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Organizational Learning with Crowdsourcing: The Revelatory Case of LEGO

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Abstract

Extant organizational learning theory conceptualizes organizational learning as an internal, member-based process, sometimes supported by, yet often independent of, IT. Recently, however, several organizations have begun to involve non-members systematically in their learning by using crowdsourcing, a form of open innovation enabled by state-of-the-art IT. We examine the phenomenon of IT-enabled organizational learning with crowdsourcing in a longitudinal revelatory case study of one such organization, LEGO (2010-14). We studied the LEGO Cuusoo crowdsourcing platform's secret test in Japan, its widely recognized global launch, and its success in generating top-selling LEGO models. Based on an analysis of how crowdsourcing contributes to the organizational learning at LEGO, we propose the "ambient organizational learning" framework. The framework accommodates both traditional, member-based organizational learning and IT-enabled, non-member-based organizational learning with crowdsourcing.

Keywords: *LEGO, Crowdsourcing, Open Innovation, Organizational Learning, Case Study.*

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1. Introduction

This paper analyses crowdsourcing as contributing to organizational learning, a hitherto neglected aspect of crowdsourcing. We conducted a longitudinal analysis of the LEGO Cuusoo platform in order to theorize about the relationship between crowdsourcing and organizational learning. On this platform, fans were able to propose LEGO-specific ideas that we subsequently systematically evaluated, and, if positively evaluated, LEGO actually implemented them[1].

Many startups have used "crowdsourcing" as an IT-enabled coordination and collaboration mechanism at the core of their business (e.g., Brabham, 2010; Giles, 2005; Kuppuswamy & Bayus, 2013). In these cases, crowdsourcing might be seen as the foundation of new business models dedicated to crowdsourcing. More recently, however, large and established organizations across industries have also used crowdsourcing as a means to learn and innovate (e.g., Gallaugher & Ransbotham, 2010; Leimeister, Huber, Bretschneider, & Krcmar, 2009; Tapscott & Williams, 2006). This suggests that crowdsourcing may present a general, new mode of learning that can be embraced by many or most organizations. LEGO is often cited as a poster child example of a large and established organization that successful implemented crowdsourcing (Antorini, Muñiz, & Askildsen, 2012; Lakhani, Lifshitz-Assaf, & Tushman, 2013; Robertson & Breen, 2013).

Even though it is relevant for both practitioners and scholars, "How can organizations use crowdsourcing for their learning?" is one of the less-explored questions in crowdsourcing. We tackle this question by analyzing an in-depth, longitudinal revelatory case study (Flyvbjerg, 2004; Yin, 2013) of LEGO. LEGO provides an early and prominent case of a large, established organization that has achieved an advanced, systematic implementation of crowdsourcing to enhance its learning. We worked with LEGO over several years (2010-14) to study how LEGO implemented and learnt from crowdsourcing.

For scholars, the paper contributes to organizational learning theory and our understanding of crowdsourcing. To our knowledge, our study presents the first attempt to understand the crowdsourcing phenomenon from an organizational learning perspective. In this paper, we discuss IT-enabled, non-member-based organizational learning with crowdsourcing as different from, yet complementary to, traditional, member-based organizational learning. We propose "ambient organizational learning" as a theoretical framework that integrates both learning types. This paper will hence be of interest to scholars working in the areas of crowdsourcing and/or organizational learning.

For practitioners, our analysis of the LEGO case contributes knowledge regarding the *why* and *how* of crowdsourcing. The analysis reveals the benefits and learnings that LEGO achieved through crowdsourcing. The LEGO case provides a blueprint model of how organizations may effectively use the often-untapped resource of their customers' and fans' ideas and skills via crowdsourcing. This paper hence provides a reference and departure point for practitioners interested in using crowdsourcing in their respective organizations.

The rest of the paper is organized as follows. In Section 2, we discuss the state of knowledge about crowdsourcing. In Section 3, we discuss organizational learning theory. In Section 4, we report on our case study research method and, in Section 5, we overview and report on the important empirical findings of the case. Based on this, in Section 6, we discuss the theoretical meaning of these findings in relation to our research question, provide our study's contributions and limitations, and present our recommendations for future research. In Section 7, we conclude the paper.

[1] We abbreviate The LEGO Group to just LEGO for easier reading of this paper. The LEGO Cuusoo case is described in detail in Sections 5 and 6 of this paper. LEGO Cuusoo was renamed to LEGO Ideas in mid-2014 when LEGO took possession of the functionality and internalized its management. We retain the LEGO Cuusoo name because this was the name of the platform at the time of our study.

2. Definition and Theoretical Understanding of Crowdsourcing

In this section, we discuss how crowdsourcing has been empirically defined and what the theoretical "framings" of crowdsourcing are that have been suggested in the literature.

2.1. Definition of Crowdsourcing

"Crowdsourcing" has been introduced as a process in which an organization outsources tasks that have *traditionally been performed by the organization's members* to a crowd of external individuals (Howe, 2006; Howe, 2008). In an effort to consolidate more than 200 definitions of crowdsourcing, Estellés-Arolas and González-Ladrón-de-Guevara (2012) conclude that crowdsourcing is:

> *a type of participative online activity in which an individual, an institution, a non-profit organization, or a company proposes to a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task (p. 197).*

In this paper, we subscribe to this understanding of crowdsourcing, which, by definition, includes a sponsoring organization (as opposed to other forms of social production, see Benkler, 2006).

Crowdsourcing is not historically new and does not necessarily require the Internet or IT. However, Internet technologies substantially reduce transaction costs for information exchange (Benkler, 2002; Benkler, 2006) and hence enable new and effective modes of collaboration and coordination (Crowston & Wade, 2010; Malone & Crowston, 1994; Malone, Yates, & Benjamin, 1987). From the perspective of a focal organization, Internet technologies provide capabilities that make the organization "ambient", extending or dissolving its borders by including non-members in its value creation (Bjørn-Andersen, 2007; Bjørn-Andersen & Raymond, 2014). Today, crowdsourcing is much more efficient and effective because it takes advantage of state-of-the-art IT and "social information systems" (Germonprez, Hovorka, & Gal, 2011; Schlagwein, Schoder, & Fischbach, 2011). The crowdsourcing in the LEGO case falls into this category of IT-enabled crowdsourcing.

Crowdsourcing is a form of IT-enabled open innovation, the topic of this special issue. Open innovation is considered as a paradigm in which organizations systematically look for outside ideas relevant to their internal problems and/or external ways to market their own ideas (Chesbrough, 2003; Dahlander & Gann, 2010; West, Salter, Vanhaverbeke, & Chesbrough, 2014). Open innovation describes organizational practices aimed at the purposeful inflows of external ideas to accelerate internal innovation (in-bound open innovation), the purposeful outflows of ideas to support external innovation (out-bound open innovation), or both (Gassmann & Enkel, 2004). From an open innovation perspective, crowdsourcing is one specific implementation of outside-in open innovation at the individual level (West, Vanhaverbeke, & Chesbrough, 2006). From a crowdsourcing perspective, open innovation is one of several possible purposes of crowdsourcing (Esposti, 2011). Certainly, there are open innovation practices that do not constitute crowdsourcing (e.g., industry-university research collaborations) and crowdsourcing practices that do not constitute open innovation (e.g., crowdfunding). We are, however, interested in the intersection; that is, when crowdsourcing is used for open innovation, such as in the case of LEGO.

2.2. Theoretical Understanding of Crowdsourcing

The understanding of crowdsourcing as a theoretical phenomenon varies between different literature streams. The first and largest stream of crowdsourcing papers to date is in computer science. This literature stream often centers on technically new implementations of crowdsourcing or "human computation" (Law & von Ahn, 2011; Quinn & Bederson, 2011). This stream has produced fascinating crowdsourcing prototypes. However, due to the different aims of computer science and IS research, these studies almost always neglect non-technical aspects of crowdsourcing, such as social, societal, business, psychological, and behavioral aspects (e.g., Riedl, Blohm, Leimeister, & Krcmar, 2010). This stream typically does not support organizational and business scholarship and practice through the provision of theoretical models.

A second large literature stream focuses on crowdsourcing participants' behavior. The motivation of crowdsourcees (i.e., crowdsourcing workers) is of specific interest in this stream: that is, why the crowdsourcees are doing what they are doing (e.g., Frey, Lüthje, & Haag, 2011; Jeppesen & Frederiksen, 2006; Lakhani & Wolf, 2005). Most papers extend Deci and Ryan's (1990) work on intrinsic vs. extrinsic motivation. The literature on crowdsourcee motivation suggests that the crowd is motivated by both extrinsic factors (e.g., payment) and intrinsic factors (e.g., enjoyment), where the latter is often based on a gaming element of competition between crowdsourcees (Archak, 2010; Hutter, Hautz, Füller, Müller, & Matzler 2011). These papers typically focus on the individual level and do not consider the theoretical meaning or the practical implications of crowdsourcing on the organizational level or for the crowdsourcer (i.e., the crowdsourcing sponsor).

A smaller third literature stream is concerned with crowdsourcing on an organizational level of analysis, the research stream to which this paper contributes. In this research stream, some papers describe crowdsourcing at the heart of new business models and startups, from co-created encyclopedias (Wikipedia) (Giles, 2005) to crowdsourced t-shirt design (Threadless) (Brabham, 2010), and crowdfunded new ventures (Kickstarter) (Kuppuswamy & Bayus, 2013). Other papers report how large and established organizations are adopting crowdsourcing to an increasing extent. For example, crowdsourcing has been used to improve customer service at Starbucks (Gallaugher & Ransbotham, 2010), to design enterprise resource planning systems interfaces at SAP (Leimeister et al., 2009), and even to find gold for Goldcorp (Tapscott & Williams, 2006). For such large crowdsourcers, the main challenge is not to create a new, crowdsourcing-based business, but rather to generate valuable insights relevant for their existing business through crowdsourcing.

The increased use of crowdsourcing strategies in organizational contexts raises the question of how to "theorize" crowdsourcing vis-à-vis the rich base of extant general organizational theory. That is, we need to meaningfully conceptualize crowdsourcing as a theoretical phenomenon so as to better understand open innovation strategies (Chesbrough & Appleyard, 2007). Improved theorizing of crowdsourcing would be useful to frame our knowledge on crowdsourcing, identify existing knowledge relevant for crowdsourcing, structure our future research efforts on crowdsourcing, help us to better implement crowdsourcing in organizations (Majchrzak & Malhotra, 2013), and contribute to broader theories about organizations' nature and behavior (Argote & Miron-Spektor, 2011). While theorizing about crowdsourcing would be beneficial for these reasons, there have been limited scholarly attempts at placing crowdsourcing vis-à-vis organizational theory. Our and others' reviews of the crowdsourcing literature (Geiger, Seedorf, Schulze, Nickerson, & Schader, 2011; Majchrzak & Malhotra, 2013; Pedersen et al., 2013) document that crowdsourcing research lacks theory, especially when it comes to organizational level of analysis.

A few scholars have attempted to theorize crowdsourcing on an organizational level. Afuah and Tucci (2012) consider that crowdsourcing constitutes an organizational "distant search" at the cost equivalent of a local search. This framing corresponds to the description of open innovation on the InnoCentive platform as a "broadcast search" (Jeppesen & Lakhani, 2010). Afuah and Tucci use the search framing to introduce a theoretical model of factors driving "adoption of crowdsourcing" as the dependent construct of interest. That is, they present a model for predicting the probability of crowdsourcing being adopted by a focal organization. However, Afuah and Tucci do not study crowdsourcing as a process, how it is integrated with the organization, how feedback is given, nor how it generates benefits over time. Some have hence argued that their model of crowdsourcing considers only "value creation" and not "value capture" (see further Afuah & Tucci, 2013; Bloodgood, 2013; Lepak, Smith, & Taylor, 2007; Morgan, Feller, & Finnegan, 2013).

Others have considered absorptive capacity as a helpful lens for explaining crowdsourcing and open innovation (e.g., King & Lakhani, 2011; Spithoven, Clarysse, & Knockaert, 2011; Vanhaverbeke, Van de Vrande, & Cloodt, 2008). A central claim here is that an organization's absorptive capacity is supported by the use of crowdsourcing and open innovation. However, the absorptive capacity construct typically includes specific contextual assumptions and measurement dimensions (Cohen & Levinthal, 1989; Lane, Koka, & Pathak, 2006; Roberts, et al., 2012). For example, a typical measurement of absorptive capacity in empirical studies is the amount of R&D spending, which is

taken as a proxy because absorptive capacity is held to be constituted by an organization's pre-existing knowledge. According to this perspective, it is pre-existing knowledge that is critical to identify and exploit new external knowledge. However, organizations with little or no pre-existing knowledge base or R&D spending to speak of (e.g., Internet startups) have successfully applied crowdsourcing strategies. Absorptive capacity also does not appear to capture the core of organizational crowdsourcing strategies because it emphasizes finding pre-existing external knowledge and ideas, while, in organizational crowdsourcing, these ideas are dedicatedly created for the organization (as we find, for instance, in the LEGO case).

Organizational learning is a related but broader framework compared to both distant search and absorptive capacity. Indeed, the few empirical IS studies that track long-term, sustainable forms of crowdsourcing suggest that organizations gain various learnings from their engagement in crowdsourcing. For example, Feller, Finnegan, Hayes, and O'Reilly (2012), in their study of crowdsourcing intermediaries, found that:

> *successful innovation seekers* [crowdsourcers] *enjoy two kinds of organizational learning. First, they usually develop an improved understanding of both the problem and solution space, derived from the process of problem articulation, the nature of the chosen solution, the process behind the chosen solution, and the nature of the other proposed (unsuccessful) solutions. Second, the innovation-seeking firm gains a better understanding of…the process of working with unknown individuals/firms for innovation purposes* (p. 12).

From a different point of departure, leading scholars of organizational learning in our neighboring field of Organization Studies suggest that there is "an exciting new line of research on…knowledge creation in the context of online communities" (Argote & Miron-Spektor, 2011, p. 1129), which might be able to provide an integration (of itself) with organizational learning theory and thus present an important research frontier (e.g., Faraj, Jarvenpaa, & Majchrzak, 2011; Faraj, Kudaravalli, & Wasko, 2014; Kane, Johnson, & Majchrzak, 2014; Orlikowski & Scott, 2014).

In addition to these considerations based on the literature, it became clear to us through our engagement over the years with LEGO that the organization benefitted by learning both "with" crowdsourcing (e.g., how to change business and products) and "about" crowdsourcing (e.g., how to improve crowdsourcing). It is almost impossible to substitute the word "learning" here: there is clearly a form of organizational learning taking place.

We find that organizational learning theory is a legitimate and well-suited theoretical basis for understanding crowdsourcing as an organizational practice, but, surprisingly, to our knowledge, no prior study has attempted to theorize crowdsourcing using an organizational learning lens. Hence, in this paper, we use organizational learning theory to frame and analyze the crowdsourcing phenomenon. The LEGO case helps us understand how large organizations use crowdsourcing for learning and what the emerging prolonged use of crowdsourcing by organizations means for extant organization learning theory.

3. Organizational Learning Theory

3.1. Current Theorizing on Organizational Learning

We use the term "organizational learning theory" to refer to the group of theories concerned with how organizations learn (for a recent review, see Argote & Miron-Spektor, 2011). Organizational learning theory provides a behavioral and evolutionary lens on organizations and firms (Argote & Greve, 2007; Dosi & Marengo, 2007; Nelson & Winter, 2002) and it was long ago identified as relevant for IS research (Argyris, 1977). Organizational learning theory is fundamentally about how organizations can improve their actions through learning (Argyris & Schön, 1978; Cangelosi & Dill, 1965; Garvin, 1993). A very comprehensive definition of organizational learning is the following:

> *Organizational learning is different from the simple sum of the learning of its members. Although individuals may come and go, what they have learned as individuals or in groups does not necessarily leave with them. Some learning is embedded in the systems, structures, strategy, routines, prescribed practices of the organization, and investments in information systems and infrastructure* (Crossan, Lane, & White, 1999, p. 529).

In this paper, we specifically build on Crossan et al.'s (1999) model of organizational learning. Their paper presents one of the most universally accepted and influential models of organizational learning[2]. The model extends earlier organizational learning frameworks (Daft & Weick, 1984; March, 1991; Nonaka & Takeuchi, 1995) by detailing the learning process transitions from the individual level (employee) to the group level (teams) and the organizational level. Figure 1 shows a simplified version of Crossan et al.'s (1999) three-level model. The three grey symbols indicate the three different levels (individual, group, organizational); the upward arrows indicate the "feed forward" (expressing ideas); and the downward arrows indicate the "feedback" (receiving reactions) of organizational learning.

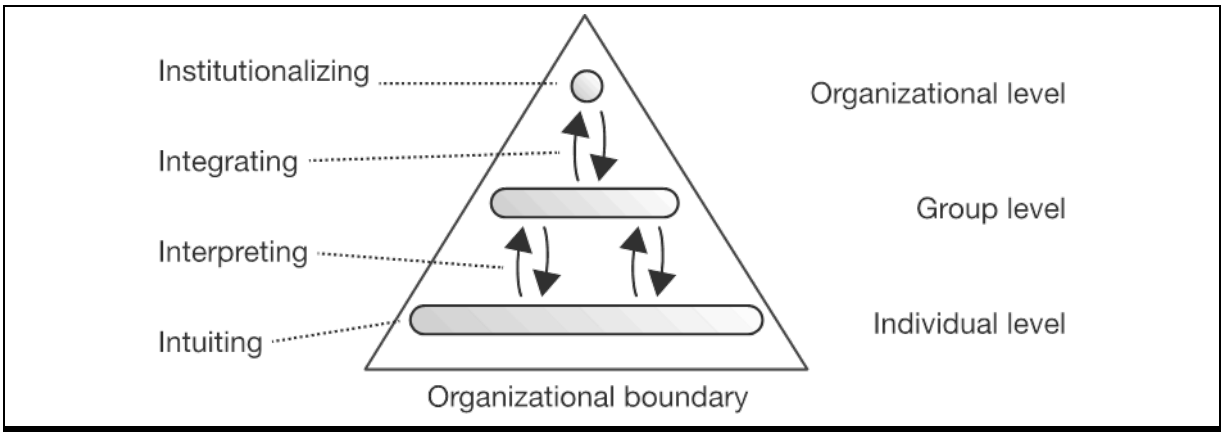

Figure 1. Organizational Learning (adapted from Crossan et al., 1999)

Figure 1 further shows four learning sub-process steps on and between the individual, group, and organizational levels: intuiting, interpreting, integrating, and institutionalizing (i.e., the "4I") (Crossan et al., 1999).

3.1.1. Intuiting in Organization Learning

Intuiting is a subconscious, individual-level process. Central to the intuiting process step are hunches, intuitive reckoning, and the sparks of ideas. These ideas and hunches occur frequently to individual members of the organization (Crossan et al., 1999; Nonaka & Takeuchi, 1995; Simon, 1991). Individuals' personal experiences allow them to recognize patterns or see inherent possibilities (Weick, 1995). Intuiting is a creative act that in which one makes a connection between areas of knowledge where there has been no connection before (Amabile, 1996; Fauconnier & Turner, 2002; Koestler, 1964). Crossan et al. (1999) distinguish two forms of intuiting: 1) expert intuiting relates to the intuitive recognition and relation of a current situation to patterns learnt in the past, which typically requires substantive expertise and experience ("how to do things"); and 2) entrepreneurial intuiting is focused on making novel connections and perceiving innovative possibilities that do not necessarily require or may even be hindered by expertise ("how to do things differently"). One example of intuiting is an individual having the hunch that LEGO bricks could be used as a brainstorming tool for adult creativity in discussions and meetings.

[2] Crossan et al.'s (1999) framework continues to significantly impact organizational scholarship today, and has been recognized as "Best Paper of the Past Decade (1998-2008)" by the *Academy of Management.* The authors wrote a reflective piece on this award and their paper's impact of their paper (Crossan et al. 2011). Inter alia, they are concerned about too few empirical studies and suggest further refinement of their basic framework based on such empirical studies.

3.1.2. Interpreting in Organizational Learning

Interpreting is a process step of consciously explaining, expressing, and discussing ideas or insights, which, per their nature, involve more than one individual. Interpretation is usually done through dialogue in meetings, emails, or other spaces for communication. While the intuiting individual will perform the first interpretative steps (formulating the idea, writing a memo, drawing a sketch, etc.), interpreting is aimed at communicating ideas in groups. In the collective process of interpretation, equivocality is reduced, common understanding is established, and actions are agreed on (Crossan et al., 1999; Daft & Weick, 1984; Weick & Vanorden, 1990). For example, investigating and discussing the above idea that LEGO bricks could be used as a brainstorming tool for adult creativity would be classified as interpreting the idea. Questions that might arise in the discussions and meetings could include: to which extent can new strategies, products, or collaborations actually be visualized with LEGO bricks? Can adults be made to play with LEGO bricks? Will doing so actually enhance their creativity? Tentative answers to these questions are developed through inter-personal interpreting.

3.1.3. Integrating in Organizational Learning

Integrating is a learning process step that links the group level and organizational level. Integrating closely follows interpreting. However, integrating focuses on the actualization of the ideas through collective action and shared practices. Integrating is the step from organizational cognition to organizational action (Brown & Duguid, 1991; Crossan et al., 1999). Organizational learning manifests in practices and actions (Simons, 1991) in this process step. Continuing the LEGO example, LEGO may now actually work on implementing the idea about using LEGO bricks for enhancing adult creativity. LEGO may start testing a prototype, assess the results, and eventually launch a brainstorming product (i.e., LEGO launched “LEGO Serious Play” in 2002).

3.1.4. Institutionalizing in Organizational Learning

Institutionalizing refers to the process of embedding what has been successfully learnt in the past into organizational systems and routines. Institutionalized learning is reflected, for example, by an organization’s long-term investments, practices, and contracts (Crossan et al., 1999). Institutionalizing enables an organization to regulate its activities and exploit what has been learnt over a prolonged period of time (Simons, 1991; Simons, 1994). From a bottom-up perspective, institutionalizing is the ultimate aim of the “feed forward” of intuiting, interpreting, and integrating. From a top-down perspective, institutionalizing generates “feedback” regarding the experiences with new learnings for future intuiting, interpreting, and integrating. To complete the LEGO example, with this step, the idea of enhancing creativity and innovation using LEGO bricks for brainstorming in meetings would now be institutionalized across LEGO, and “Serious Play” would be available as a permanent product offering for externals on the market.

We find Crossan et al.’s (1999) framework particularly useful because it shifts the focus of organizational learning from exploring (dominant in previous organizational learning conceptualizations) to both exploring and exploitating. The exploration and exploitation dichotomy of organizational learning (Kane & Alavi, 2007; March, 1991) is closely related to the value creation and value capture dichotomy discussed above in relation to crowdsourcing (Afuah & Tucci, 2013; Bloodgood, 2013). In addition, Crossan et al.'s framework clearly accounts for the recursive, multi-level nature of systematic, long-term-oriented crowdsourcing processes.

3.2. Critique

Overall, we found organizational learning to be a valid and valuable lens to theorize crowdsourcing. However, we also found severe limitations in explaining crowdsourcing through the organizational learning lens. Two of these limitations are particularly relevant to our work.

First, organizational learning has a self-imposed boundary assumption (often implicit in the arguments) that only organizational members learn for the organization. This is the underlying assumption of Crossan et al. (1999) and the dominant view in organizational learning theory. In a recent review of organizational learning theory, Argote & Miron-Spektor (2011) express this dominant view in that:

> *the basic elements of organizations are members* [in the same paper also referred to as employees]*, tools, and tasks. These elements of members, tools, and tasks and their networks are the primary mechanisms in organizations through which organizational learning occurs and knowledge is created* (p. 1125).

They further distinguish between a latent (external) and an active (internal) context of organizational learning, with the "difference between the active and the latent contexts [being] their capability for action. Members and tools perform tasks: they do things. By contrast, the latent context is not capable of action" (p. 1125). This boundary assumption is in contrast to organizational learning with crowdsourcing because a substantial part of this learning is of an external yet active and organization-specific nature.

Second, the role of IT has been almost totally neglected in extant organizational theories (see also Orlikowski & Scott, 2008). Yet, IT has a huge potential for bringing down the transaction costs in relation to learning with crowdsourcing. Afuah and Tucci (2012) conclude that "in many anecdotal examples of crowdsourcing, IT plays a crucial role. However, it is still not very clear what IT's exact role is from a theory point of view" (p. 372). Indeed, "research on how tools [IT] affect knowledge creation and organizational learning is in its infancy" (Argote & Miron-Spektor, 2011, p. 1129), yet the same paper suggests that IS researchers might be able to close this gap in understanding (e.g., such as with Faraj et al., 2011; Kane & Alavi, 2007). Finally, Majchrzak & Malhotra (2013, p. 11) argue that "strategic IS scholars are particularly well suited to reorienting crowdsourcing…. The community of scholars that succeeds at this reorientation may be doing nothing less than defining a new basis for strategic competition in the years to come". With this study, we contribute to theory development by crossing IS and Organization Studies.

4. Case Study Research Method

In this section, we report the details of the case study research method we used in our longitudinal investigation of crowdsourcing at LEGO.

Using an interpretivist epistemological stance (Klein & Myers, 1999; Walsham, 1993), we conducted a longitudinal revelatory case study of organizational learning with crowdsourcing at LEGO. We chose a revelatory case research method because it allows for theory building regarding new and interesting phenomena through the in-depth analysis of exemplary, novel, or unique cases (see also Flyvbjerg, 2004; Sarker, Xiao, & Beaulieu, 2013; Yin, 2013). The LEGO case constitutes such a case, and it allowed us to explore the new and interesting phenomenon of IT-enabled organizational learning with crowdsourcing at a large and in many ways traditional organization.

LEGO is a family-owned Danish toy manufacturing organization famous for its "LEGO bricks". LEGO, in collaboration with their partner Cuusoo[3], is among the first manufacturing businesses to use a systematic contest-based crowdsourcing approach. LEGO Cuusoo provides an early example of how IT-enabled crowdsourcing relates to, and constitutes, organizational learning in a large and established organization. One of the authors has been in interaction with LEGO since 2000, when LEGO first launched e-commerce and e-branding initiatives. For this particular study, both authors worked with LEGO and Cuusoo, specifically in regard to crowdsourcing from 2010 to 2014.

During our engagement with the case, we collected both primary data and secondary (natural) data (Silverman, 2011). The research included visits to LEGO in Denmark and to Cuusoo in Japan, where we participated in meetings, spoke to staff, and inspected facilities. We conducted 19 semi-structured in-depth interviews with key informants (551 pages of transcripts) and had informal discussions in person or online with 25 other internal and external stakeholders. In addition, we attended conferences and meetings, following closely the developments not only on the focal LEGO Cuusoo crowdsourcing platform but also on LEGO's other websites and social media channels. We systematically tracked press releases, conference presentations, trade press reports, and blog posts.

[3] Cuusoo is technology company based in Tokyo, Japan. Cuusoo provides individualized crowdsourcing intermediary services for clients such as LEGO, Muji, and Nissan.

LEGO and Cuusoo also made internal documentation available to us. These data complemented the interviews and allowed for a rich and contextualized understanding of the case.

We followed a hermeneutic approach in our data analysis (Gadamer, 1998; Klein & Myers, 1999). We analyzed our empirical data in an iterative process to understand the company, its history, its culture, and other contextual factors that enabled or limited initial adoption and prolonged conduct of its crowdsourcing strategy. From our initial contacts with LEGO and throughout the data collection, we tried to make sense of its strategies and logics, and its internal processes and transformations that made these strategies and logics work, especially in regard to crowdsourcing. We iterated between understanding of the parts and understanding of the whole in our investigation. That is, we adopted an approach aimed at understanding LEGO and its crowdsourcing strategy by exploring the detailed actions and processes involved, and vice versa, understanding these details in the light of the overall organization and its crowdsourcing strategy. We attempted to be particularly sensitive to contextual factors, multiple interpretations, and potential biases in the narratives of participants (e.g., when reporting sensitive topics such as internal tensions at LEGO). Using dialogical reasoning about the case, we ultimately arrived at abstractions and generalizations (i.e., theory). We deemed this research approach to be most appropriate because it takes into account the uniqueness and multi-faceted nature of the LEGO case.

Consistent with our revelatory aim, our theory building was primarily inductive. We supported the analysis through a process of open coding (Ezzy, 2002; Strauss & Corbin, 1998), aggregation of codes to concepts, and analysis of relationships between concepts. We used the fine-grained qualitative data that we collected to identify theoretically meaningful patterns (Langley, 1999; Markus & Robey, 1988). The analysis of the empirical observations allowed us to develop a model of organizational learning with crowdsourcing in the LEGO case, a "substantive" theory (Klein & Myers, 1999; Müller & Urbach, 2013). We constantly compared our emerging theory and the case data with the aim of an "emergent fit" (Ezzy, 2002; Urquhart, Lehmann, & Myers, 2010). During the analysis, we identified organizational learning theory as a general framing that was helpful in making sense of patterns discovered in our analysis of crowdsourcing at LEGO. Specifically, we identified the feed forward and feedback about learning between individual, group, and organizational levels. At the same time, beyond what extant organizational learning theory provided, we observed the systematic integration of non-members in learning. Furthermore, we identified, and focused on, the crucial role of IT.

5. Overview and Findings of the Case

In this section, we present the empirical findings of our case study.

5.1. Background and Context

LEGO is a toy manufacturing organization headquartered in Billund, Denmark. LEGO is owned by the Kristiansen family. In 2013, LEGO had revenue of US$4.7 billion, a profit of US$1.1 billion, and 12,000 employees. LEGO manufactures toys based on the well-known LEGO bricks, which it has very successfully produced and sold since the 1950s. LEGO is one of the most popular and well-reputed brands globally[4]. The organization faced a crisis in the early 2000s with record losses due the failure of new businesses and changes in the global market for toys. However, by the end of the 2000s, LEGO was once again outgrowing its competition[5].

Before its early-2000s crisis, LEGO had a general policy of not accepting "unsolicited" design ideas submitted by fans (e.g., sent to LEGO via mail). However, the participants of our study reported that LEGO increasingly became aware that it had a motivated, creative, and brand-loyal "crowd" of fans as an untapped resource that was showing high willingness to engagement with LEGO. Supported by Internet technology, the LEGO crowd created their own communication and collaboration channels.

[4] LEGO ranked 9th on the *Reputation Institute's* Global RepTrak 2014 list.

[5] In response to mounting losses and to prevent bankruptcy, LEGO appointed a new CEO in 2003. The new CEO made substantial changes to LEGO's strategy and operations. The strategic changes proved successful in that LEGO went from heavy losses in the early 2000s to major revenue increases and achieving the highest per-year growth rate in the industry in the past five years (a detailed account of LEGO's turnaround is provided in Robertson & Breen 2013).

The participants referred, for example, to LEGO-specific, fan-created forums (e.g., LUGNET) and the massive presence of user created LEGO-themed channels and materials on social media[6].

Furthermore, in some instances, the LEGO crowd actively pushed the organization to adopt an open, crowdsourced model. The participants referred to several past examples in which the crowd "hacked" LEGO systems to open them up. In one event in 1998, fans coordinated over the Internet for a hacking of the chipset of LEGO's robotic set "LEGO Mindstorms". The fans felt that LEGO's chipset programming unnecessarily restricted the abilities of their Mindstorms robots. Caught by surprise by this "attack", LEGO first considered taking legal action. However, LEGO soon realized that the fans had actually improved the system, and had done so for free. LEGO endorsed their changes. In another event, fans again coordinated over the Internet for a hacking of the servers of the "LEGO Factory" mass customization system in 2005. The fans were dissatisfied with the sub-optimal way in which the LEGO Factory back-end allocated bricks to their orders. Again, the hacking was successful, and again the changes were endorsed by LEGO. With these and other similar events, the crowd made LEGO aware of their eagerness to be actively involved in shaping LEGO's products. Our study's respondents interpreted this as showing both a high potential and high willingness of the crowd to contribute to LEGO activities. One aim of establishing crowdsourcing at LEGO was hence to leverage and channel this crowd willingness.

LEGO came to recognize the strategic potential of increased user involvement. LEGO's CEO (in O'Connell, 2009) explained how openness became part of the strategic agenda:

> *The LEGO community…is one of the company's core assets. I think I realized the power of customer contributions in 2005…. Since then, we actively encouraged our fans to interact with us and suggest product ideas. While we have 120 designers on staff, we potentially have probably 120,000 volunteer designers we can access outside the company to help us invent.*

Crowdsourcing fit well with the "innovation and customer" focus of LEGO's strategy since its early-2000s crisis. The new strategy included goals of increased user centricity and user engagement. As part of this strategy, LEGO established new organizational structures. For example, LEGO established the new business group to explore new business opportunities, including in the co-creation space. Later, LEGO created the open innovation department specifically to develop LEGO's crowdsourcing and open innovation strategy. The participants reported that top management support was critical for overcoming internal inertia towards open innovation in LEGO's organizational culture.

In the mid-2000s, LEGO experimented with different forms of user involvement and open innovation. For example, LEGO invited a small user group to be involved in the development of the second version of the robotic set Mindstorms ("LEGO Mindstorms NXT", launched in 2006). The users were picked based on their leading roles on fan-run LEGO forums. This group was enthusiastic to be invited to work with LEGO, even though they had to pay their flights to Denmark and received only a pack of LEGO bricks as reward for their participation. LEGO considered the users' contributions very valuable. While the mass customization LEGO Factory[7] (2005-12) platform was not a huge commercial success, the platform was avidly used by LEGO fans, and LEGO had used user creations as showcase examples of its power. The participants of our study considered such prior experiences as creating a supportive environment for crowdsourcing. The prior experiences further reduced internal skepticism towards involving users, and LEGO could draw from these prior experiences for approaching and working with external users (e.g., LEGO learnt how to respond to public audiences).

Furthermore, the participants suggested that the availability of enabling IT (e.g., Internet co-creation platforms such as Cuusoo) was critical for crowdsourcing. The crowdsourcing platform for LEGO Cuusoo was not built based on an already existing and well-developed business case for

[6] For example, a search on YouTube in early 2014 revealed around 14 million LEGO-themed videos, almost all of which were made by fans.

[7] LEGO Factory was later renamed to LEGO DesignByMe.

crowdsourcing; rather, the other way around: the availability of new IT triggered LEGO's actions regarding crowdsourcing. A LEGO senior manager explained: "Opening up is…a reaction of looking at [the IT] landscape out there, seeing that the...tools for opening up and getting very close to consumers have been built up". Specifically, LEGO came across Cuusoo's technology by a chance meeting at a conference in 2008. The promise of this new technology matched well with LEGO's strategic intent to increase user involvement. Due to the newness of this technology and crowdsourcing at that time, LEGO opted for partnering and using Cuusoo's technological and organizational infrastructure and expertise.

5.2. The Cuusoo Experience

The LEGO Cuusoo crowdsourcing platform allowed users to submit LEGO-related ideas for crowd evaluation (i.e., the user community on the platform) and LEGO's consideration for actual implementation. The platform was branded as LEGO and exclusive to LEGO, but it was originally hosted and managed by Cuusoo. LEGO ran a "secret"[8] Japan-only test from 2008 to 2011. In October 2011, the LEGO Cuusoo platform was launched globally and it created a lot of interest among fans and media.

The LEGO Cuusoo crowdsourcing platform worked as follows. LEGO users privately, and usually individually, developed design ideas for LEGO, typically in the form of design ideas for proposed new LEGO models[9]. Users could use actual bricks, software, or any combination thereof to prepare their design ideas before submitting their ideas to the LEGO Cuusoo platform. Submissions could be made on an ongoing basis.

The upload of user designs, of course, had already been possible before using social media platforms such as Flickr, YouTube, or fan-run LEGO forum. However, these channels were neither endorsed by LEGO, nor did LEGO monitor or support these channels with the intention of actualizing product ideas. In contrast, the LEGO Cuusoo platform was systematically integrated with the organization, and had the stated purpose to develop user ideas into new LEGO products. Hence, "[the] LEGO Cuusoo system formalized a path for users to turn their ideas into products" according to Cuusoo's executive officer.

While LEGO Cuusoo platform users were "core" LEGO fans, there was also a large group of other users from a very broad range of backgrounds. A LEGO senior manager explained: "One of the surprising findings is that you're actually able to tap into interested communities that are outside the core of the LEGO community and thereby grow the LEGO community in general". Many users turned to their social media channels to drum up support when they submitted an idea to the platform, or when they found someone else's idea particularly striking. Users learnt from one another how to most effectively promote ideas and how to rally support. The study's participants considered this an important "side effect" of crowdsourcing and a valuable contribution to LEGO's brand image.

Once the design ideas were uploaded to the LEGO Cuusoo platform, users evaluated the design ideas. Users had various options to interact and to comment, discuss, and vote on design ideas. Ideas could be revised and re-uploaded. LEGO initially had some problems with "stolen" ideas (e.g., design copied from Flickr) but reduced this through explicating rules and imposing an age restriction. LEGO and Cuusoo had moderators and community managers (including one hired directly from the LEGO community) that monitored the interactions on the platform and moderated cases of disputes. Receiving support via votes was most crucial on the platform because design ideas were considered by LEGO only when reaching a 10,000-vote threshold[10]. LEGO also introduced a one-year limitation for support votes, after which design ideas were removed from the platform to avoid displaying "dead" ideas. Cuusoo passed all designs that met the vote threshold on to LEGO on a quarterly base. That is,

[8] The platform was available only in Japan and in Japanese from 2008-11. The decision to launch only in Japan was based on Cuusoo being located in Japan and on the intention to not attract much attention to the project before it was proven successful in this "sandbox" test.

[9] LEGO models are packed sets of pre-compiled LEGO bricks to build an "airport", a "hospital", and so on.

[10] This threshold was 1,000 votes in the Japan-only test in 2008-11.

only the (few) design ideas that were able to gather enough supporters on the platform were passed on to LEGO. A high number of votes were generally considered as an indication of high buyer interest. This mechanism automatically provided a market test before what would be considered product development in a narrower sense (rather than the other way around).

LEGO internally reviewed all new ideas that had passed the crowd voting. In this step, LEGO employees became responsible for reviewing and acting on the users' design ideas. A LEGO expert panel reviewed the winning ideas and determined which ideas were the best candidates for implementation. All the information on the platform (number of votes, but also qualitative discussion data) was used by the LEGO expert panel for their evaluation. A senior manager explained LEGO's internal review process:

> [There is] *a big review document that is passed around to relevant people inside LEGO. That would be a product designer, that would be an artwork designer, looking at what the packaging would be and that would be people on the different markets looking at the positioning of the product idea in the US, and Europe, and in Asia. And there would be financial control in looking into the financial aspects of a product in the business case. And then we have sessions with each different participant in the review, discussing the elements of all the candidates for products.*

In some cases, internal LEGO designers would refine users' designs. The review step resulted in LEGO making a "go" or "no go" decision on whether to implement the reviewed design idea. Finally, LEGO communicated their decision back to the Cuusoo community.

Design ideas that survived both the crowd voting and the LEGO review then became part of LEGO's permanent product offerings. LEGO started producing the corresponding new models, which typically required the creation of new molds (i.e., new casting molds for the production of unique LEGO bricks, which, in turn, could be used for future internal LEGO models as well). LEGO listed the new models in catalogues and sold the models via its online and physical channels. According to the participants, LEGO Cuusoo models often went from proposal to shelf in six months. This was much faster than for comparable internally developed LEGO models, which typically took two years to market. The time saved was attributed to the facts that a complete design was available to LEGO, the market testing was done before product development, and there was strong evidence for a best-seller potential of the model and hence an incentive for the LEGO to bring this model to market as soon as possible.

Many user design ideas required more than internal arrangements for LEGO. Highly voted models often used intellectual property of other organizations in some form and hence required LEGO to engage in new business partnerships. For example, the 2012 top-selling crowdsourced LEGO Minecraft (a popular online game) model required LEGO and Minecraft's producer, Mojang, to form a partnership to bring this product to market. This organizational partnership continued and resulted in a full LEGO Minecraft product line, with only the first model resulting from crowdsourcing. Interestingly, according to the participants, neither LEGO nor Mojang had previously thought of any form of partnership. The idea to engage in this partnership stemmed from crowdsourcing.

The original submitter of a successful design idea received several benefits. Naturally, there was the recognition by the Cuusoo LEGO community and the satisfaction of having one's own design idea officially endorsed and produced by LEGO. Additionally, there was a substantial financial reward in the form of a revenue share on the sales of the product. A business developer at LEGO elaborated:

> *The owner of the idea will receive 1% of the net revenue from that particular model sold: So, he* [sic] *has an interest in the product being sold. So, we are hoping also to activate the user in actually selling the product.*

That is, LEGO aimed to involve users in marketing the product after launch, moving directly from crowdsourced product design to viral marketing. Again, this promotion by the users usually took place via users' social media channels.

6. Discussion

Based on the LEGO Cuusoo case reported above, in this section, we discuss our research question: "How can organizations use crowdsourcing for their learning?".

6.1. Organizational Learning with Crowdsourcing

The process of organizational learning with crowdsourcing found in the LEGO Cuusoo case can be theoretically conceptualized in line with Crossan et al.'s (1999) general framework of organizational learning. In the LEGO case, however, the first two process steps of organizational learning were crowdsourced. That is, intuiting and interpreting were systematically performed by non-members of the organization via IT.

6.1.1. Intuiting in Organization Learning with Crowdsourcing

When crowd members individually develop LEGO-relevant ideas, they are "intuiting". Some have referred to this step as "ideation" (Whelan, Parise, de Valk, & Aalbers, 2011). Creative theory has some insights that help us understand this first process step of distributed organizational learning with crowdsourcing. Theories of creativity often consider creative processes to involve a divergent process and then a convergent process (Amabile, 1996; Campbell, 1960; Finke, Ward, & Smith, 1996; Guilford, 1967). In the divergent process, individuals create new ideas through unconventional combinations and associations of thought (Guilford, 1967). These unconventional combinations result from individuals blending different contexts (or frames of reference) (Fauconnier & Turner, 2002; Koestler, 1964); that is, individuals intuit valuable combinations of knowledge by referencing separate contexts. The broader the range of individuals' backgrounds, the more combinations that are possible. Individually, such users are spanning boundaries; collectively, the crowd is divergently creative or "entrepreneurial intuitive" to use Crossan et al.'s term. This is in contrast to LEGO's primarily "expert intuitive" professional design staff.

Based on our observations over the years, it became clear to us that the crowd was more likely to identify new combinations with other contexts, while the LEGO experts were more likely to develop complex new product lines that required deep knowledge of the LEGO's system of play. The intuiting step of organizational learning with crowdsourcing is different from traditional organizational learning in terms of where (external vs. internal) and to whom (non-professionals vs. professionals) the intuiting occurs. Additionally, the dominant form of intuiting in organizational learning with crowdsourcing is qualitatively different from the dominant form of intuiting in traditional organizational learning (entrepreneurial intuiting vs. expert intuiting). Organizational learning with crowdsourcing is hence likely to produce different ideas on the individual level and will have different effects on the organizational level.

In summary, we argue that crowdsourcing constitutes a legitimate form of organizational learning that is not just a "cheaper" form of traditional, employee-based organizational learning but is a substantially *different* and *complementary* type of organizational learning in the intuiting step. As an example of intuiting in crowdsourced learning, the best-selling crowdsourced LEGO Minecraft model was proposed by an individual user who was a member of both the LEGO community and the Minecraft community. While the LEGO Minecraft model idea seemed natural and obvious to this user, the idea had never occurred to organizational members at LEGO at Mojang (Minecraft's producer) because they lacked familiarity with the other context.

6.1.2. Interpreting in Organization Learning with Crowdsourcing

Users articulated their idea(s) in the form of text, drawings, or photos to upload it to the LEGO Cuusoo platform. This articulation was for receiving comments and support from the crowd of other users. The feedback generated therein often leads submitters to revise their ideas, which also offered other users an opportunity to learn from this feedback for their future submissions. This constituted the "interpreting" step in the organization learning with the crowdsourcing process. This step has also been referred to as "selection" (Whelan et al., 2011). That is, interpreting in the case of crowdsourcing refers to explicating, collaborating, discussing, supporting, and selecting ideas specific to the

organization by non-members. Practically all these processes are not effectively possible without the underlying IT platform.

Collectively, the crowd performs a convergent creative process in this interpreting step (Cropley, 2006, Guilford, 1967), where the objective is to consolidate different ideas and to evaluate "best" ideas (Cropley, 2006). Even LEGO Cuusoo users who were not able or inclined to produce notable creative ideas themselves were, at least collectively, able to evaluate the best design ideas of other users ("we know a good idea if we see one"). That is, the crowd was collectively able to interpret great ideas, regardless of their individual ability to intuit great ideas. There is certainly no universal "right" approach to evaluating creative ideas because the evaluation process must be matched to the nature of the ideas (Brophy, 1998, Lonergan, Scott, & Mumford, 2004). However, creativity research widely considers that a divergent process (intuiting, ideation) should be followed by a convergent process (interpreting, selection) to produce best results (Cropley, 2006). At the time of our study, LEGO was still working on improving and modifying this interpreting step[11].

What is blatantly clear is that the nature of interpreting in organizational learning with crowdsourcing is strongly enabled by IT (use of online tools, ratings scales, public transparency, etc.). This is in contrast to traditional interpreting of ideas considered for an organization. IT makes organizational learning with crowdsourcing so efficient that it provides a new and potentially disruptive way of learning and innovating. To continue the above example, LEGO Cuusoo users were immediately able to see the best-seller potential of the LEGO Minecraft model once the idea was manifest and uploaded on the platform. The model reached the needed support votes in a record 48 hours, accompanied by very positive feedback and a social media frenzy.

6.1.3. Integrating in Organization Learning with Crowdsourcing

In the LEGO Cuusoo case, the integrating step was performed in the traditional organizational learning mode (internal, member-based). The ideas and interpretations from outside the core organization were regularly feed forwarded into the core organization. For open innovation, it is critical that outside ideas are not only generated but also systematically channeled to the right internal people (Whelan, Golden, & Donnellan, 2013). Considering internal expert opinions, LEGO decided on whether to implement ideas, and, in case of a positive decision, negotiated business partnerships, set up the production facilities, and so on. LEGO communicated back to the crowd the outcome(s) of internal reviews, how the internal reviews worked, and in some cases, the reasons why certain models were or were not produced (i.e., LEGO provides feedback). In the example, neither LEGO nor Mojang had the idea to collaborate and create LEGO Minecraft models. Crowdsourcing triggered organizational actions such as forming a partnership, creating new molds, and developing a marketing plan to bring this model to market.

6.1.4. Institutionalizing in Organizational Learning with Crowdsourcing

The institutionalization of learning from crowdsourcing occurred in the focal organization, LEGO. Strategically, LEGO worked in long-term business arrangements with other organizations that were established as a result of crowd-based learning. Operationally, LEGO worked with new molds (which then might be used in other, internal models as well) based on crowd-developed models. LEGO also learnt about crowdsourcing, with crowdsourcing and open innovation increasingly becoming institutionalized as an organizational capability at LEGO. In this way, crowdsourcing changed the nature, image, and workings of LEGO as an organization. To complete the LEGO Minecraft example: after the first Minecraft model, LEGO continued to engage in a broader business partnership with Mojang for a full line of products. LEGO is now linked with Minecraft in an ongoing, long-term, and very visible fashion. In addition, LEGO institutionalized crowdsourcing as a practice based on successes such as with the Minecraft model.

In summary, we argue that crowdsourcing as in the LEGO case constitutes a legitimate and effective form of organizational learning. Organizational learning with crowdsourcing is a novel, unique (e.g.,

[11] For example, LEGO Cuusoo used a binary scale of "support" vs. "no support", while studies on crowd evaluation suggest that more elaborate mechanisms should be used (Riedl et al., 2010).

external, non-professional, IT-shaped, and entrepreneurial) form of organizational learning. Organizational learning with crowdsourcing is hence not just a cheaper, digital re-enactment of traditional employee-based organizational learning, but rather an alternative learning mode.

Figure 2 summarizes the process model of organizational learning with crowdsourcing at LEGO Cuusoo described above. As in Figure 1, the grey symbols indicate the three different levels (individual, group, organizational); the upward arrows indicate the feed forward (expressing ideas); and the downward arrows indicate the feedback (receiving reactions) of the learning process. The four process steps of intuiting, interpreting, integrating, and institutionalizing still occur on or across individual, group, and organizational levels. However, the individuals and groups that performed the intuiting and interpreting were not organizational members (employees) of LEGO. Furthermore, this type of external learning was enabled and shaped by IT. The process contributed to LEGO's overall organizational learning (in addition to the traditional, member-based organizational learning, which is not the focus of this paper).

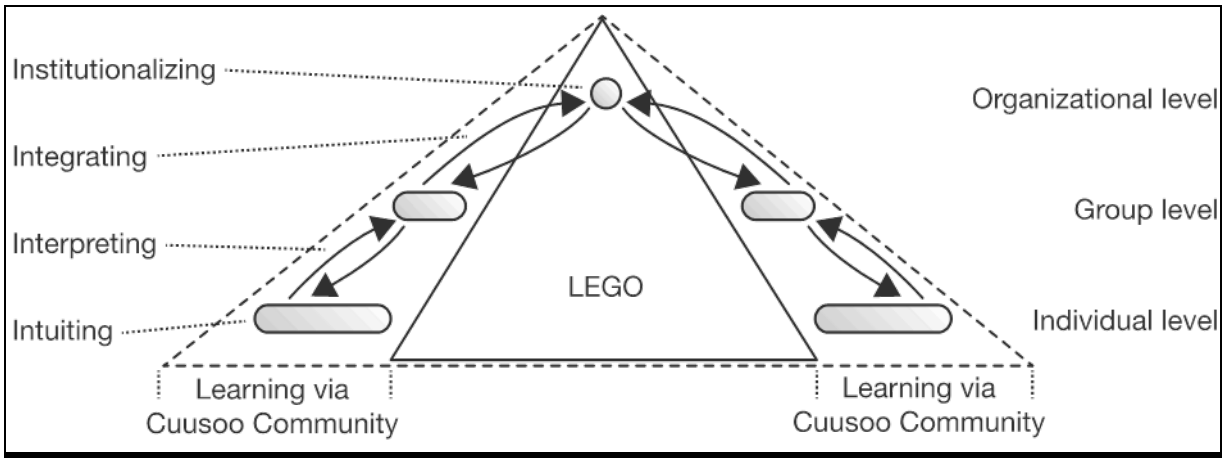

Figure 2. Organizational Learning with Crowdsourcing at LEGO

Table 1 summarizes examples of learnings for LEGO identified in the case study above. On the one hand, LEGO had learnings directly resulting from the stated purpose and central function of the crowdsourcing platform (i.e., product development). LEGO learnt about LEGO-specific design ideas, received refinements and evaluations of these design ideas, and received suggestions for new business directions or partnerships. On the other hand, LEGO had learnings that rather indirectly resulted from their crowdsourcing engagement. LEGO learnt about the crowdsourcing process itself and increased its crowdsourcing and open innovation capability, received contribution to branding and marketing[12], and gained various other indirect learnings about its fans through analysis of the rich qualitative and quantitative data generated on the crowdsourcing platform.

[12] The case also shows that crowdsourcing/open innovation is not per principle limited to support of the R&D/product development function. In fact, many LEGO participants found the crowdsourcing-based contributions to branding or marketing more valuable.

Table 1. Example Learnings and Benefits from Crowdsourcing for LEGO

	Generic description	Concrete example
Direct learnings	Organization receives original, creative ideas specific to the organization.	A user developed and proposed the idea of a LEGO Minecraft model.
	The crowd evaluates ideas in regard to likely being well received in the marketplace.	The crowd provided a discussion and (very positive) evaluation of the LEGO Minecraft model idea.
	Organization gets hints and suggestions for valuable new business directions and partnerships.	LEGO hinted at engaging in a long-term partnership with Mojang.
Indirect learnings	Organization learns through experience (learning by doing) the "dos and don'ts" of crowdsourcing and develops its capability for crowdsourcing and open innovation.	LEGO learnt mechanisms of dealing with "stolen" ideas in the crowdsourcing community (e.g., explicating rules, imposing age restriction, hiring a community manager from the crowd).
	Organization learns how to engage its fan base in brand building and viral marketing.	LEGO learnt that the crowd externally popularized the crowdsourcing platform (contributing to branding) and the resulting products (contributing to marketing).
	Organization learns about the nature, interests, and changes in its fan community.	LEGO gained various insights about the nature and interest of its fan community through analysis of the qualitative and quantitative data generated on the platform.

6.2. Ambient Organizational Learning

Organizational learning through crowdsourcing, as evident at LEGO, constitutes a legitimate and very effective form of organizational learning. Such organizational learning with crowdsourcing is complementary to, yet substantially different from, traditional organizational learning. In the section above, we highlight categorical differences between these two forms of organizational learning. For one, organizational learning with crowdsourcing is an external, non-member-based form of organizational learning. The organization "broadens the base of minds" and learns through using crowdsourcing. Also, organizational learning with crowdsourcing is enabled by—only made possible through—IT. IT not only "supports" learning (Janson, Cecez-Kecmanovic, & Zupančič, 2007) but also "enables" and shapes crowdsourced learning (Majchrzak & Malhotra, 2013). Finally, the crowd is entrepreneurial intuitive rather than expert intuitive: it's able to blend additional frames of reference (contexts) with that of the focal organization.

How can we conceptually integrate the two forms in which an increasing number of organizations now learn? We propose "ambient organizational learning" as a theoretical framework that can accommodate organizational learning with crowdsourcing (as conceptualized in this paper) and traditional organizational learning (as conceptualized in extant organizational learning theory). We use the word "ambient" because it is used by the European Commission's IT advisory group (Ducatel et al. 2003) for categorizing "ambient technologies" and "ambient intelligence" and it is used in the literature on the "ambient organization" (Bjørn-Andersen, 2007; Bjørn-Andersen & Raymond, 2014; Elliot, 2006). Figure 3 shows the framework. The arrows and the grey symbols in Figure 3 have the same meanings as in the above Figures 1 and 2.

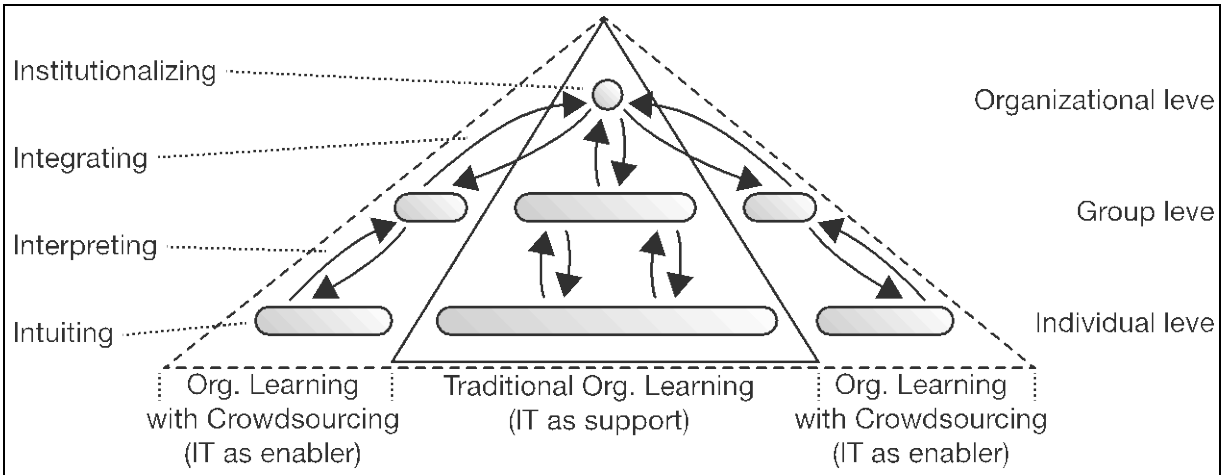

Figure 3. Ambient Organizational Learning

In the central pyramid in Figure 3, traditional organizational learning is depicted as processes involving organizational members (e.g., employees). Member participation in internal organizational learning is part of their formal membership of the organization (e.g., based on employment contract). The mechanisms in which the learning is feed forwarded and in which feedback is received vary among organizations. Typical traditional mechanisms for feed forward and feedback include meetings, conversations, emails, rules, contracts, and so on. Organizational learning with members can in some cases be "supported" (made more efficient) by IT (Janson et al., 2007). However, IT has not hitherto been considered to be an important element in extant work on organizational learning (Argote & Miron-Spektor, 2011).

On both sides of the traditional organizational learning pyramid in Figure 3, organizational learning with crowdsourcing is depicted as processes of organizational learning through non-members. Non-member participation in organizational learning is voluntary (e.g., based on fan loyalty). Typical mechanisms for learning feed forward are uploading, collaborating, discussing, or voting on an online IT platform. The role of IT goes beyond mere support and "nice to have" for this form of organizational learning. IT is central to, and inseparable from, the learning process with crowdsourcing (see also Orlikowski & Scott, 2008; Orlikowski & Scott, 2014). Organizational learning with crowdsourcing would not be possible without, and is "enabled" and shaped by, IT (see also Majchrzak & Malhotra, 2013).

Ambient organizational learning is a proposal for a theoretical framing of organizational learning that resolves the conceptual tensions between extant organizational learning theory and the empirical findings of how learning happens with crowdsourcing. As such, the framework is to be considered as an initial conceptual tool to inform future research on crowdsourcing and organizational learning.

6.3. Contributions and Limitations

This paper's theoretical contribution is the new and (in our opinion) valuable conceptualization of crowdsourcing as a legitimate, IT-enabled, non-member-based form of organizational learning. That crowdsourcing contributes to organizational learning seems to flow logically from recent papers on crowdsourcing (Feller et al., 2012, Majchrzak & Malhotra, 2013), but the learning perspective of crowdsourcing has not been elaborated on in such papers. Similarly, recent work on organizational theory has suggested further empirical work on organizational learning in general (Crossan, Maurer, & White, 2011) and on the relation between IT, online communities/crowdsourcing, and organizational learning in specific (Argote & Miron-Spektor, 2011). This paper contributes to filling this gap.

The theoretical analysis in this paper helps clarify the multi-level nature of organizational implementations of crowdsourcing and the "inner workings" of learning from individual to organizational level that crowdsourcing enables. Our analysis shows that crowdsourcing is helpful

and strategically significant for various organizations (including large and established organizations; not only startups) because it enables an additional, complementary mode of intuiting and interpreting. This leads us to suggest two modifications to our prior understanding of organizational learning. First, crowdsourcing as in the case of LEGO leads us to question the boundary assumption of organizational learning theory (i.e., that members are learning for the organization). IT-enabled crowdsourcing allows the organization to learn from non-members and, in this way, the organization "broadens the base of minds" from which it can learn.

Second, crowdsourcing, as in the case of LEGO, reveals that IT is crucial for organizational learning. As we describe in the above section, prior studies have identified IT's "supporting" role for traditional organizational learning, but our study reveals that IT plays an "enabling" role for organizational learning with crowdsourcing. To account for IT-enabled, non-member-based organizational learning with crowdsourcing as a complement to traditional organizational learning, we introduce "ambient organizational learning" as a theoretical framework that accommodates both forms of organizational learning. Future research needs now to investigate how these two forms of organizational learning influence, complement, and shape one another. For example, which type of insight is best achieved through which mode of learning? The distinction between entrepreneurial and expert intuiting might provide a starting point.

This paper informs practitioners about why and how they might want to establish crowdsourcing in large and well-established organizations. This paper's "why" contribution for practitioners is that the case provides examples of how IT-enabled crowdsourcing benefits organizations. Particularly, crowdsourcing can facilitate the creation and selection of organization-specific ideas. Crowdsourcing also helps brand building and the marketing of products. Furthermore, the organization learns through its engagement with crowdsourcing for future implementations of crowdsourcing and open innovation. The learnings and benefits of crowdsourcing are based on the fact that organizations can access and involve a broader range of minds and skills for their learning. This paper's "how" contribution for practitioners is that the LEGO case provides a blueprint model for how to enhance organizational learning with crowdsourcing. Other organizations might use LEGO's model as a direct model, or as a reference and departure point for their own crowdsourcing implementations.

Based on our LEGO case analysis, we suggest that practitioners need to allow the crowd to submit ideas to their organizations, have the crowd discuss, develop, and evaluate the ideas, and then provide a credible and systematic way into the organization. The last point is critically important: the organization needs to act on the ideas generated in crowdsourcing (otherwise, there is no way crowdsourcing can actually affect the organizational level). In addition, the organization needs to inform the individual members of the crowd what has happened to their suggestions (otherwise, without feedback, users cannot improve their efforts and may become demotivated). LEGO provides a case in point how meaningful crowdsourcing can be organized in both technological and organizational terms.

This study has several limitations. The *causa finalis* (Gregor, 2006) of this study is to provide a theoretical analysis and explanation of crowdsourcing at LEGO as a well-recognized, unique case of a large and established organization pushing the boundaries of what is possible with crowdsourcing in a rather traditional context. We stress that organizational learning with crowdsourcing is context-dependent, and no organization is exactly like LEGO. Quite on the contrary, the paper highlights the role of LEGO's unique context. As such, we do not make, or aim to make, use of statistical generalization techniques and the corresponding inferential claims that our findings represent the average of a larger population. Other organizations that implement crowdsourcing might use a modified crowdsourcing process and might achieve learnings that are different from the learnings that LEGO achieved (summarized in Table 1). We hence caution the reader that other organizations' learnings will depend on their internal and external contexts (nature of business, state of knowledge, strategic aims, etc.) (on generalizability of knowledge claims, see further Lee & Baskerville, 2003; Lee & Baskerville, 2012; Thompson, 2011, Tsang & Williams, 2012).

The theoretical framework "ambient organizational learning" (depicted in Figure 3) is, however, a general enhancement to the Crossan et al.'s (1999) organizational learning model, and the framework is in its nature not limited to the LEGO case[13]. The framework provides an analytical, abstract model for cases in which internal organizational learning is complemented by systematically using external intuition and interpretation through IT-enabled crowdsourcing. Certainly, it is likely that the analysis of other cases of organizational learning with crowdsourcing will provide additional insights and refinements to what is presented in this paper, and we encourage IS researchers to contribute to this exciting area.

7. Conclusion

While IT-enabled crowdsourcing has been recognized as an important issue (Afuah & Tucci, 2012; Lakhani et al., 2013; Majchrzak & Malhotra, 2013), the nature of crowdsourcing as an organizational phenomenon, vis-à-vis extant organizational theory has not been clear. In this paper, we examine IT-enabled crowdsourcing through an organizational learning framing, which provides a valid and valuable lens on the phenomenon. We researched IT-enabled organizational learning with crowdsourcing in a longitudinal revelatory case study of a large and established organization, LEGO (2010-14). We found that LEGO systematically involved non-members in its organizational learning using crowdsourcing strategies enabled by state-of-the-art IT. Based on an analysis of how crowdsourcing "broadened the base of minds" involved in organizational learning, we propose the concept of "ambient organizational learning" as a theoretical framework capable of accommodating both traditional, member-based organizational learning and IT-enabled, non-member-based organizational learning with crowdsourcing.

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[13] The implicit claim in the framework is not that ambient organizational learning exists in all cases. The implicit claim in the framework is that ambient organizational learning as in the LEGO case is an interesting phenomenon (a new learning mode) that does exist, which, logically, is sufficiently evidenced through reporting a single case.

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