How Users Perceive and Actualize Affordances: An Exploratory Case Study of Collaboration Platforms

Completed Research Paper

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Abstract

The success of collaboration platforms depends on the degree to which users incorporate generic platform features into their particular collaborative actions. Yet, little is known about the processes through which users perceive and actualize the potentials for action, or affordances, offered by collaboration platforms. We report the results of an exploratory case study in which we accompanied collaboration platform users over a period of over two years. We find that users perceive affordances through three alternative processes: imitating, exploring, and transferring. After perceiving affordances, users often need to arrange for configuration to enable the perceived action potential. Configuration can be found in three forms: delegated, guided, or autonomous configuration. Our emerging theory suggests that these perception and actualization processes depend in complex ways on individual-level (knowledge, self-efficacy, perceived complexity) and on higher-level factors (advice networks, collective knowledge). Our study helps open the black box of affordance perception and actualization processes.

Keywords: Affordances, Affordance Actualization, Affordance Perception, Collaboration Platforms, User Behavior

Introduction

Many organizations rely on collaboration platforms, such as Microsoft SharePoint (SP), to increase the efficiency of collaborative work (Kang et al. 2012; Kolfschoten et al. 2012; Maruping and Magni 2015). A key characteristic of collaboration platforms is that they provide users with relatively generic features, such as lists, notifications, or search (Zhang et al. 2011). Users are then required to find ways to incorporate these generic features into their particular collaborative work in order to achieve goals meaningful to them. For instance, production planners may start using the list feature and the alert feature of a collaboration platform to keep sales personnel and shop floor operators informed about order status changes. In doing so, they find a way to use generic features (list and alert) for purposes meaningful to production planners

(keeping others informed about order status changes). This example shows that the benefits from collaboration platforms critically hinge on the degree to which users perceive and actualize the many possibilities in which they can use generic platform features to perform their particular collaborative work in a more efficient manner. Unfortunately, research on feature use suggests that this potential is often highly underutilized because users tend to use a very limited amount of features (Jasperson et al. 2005) and to infrequently revise their usage pattern over time (Wang et al. 2008). Even if organizations train users in preconceived use scenarios that are applicable to many users (Kang and Santhanam 2003), users may still struggle to recognize many of the ways in which they can leverage the platform features in their particular, local collaborative work. Thus, much of the potential offered by collaboration platforms lies idle. An important question for organizations striving to realize the full potential of collaboration platforms is therefore how and when users perceive and actualize the potentials for action offered by collaboration platforms.

The literatures on affordances and on feature use provide some perspectives on this question. The affordance literature aims to explain how users realize affordances, i.e., potentials for goal-oriented action that a particular technology offers to particular users (Volkoff and Strong 2013). Affordance theorists often posit that users realize affordances through a two-phase process: affordance perception and affordance actualization (Bernhard et al. 2013). Affordance perception describes the moment when a user becomes "aware of the existence of an action possibility" (Bernhard et al. 2013). Whether a user perceives an affordance depends on the information available to the user (Bernhard et al. 2013). The feature use literature adds that a specific type of user behavior, exploring, may result in users becoming aware of a new way of using a technology (e.g. Hsieh et al. 2011; Liang et al. 2015; Maruping and Magni 2015). The second phase, affordance actualization, denotes the actions taken by individuals to realize the action potential (Strong et al. 2014). The affordance literature suggests that whether affordances are actualized depends on actualization efforts, or the degree of difficulties associated with actualizing the affordances (Bernhard et al. 2013).

Although these relatively young literatures have contributed important knowledge, we note three gaps. First, we have limited knowledge of the processes that lead to affordance perceptions. While it appears plausible that affordances are recognized through information that is available to a user, it is unclear through which processes users obtain such information. Although the feature use literature adds that exploring is one of such processes (e.g. Hsieh et al. 2011; Liang et al. 2015; Maruping and Magni 2015), it remains unclear whether other important processes may, too, result in affordance perceptions. Second, the literature hardly appreciates the peculiarities of relatively generic but malleable technology such as collaboration platforms (Kallinikos et al. 2013). Designers cannot predefine all possible use cases for collaboration platforms (Orlikowski 1996). Thus, platforms require local configuration to support particular tasks (Briggs et al. 2013) or to contextualize information (Zhang et al. 2011). Yet, although some literature emphasizes this malleable, configurable nature of many contemporary technologies, configuration actions are largely absent from current conceptions of actualization processes (Bernhard et al. 2013; Strong et al. 2014). Third, in particular the feature use literature focuses on features rather than on the actions that the features enable. Yet, in collaboration platforms, which provide relatively generic features, a single feature may be used to support a variety of actions. In other words, a single feature may offer many affordances. A longitudinal perspective may be particularly helpful for exploring how users come to actualize several affordances from the same feature. Yet, with exceptions (Strong et al. 2014), such longitudinal perspectives are still rare. By targeting these gaps, we hope to gain a better understanding of the affordance actualization process in the context of collaboration platforms. With a better understanding of this process, we will also better understand the obstacles in the process, or why affordance actualization processes can be stuck. These understandings are likely to help organizations to more fully leverage the potentials of collaboration platforms.

Our study addresses the following question: *How and when do users actualize affordances with collaboration platforms?* In an exploratory case study, we examined the affordance actualization process in an organization that implemented SP as a collaboration platform. We conducted 47 interviews with 12 users over a duration of more than two years, collecting data at seven points in time. We unveiled three processes of how affordances are perceived (imitating, exploring and transferring). Additionally, we uncovered that affordance actualizations may involve three types of configuration processes (delegated, guided and autonomous). Although most users were engaged in a variety of perception and configuration processes, we also found important differences between users as well as within users over time. Our emerging theory suggests that these differences can be explained by initial differences and changes in the user's technical knowledge, by perceptions of task complexity, and by user's self-efficacy. Furthermore, we identified external factors

(advice networks and collective knowledge) that influenced the affordance actualization processes. Our key contribution is an emerging theory of affordance perception and actualization processes.

The remainder of this paper is organized as follows. We briefly review the literature on concepts related to affordance actualization. Afterwards we describe our methods, present our findings and the emerging theory, and discuss implications and contributions.

Related Literature

We build on affordance theory to examine how users realize action potentials from collaboration platforms. Affordances describe the action potentials offered to someone or something by an object (Volkoff and Strong 2013). Gibson introduced the term affordance (Gibson 1979), which is rooted in psychology. He coined the term based on his observations of animals and their interaction with objects in their environment. For instance, a path affords pedestrian animals to move from one place to another, whereas obstacles prevent such movement (Gibson 1979). Later Norman applied the affordance concept to human-machine interaction (Norman 1999). However, Norman's definition deviated from Gibson's definition in important regards. Most importantly, Norman assumed that affordances are designed into technology and that designers should make them perceivable (e.g. Hutchby 2001; Leonardi 2011). We do not follow Norman's interpretation of affordances in this study. We assume that collaboration platforms contain generic features (e.g. lists, alerts) and that the potential for local action (e.g. keeping sales personnel informed about order status changes) offered by these features is typically not anticipated by designers of the collaboration platform but discovered by particular users in particular contexts. This is in line with a relational affordance lens (Hutchby 2001), as it has recently been endorsed in many information systems (IS) studies (e.g. Gaskin et al. 2014; Goh et al. 2011; Leonardi 2011; Zammuto et al. 2007). Consistent with this perspective, we define an affordance as a "relationship between a technical object and a specified user that identifies what the user might be able to do with the object, given the user's capabilities and goals" (Markus and Silver 2008, p. 622). Several points of this definition are noteworthy. Affordances refer to what users can do with given technical objects. These potential actions are related to the user's specific goals. Technical objects, or features in our study, are thus not the same as affordances. One feature, e.g. the list feature in SP, may enable the user to engage in a variety of actions that are meaningful given the user's goals. For instance, the list feature may enable a quality manager to track relevant technical norms but also to monitor orders. The definition also emphasizes that the pure existence of an affordance is not sufficient for an action to occur. Users need to actualize the affordance (Strong et al. 2014).

The affordance actualization process has lately gained interest in IS research (Bernhard et al. 2013; Pozzi et al. 2014; Strong et al. 2014) but remains little understood. The full process consists of four distinct phases: Affordance existence, affordance perception, affordance actualization and effect (Bernhard et al. 2013). We will focus on the second and third phase (perception and actualization) in this paper, because these phases are characterized by active user involvement, whereas the existence phase defines the hypothetical option space given the technology and the user characteristics and the effect phase captures the results of the actualization on organizational level (Strong et al. 2014). *Affordance perception* describes the event of a user becoming aware of an action possibility (Bernhard et al. 2013). After an affordance perception, a user has at least a vague understanding of the potential for a particular action offered by a collaboration platform. Affordance perception is enabled through information about the affordance (Bernhard et al. 2013). This information may be inherent to the artefact itself through the symbolic expressions of features (Markus and Silver 2008). For instance, in SP, a "+" symbol on top of libraries denotes the possibility to upload a document. Another source for information about an affordance are external sources (Bernhard et al. 2013). For example, a user may observe how another user activates alerts to receive personalized notifications on changes to a document. The observation of this use may then lead the user to recognize that she, too, could use the alert feature for a particular purpose. In contrast to these positive examples, users can also misperceive affordances by picking up misinformation (Gibson 1979). For example, a user perceives that he can use SQL statements within SP, because he heard something about SQL in the context of SP. However, users cannot use SQL statements in SP. The user may not realize his misperception until an unsuccessful affordance actualization attempt, i.e., he tries SQL statements in SP and fails (Shaw et al. 1982).

Affordance actualization is defined as "the actions taken by actors as they take advantage of one or more affordances through their use of the technology to achieve immediate concrete outcomes in support of organizational goals" (Strong et al. 2014). Thus, actualization is the actual use of the technology for an action (Bernhard et al. 2013). In this paper, we refer to affordance actualization as the initial use of an artefact for a specific goal. Hence, we do *not* consider the repeated use of an artefact for the same purpose as another instance of an affordance actualization. The factors influencing the perception and actualization of affordances are currently only adumbrated in literature. For example, Strong et al. identify the key factors "individual abilities and preferences", "EHR's features" and "work environment's characteristics", all of which lead individuals to take different actualization actions (Strong et al. 2014). These generic factors draw a rough image of the factors but require more research to improve our understanding of affordance actualizations. We also still know little about the impact of change in these factors over time. For example, knowledge is seen as a factor that increases over time and allows the perception of new affordances through the user (Strong et al. 2014). However, it remains unclear how affordance perception processes at such an increased knowledge level differ from previous affordance perception processes at lower knowledge levels.

Furthermore, how users move from perception to actualization remains a black box. To the best of our knowledge, the configuration processes that are required to actualize a perceived affordance are rarely discussed in the affordance literature. However, configuration is an important activity in collaboration platforms (Kolfschoten et al. 2012) and, thus, eminent for affordance actualizations. Therefore, we would profit from a better understanding of configuration within the affordance actualization process. We next present how we addressed these gaps through an exploratory case study.

Method

We conducted a longitudinal case study to explore the processes through which users perceive and actualize the affordances offered by collaboration platforms. The case study method is appropriate for this objective for three reasons. First, it allows uncovering the process, or mechanisms (Flyvbjerg 2006), through which affordance perceptions and actualizations occur in a real organization. Second, the case study method is likely to reveal differences in these processes between cases, which is important for developing explanations for the occurrence of these processes (Eisenhardt 1989; Yin 2003). Third, the case study method allowed us to follow individuals over time, giving some insights into how initial instances of affordance perceptions and actualization processes influence later instances of these processes (Yin 2003).

Case Set-up

We conducted the case study at Alpha, a medium-sized mechanical engineering company with locations in Switzerland and Germany. Our study started in November 2014, when Alpha was about to implement Microsoft SharePoint (SP) to foster collaboration within and between its subsidiaries. Two characteristics of the post-implementation phase of the introduction of SP at Alpha were particularly noteworthy. First, Alpha left very high levels of discretion to its employees in configuration and use of their own SP-based collaboration environments—so-called "sites". That is, employees were free to choose which components of sites (e.g. libraries, lists, permission settings) they wanted to use for what purpose. Second, because of scarce resources, Alpha's IT department was hardly able to support users in the configuration of SP. Thus, users had to rely on the help of knowledgeable peers or consultants. High user discretion and low support by the IT department were contextual conditions that made it particularly likely to observe how users themselves perceive and actualize affordances. Thus, the post-implementation phase of SP provided a *revelatory case study* context (Yin 2003), in which processes of affordance perception and actualization were particularly likely to occur.

We chose an embedded-case design (Yin 2003) with two levels of analysis: (1) users and (2) the affordance actualizations in which a particular user engaged over time. At the first level, we selected 5 users from different functional units, e.g. quality management and research & development, from different management levels, e.g. managers and assistants, and different locations in Switzerland and Germany. We selected the interview partners based on maximal variation and initial interest in SP. These users typically engaged in several instances of affordance perceptions and actualizations over time, which were our embedded units of analysis. We chose this case design to capture the relationship between users and affordance perceptions and actualizations. This relationship is important because affordance theory presumes an influence of users on the affordance actualizations process.

Data Collection

We collected data over a period of more than two years, from November 2014 to January 2017. Our primary data source were 47 semi-structured interviews, supplemented by archival data extracted from SP. We conducted the interviews in seven rounds[1]. Interviewing the same users over time allowed us to identify changes in affordance actualization processes. The interviewees comprised the individuals that we had selected as research cases and other individuals (e.g. individuals mentioned in the interviews, members of the IT department) that were able to provide further context information. We conducted the first interviews when the system became available for use in November 2014. In the first round, we asked the users how they came to use SP in their work and what plans they had for the future. We also asked questions regarding their personal experience, e.g. their information technology experience and their tenure. We scheduled the subsequent interviews on intervals of three to four months and continued the interviews until January 2017. In these interviews, we asked users to report about important events related to SP, such as trainings, configurations or the creation of new sites. We also encouraged them to describe their current use and problems. We then asked follow-up questions to elicit information about the affordance perception and actualization processes that had led to the use. The interviews took between 30 and 90 minutes.

Two further types of data sources served to triangulate the information obtained from the interviews with the five users that were our research cases. First, we extracted archival data from SP. For example, after one interviewee told us that she was using SP to version documents in her team, she provided us with the link to the team site and we were able to examine the configuration settings that she had made in her team site. Thus, we were able to verify that the mentioned actualization had taken place. Second, we used data from interviews with related team members and compared this information to the information obtained from the interviews with our five research cases. For example, one interviewee described the process of how his teams reports the project status with SP. Afterwards, we asked one of his team colleagues to describe his view on the same process. This allowed validating the two descriptions for consistency.

Data Analysis

We followed an inductive data analysis approach with the goal of generating theory (Eisenhardt 1989). The process consisted of four steps. First, we created a write up of the interviews. Second, we identified instances of affordance perceptions and actualizations. We coded an affordance perception when a user became aware of the possibility to use SP for a specific purpose for which the user had not used SP before. We coded an affordance actualization when a user began using SP for a purpose for which the user had not used SP before. For instance, one user reported that she had activated the checkout feature of SP to enable a distributed team to manage a common database of machine orders. Table 2 and Table 4 provide further coding examples. Third, we developed categories of affordance perception processes and affordance actualization processes by comparing instances of these processes (Glaser and Strauss 1967). These categories address the question of *how* users perceive and actualize affordances. In developing these categories, we discovered that affordance actualization processes often consisted of two steps: configuration and initial use. Building on this subdivision, we identified distinct categories of configuration processes in our data. In our ongoing analysis, we used the category definitions in later interviews for validation and refinement. Fourth, we built explanations for *when* (i.e., under what conditions) users engaged in these particular categories of affordance perception and affordance actualization processes. We built potential categories by analyzing change in the affordance actualizations of a particular user over time and by comparing affordance actualization processes between users. This was an iterative process of constant comparison (Glaser and Strauss 1967), in which we developed potential categories and dismissed or retained them while validating them in other instances of affordance actualizations. To increase the confidence in our analysis, we relied on investigator triangulation (Yin 2003) by regularly discussing preliminary results in our research team and by giving our raw data to independent students for analysis. We discussed variations in the analysis results and incorporated them in our model if suitable. While our analysis on steps three and four unfolded, we also compared our findings with the literature on affordance actualizations and feature use, a practice called theoretical integration in inductive research (Eisenhardt 1989).

[1] Two users participated in all seven rounds, two users left the organization after the fifth round, and one user missed an intermediary interview.

Findings

Our data revealed important differences—between users and over time—in the processes through which users perceived and actualized affordances. We first present categories of these affordance perception and actualization processes. We then provide detailed accounts of two users to illustrate the conditions for and sequences of these processes. Finally, we propose an emergent theory to explain the occurrence of these distinct processes.

Categories of Processes

Affordance Perception Processes

We found three categories of affordance perception processes in our data: Imitating, exploring and transferring. Table 1 and 2 provide the definitions and example quotes of these categories.

Process	Description
Imitating	A user perceives the possibility to use the technology for a new purpose by learning about another person's use.
Exploring	A user perceives the possibility to use the technology for a new purpose by interpreting the symbolic expressions of the technology.
Transferring	A user perceives the possibility to apply the user's existing way of using the technology to a new purpose.

Table 1 Definitions of Affordance Perception Processes

Imitating. Users often first perceived new ways of using the technology by learning about other people's use. They learned from others by observation, by asking others for help, or through dedicated trainings. Through these actions, they became aware of the possibility to use SP for a purpose meaningful to them. We refer to this process as imitating because users perceive how they can imitate another person's use. For example, Stuart gave a short induction to Susan, in which he showed how to use the versioning-comment feature of SP to keep records of changes in a document. Susan, whose responsibility was to coordinate production planning with a number of colleagues, then became aware of the affordance of using the versioning-comment feature to coordinate production planning with her colleagues. She said: "The versioning comments are important for us to track changes ... We just repeated, what he [Stuart] has shown to us and implemented it." Hence, she perceived the affordance that the versioning-comment feature offered for the purpose of coordinating production planning. She perceived this affordance by imitating the use that Stuart had shown to her.

Exploring. Some users perceived possibilities to use SP for a specific purpose by exploring SP on their own. They roamed through menus and settings of SP to find features that they could potentially use. Users interpreted the symbolic expressions of SP—i.e., what the "artifact communicates to its users" (Bernhard et al. 2013)— and linked the results of this interpretation process to the purposes for which they intended to use SP. We refer to this process as exploring because users are searching the technology for new potential uses. For example, Marvin, who worked as a project manager in Alpha's customer care department, searched for ways to gather and compare status information about current projects. In the SP menus, he found the survey app, i.e., a feature that allows users to run surveys: "I saw that there are apps and that there is a survey app. You could start a poll. [Gathering and comparing status information about projects] is really an issue for which one can use this app." Thus, he concluded from the name of the app (i.e., a symbolic expression) that it would provide survey functionality. He perceived that he could use the survey app "for benchmarks", i.e., for gathering and comparing information about project status. This is an example of exploring because Marvin found the survey app on his own and realized a potential use purpose from the description of the app.

Transferring. Sometimes users perceived possibilities to use SP for new specific purposes by re-applying their existing (current or previous) ways of using SP to a new purpose. These users typically built on their experiences with SP and became aware that they could use SP for a new purpose. We refer to this process as transferring because the users transfer their existing use of the technology to a new context. For instance,

George, a quality manager, was responsible for organizing technical norms, i.e., for storing the current technical norm documents and making them accessible to users. He intended to provide colleagues with information only on those norms that were relevant to them. Being familiar with the extensive filter feature from his prior use of SP, he perceived a way to provide colleagues with only relevant norms: "It would be great if the filter is set automatically when you login with your account depending on your department." Hence, he realized that he could use the extensive filter feature to provide personalized views on norms. This is an example of transferring because George was already familiar with the use of the filter feature and transferred it to a new purpose.

Process	Background Information	Coding Examples
Imitating	1. Susan and Stacey talked about their use of SP. Stacey showed Susan that her team uses SP to track open issues. Susan recognized that her team could also use SP to track open issues.	**Susan:** "I talked to Stacey about her SP use. ... The idea arose to collect open issues of our team meetings too."
	2. Marti learned that Stuart used wiki pages in SP to share information about upcoming events. Stuart recognized that he could also use wiki pages in SP to share information about events.	**Marti:** "He [Stuart] built a wiki page for an event ... I think that is really cool ... that could fit for my own project."
Exploring	1. Marvin explored SP to become familiar with its features. In the app overview, he discovered the "survey app". He suspected that the survey app might allow him to conduct benchmark surveys across projects.	**Marvin:** "I saw many apps [in SP], also for surveys. You could start a survey. We conduct benchmark surveys... We could give it a try."
	2. Ulf managed a community of engineers that shared and discussed technical news. He searched for a way to enable the community to rate content. He explored the menus and found the rating feature. Ulf had to decide between the liking and star rating option.	**Ulf:** "I activated [the] liking [feature] ... I first thought about using star rating, but this is complicated, so let's try liking."
Transferring	1. George used SP to make information about technical norms available at a central place. Later, he identified a problem with document templates at Alpha. Employees used outdated templates because the templates were not stored at a central place. George perceived that SP would allow storing templates at a central place, much like in his existing use of SP for managing technical norms.	**George:** "I told them ... templates are not different from other documents. ... These templates I want to have in SP to steer it."
	2. Marti used SP to store project related documents. Later he became responsible for production planning. Since he was familiar with the document management capabilities of SP, he also used them to make production planning documents available.	**Marti:** "We now also store our production planning documents on SP."

Table 2 Example Quotes of Perception Processes

Affordance Actualization Processes

Users engaged in a variety of processes to actualize the perceived affordances. Affordance actualization processes often consisted of two steps: configuration and initial use. Many affordances required, in a first step, that someone configured SP (e.g. by changing parameters in SP) in such way that the conceived use was possible. While many affordances required configuration, not all of them did. Some affordances could be actualized without configuration because the features were ready to use. Irrespective of whether configuration was required or not, an affordance was only actualized with its initial use. Our data analysis showed that affordance actualization processes differed in particular in the way in which the configuration was per-

formed. We observed three categories of configuration processes: Delegated, guided, and autonomous configuration. Table 3 shows the definitions of these processes. Table 4 provides example quotes of configuration processes and initial use.

Process	Description
Delegated Configuration	Another person configures the technology based on the user's requirements.
Guided Configuration	A user configures the technology under the step-by-step guidance provided by another person.
Autonomous Configuration	A user configures the technology without step-by-step guidance provided by another person.

Table 3 Definitions of Affordance Configuration Processes

Process	Background Information	Coding Examples
Delegated Configuration	1. George knew about SP capabilities and planned to use them to make information about norms available. However, he was not familiar with the set-up of SP at Alpha. Thus, he described his requirements to Stuart and urged him to set up a site. Stuart created the site and performed the initial configuration. 2. Pete was Marti's manager and used SP. His project sites needed a special template to match his requirements. He delegated the configuration of his project sites to the IT support.	**George:** "This site exists much longer. Stuart created it for me and I just uploaded the documents ... I cannot create sites. I also do not want to, because I do not know whether I do it right." **Pete:** "I know the people who are good at SP and get their help. That is faster than trying for hours on your own."
Guided Configuration	1. Marvin intended to incorporate Gantt charts in his project management tasks. When he had questions how to configure SP to this end, he asked Stuart. Stuart showed him how configure SP for this purpose. 2. George executed many configurations on his norm repository. For example, he had to structure the library. In the beginning, he asked Stuart to guide him through the configurations. They shared their screen in a video call and Stuart told him what to do.	**Marvin:** "If I have a problem [to configure SP]... I go to Stuart and he shows me how to do it." **George:** "I have later shared my screen in a video call with him [Stuart] and then he could guide me, telling me what to do. He led me through the configuration."
Autonomous Configuration	1. Ulf wanted to restrict permissions in his reporting tool to prevent false deletions. Therefore, he modified the permissions on his own and removed the permission to delete items for certain users. 2. Marti was responsible for the production planning documents. He configured all changes on his own. For example, he added additional columns to structure the documents.	**Ulf:** "I often configure the permissions and remove the delete permission for certain users." **Marti:** "I configure modifications on my own. Thus, if there are any modification, I just do them."
Initial Use	1. Susan configured the check-in/out feature in SP. She explained the feature to her colleagues and now they use it to manage documents. 2. Marti configured event sites to store information about events in his projects. His colleagues used these sites to search for information.	**Susan:** "I use this with my colleagues in China. We have sometimes problems with this [check-in/out]." **Marti:** "We implemented an event site ... that works pretty well. The colleagues like it too."

Table 4 Example Quotes of Actualization Processes

Delegated Configuration. Users sometimes delegated the configuration of SP to others, often to someone with stronger knowledge of SP. Users typically informed these people about the purpose they wanted to

achieve. We refer to this process as delegated configuration because another person performs the configuration work on the user's behalf. For instance, George intended to set up the norms repository but did not know how to do so in SP. Thus, he contacted Stuart and described his requirements to him: "I made up my mind what I wanted to achieve. Then I went to Stuart and discussed my requirements with him. ... He [Stuart] then created the site based on my inputs." In this example of delegation, George bridged his missing knowledge by having the configuration work done by Stuart.

Guided Configuration. In some instances, users were guided by others through the configuration of SP. The users described the intended use purposes to the other person, who typically had greater SP knowledge. The other person then led the user step by step through the configuration. Typically, both users sat in front of a computer, or shared a screen in a video conference, and the guiding person helped the guided user with where to click and what to enter. We refer to this process as guided configuration. One example is Susan's use of SP for managing meetings. After she had observed how another colleague tracked issues and open questions of meetings (i.e., perception by imitating), she wanted to use the same features to manage her meetings. Since she did not know how to configure SP for this purpose, she asked an expert, who showed her how to set up a list for her purpose. The expert told her what to do and asked clarifying questions during the process. Susan executed the configurations by herself. This is an example of guided configuration because Susan executed the configuration on her own based on the instructions provided by the expert.

Autonomous Configuration. Users also configured SP on their own. Although they may have obtained help from others or through documents, they executed the configuration autonomously (i.e., without step-by-step instructions provided by others). We refer to this process as autonomous configuration given that the users executed the configuration on their own. For instance, Ulf intended to establish an efficient way through which users would be able to share interesting news articles on a portal. He configured a library in SP to receive e-mails and automatically store the attachments in the library: "I also tested [organizing the news portal] with libraries and e-mail accounts. This was received pretty well." He executed the configuration on his own based on his knowledge about SP.

Sequences of Affordance Actualization Processes

Using the categories introduced above, Table 5 shows the affordance perception (see the upper segment of the table) and configuration processes (see the lower segment of the table) in which the five users that were in the focus of our study engaged over time. We next provide detailed accounts of two cases, George and Susan, to illustrate typical but different patterns of processes over time.

George

George was the head of quality management at Alpha. When George first learned about the implementation of SP at Alpha, he was curious: "... from my experience from my old organization I thought: 'That is great.' Seven years ago this already was a good product; meanwhile it has surely evolved." However, he experienced that because of this evolution and the different set-up of SP at Alpha, he "did not understand it anymore". Therefore, he decided to search for help and found support in Stuart, who was the project manager of the SP project and who was eager to promote the use of SP at Alpha. George intended to set up a repository for technical norms that would allow him to share information about these norms within Alpha. He knew from his experience that he could use SP to make documents available *(affordance perception by transferring)*. However, he needed Stuart to configure the site in SP. He described the situation when approaching Stuart for the first time: "When I first contacted Stuart, I made up my mind what I wanted to achieve. Then I went to Stuart and discussed my requirements with him. ... He [Stuart] then created the site based on my inputs." Thus, Stuart configured SP based on George's requirements *(delegated configuration)*. Later in the same session, Stuart also showed George how to use metadata (i.e., attributes of documents stored on SP) to provide users only with norms relevant to them. George was skeptical, "in the beginning I was not sure, why he did not follow my suggestions", but followed Stuart's advice, "but then I let it happen. ... I just followed his advice and accepted it." Thus, George perceived the possibility to structure documents based on the use shown by Stuart *(affordance perception by imitating)* and Stuart configured the initial set-up *(delegated configuration)*.

User	Nov 2014	Mar 2015	Jul 2015	Jan 2016	Mar 2016	Aug 2016	Jan 2017
Affordance Perception Processes							
George	Imitating					User left organization	
	Transferring						
Susan	Imitating					User left organization	
Ulf	Exploring						
	Transferring						
Marvin	Imitating						
	Exploring						
					Transferring		
Marti	Imitating						
					Transferring		
Configuration Processes (Part of Affordance Actualization Processes)							
George	Delegated					User left organization	
	Guided						
				Autonomous			
Susan			Guided			User left organization	
Ulf	Autonomous						
Marvin	Guided						Guided
					Autonomous		
Marti		Guided					
					Autonomous		

Table 5 Affordance Actualization Sequences for Users

Afterwards they continued working on this site in a number of sessions. They shared their screens in video calls, in which Stuart guided George through the configuration *(guided configuration)*. During these sessions, George wanted to learn about SP because he had "personal interest" in SP and because he wanted to become autonomous: "Right now my problem is that I depend on others. ... I want to become an excellent user for my own needs. And I want to control what I do and become autonomous."

In the subsequent time, Stuart was not always available for help, but George still did not feel confident enough to configure SP on his own. Therefore, George sought for help at the IT department. However, his first experiences were devastating: "There [at the IT department] I made a request three or four weeks ago. ... Chris [the SP administrator at Alpha] told me he would come to me for a training, but he did not come. ... Since then I've never heard a word from them." The IT department had scarce resources and could not support the SP requests. Given limited support from others and limited confidence in own abilities, George struggled to actualize new affordances based on SP during that period.

After this episode, George increased the pressure on Stuart, insisting that Stuart should assist him with the configurations that would be required to actualize on a number of new affordances that George had perceived. Stuart agreed to assist. George later on described this joint work with Stuart as a "perfect start". One of the purposes on which Stuart assisted was to make summaries of George's quality management meetings accessible to management. He said: "I do not want to send a document to them [managers from other departments] but a link to SP with an image and one or two sentences. ... They should open it on their mobile phones and get an impression." George had perceived the possibility to use SP for this purpose on his own *(affordance perception by transferring)*; however, he depended on Stuart to get guided through the configuration process *(guided configuration)*: "Stuart showed me how I can do this." Another one of George's purposes at this time was to set up a process management repository, i.e., descriptions of different business processes and their attributes should be centrally stored. This actualization followed a similar pattern: Drawing on his experiences with the norms repository, George perceived that he could use SP to make process management information available to users *(affordance perception by transferring)*. Stuart showed him how to create the required list and columns in SP *(guided configuration)*.

The frequent guided sessions positively influenced George's knowledge. George was now able to configure some features on his own: "If there is a missing column, I can add it. Or the configuration of a column or list, that I can do as well." However, he still felt not confident enough with other features of SP: "... I cannot create new sites or modify the layout. I also do not want to do so because I have no training and do not know if I am doing it right." He demanded more trainings and documentation: "One of the biggest issues is that you cannot use it [i.e., SP] because there have been no trainings and we have nobody in the organization, who can handle it." A setback for George was when Stuart left Alpha in late 2015. Despite these problems, George continued his existing uses and even actualized new affordances with SP. A new purpose was to make standard document templates available to users. Based on his knowledge about SP, he perceived how SP can be used for this purpose *(affordance perception by transferring)*: "We need the possibility to add metadata to the documents with all variable information, like logo or directors. ... If something needs to be changed, we can easily filter on the metadata to find the needed documents." He configured the site on this own, without help *(autonomous configuration)*.

In summary, although George initially perceived some affordances by imitating, he perceived many affordances by transferring. Drawing on this basic knowledge of SP gained during his prior job, we was able to recognize how to transfer these familiar ways of using SP to purposes relevant for his current job. Nevertheless, he depended on help in order to make the required configuration changes. Being eager to learn how to change the technology, he preferred guided configuration processes, in which he could learn how to perform the configuration. Based on the knowledge gained during guided configurations, he was able to do smaller configurations on his own.

Susan

Susan was a member of the production planning team. Susan and her team were searching for a tool to support coordination during production planning: "We said we would like to have a ... planning tool. But then everybody told us about SP ... So we said we will take a look at SP to find out whether it provides what we need." Susan's first contact with SP was when she requested an induction session from Stuart. At this point, she and her colleagues did not know anything about SP: "We are absolute beginners." From the example uses shown in the induction session, Susan recognized that they might be able to use SP to coordinate work in their distributed teams *(affordance perception by imitating)*: "We work across borders and need to store documents centrally. ... In the future, we want to use SP in all projects because the team members are always located in different locations." She decided to use the machine reservation process as a pilot. In this process, Susan and her colleagues shared information about machine availability and open orders through a central document, which was continuously updated by different users. Previously, the document was sent back and forth by e-mail, which sometimes led to inconsistencies between versions. With SP, they were able to make the document available at one central location, allowing the team to track the changes between different versions of the document. No configuration work was required for SP to store this document at a central place and manage its versions. To actualize the affordance of performing the machine reservation process with a central document, Susan needed to educate other people involved in this process about the new way of performing it. To this end, Susan wrote a manual: "I wrote a short manual. The focus was only on our document and how to check it in and out."

At that time, Susan did not benefit from the opportunity to observe other people's use of SP. In her office, she was the only user of SP beside one secretary, Stacey, who worked in another department. Her main contact was Stuart, who was not available all the time and who only helped on request. She later summarized this: "I never got any input from the IT department. ... Stuart gave us an induction and said there would be trainings. However, the trainings never came. And now Stuart is also gone." Thus, for some time, the enhanced machine reservation process was the only affordance actualized with SP.

After some time, Susan was offered a SP consulting session with a SP expert. Until that point, she had perceived two affordances but was unsure how to perform the configuration work that would be required to actualize these affordances. During the session with the expert, she performed the configuration changes under the guidance of the expert. The first affordance was to manage open issues in her meetings. Susan had perceived this affordance from Stacey's use of SP *(affordance perception by imitating)*: "She [Stacey] sent me a mail with a link to her site [where she tracked open issues of meetings]. I then had the idea to also set up a list with tasks, due dates and so on." However, Susan lacked the knowledge of how to configure

such a list. In the consulting session, the expert guided her on how to configure this list *(guided configuration)*. This subsequently enabled Susan and her colleagues to collect open points from a recurring meeting at a central place. The second affordance was related to the machine reservation process. Her goal was that everyone should be automatically informed about changes to machine reservations. From Stuart's induction session, she recalled that the alert feature can be used this way *(affordance perception by imitating)*. Since then, she had planned to make use of this feature, but she did not know how to do so. The expert guided her through this configuration *(guided configuration)*. After this workshop, Susan "felt more confident with SP." All actualizations in this workshop were based on information from others (Stacey and Stuart) and could only be realized with the help of the expert. She continued using her central use case, i.e., the document in the machine reservation process, but did not actualize further affordances.

In summary, Susan, who lacked prior experience with SP, only perceived affordances by imitating others' use of SP. One affordance did not require configuration to be actualized. This affordance could be actualized after Susan educated the people involved in the collaborative use about how to use SP. Other affordances required configuration changes before initial use. Susan was able to actualize these affordances only after an expert was available to guide her through the configuration. In total, Susan perceived and actualized relatively few affordances offered by SP.

Necessary Conditions

The two accounts of George and Susan, and the five cases as summarized in Table 5, show important differences in the ways how users perceived and actualized affordances. We next propose an emergent theory to explain why users engaged in these different processes. Figure 1 shows this emergent theory. The figure shows the necessary conditions for particular affordance perception processes and for particular configuration processes. Table 6 shows more specifically which necessary conditions, as proposed by us, need to be present for particular processes to occur. The necessary conditions help to explain not only why processes differed between cases but also why processes were sometimes stuck. We next illustrate these necessary conditions primarily based on the cases of George and Susan, including examples of affordances actualization processes that were stuck for at least some time.

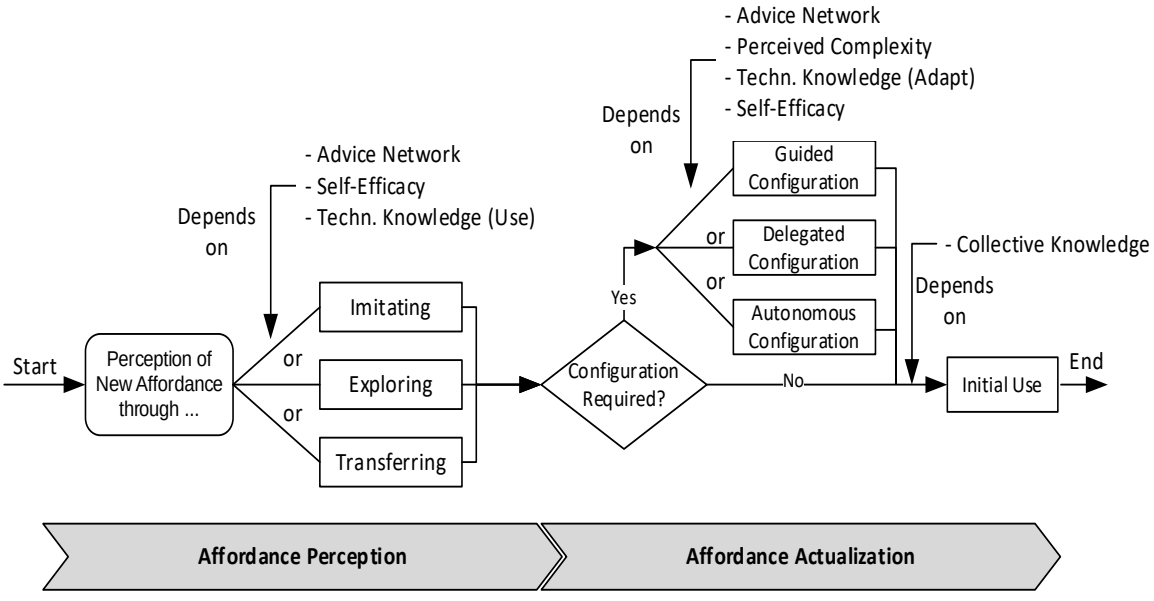

Figure 1 Affordance Actualization Process and Influencing Factors

Affordance Perception Processes

Imitating Depends on Advice Networks. George and Susan initially perceived several affordances through imitating. An important necessary condition for imitating was that the users were embedded in networks

in which they had opportunities to learn about others' use. In line with the existing literature, we refer to these networks as *advice networks* (e.g. Gibbons 2004), i.e., relationships between users through which users seek and exchange information, advice, and possibilities for solving problems. For example, the relationship with Stuart initially provided an important source of advice for both George and for Susan. Stuart showed them the possibilities of SP at Alpha. For example, George perceived from the interactions with Stuart how George could use metadata to organize a document repository. Susan perceived from the interactions with Stuart how she could leverage the versioning of documents in SP. In both cases the users repeated what was shown to them, as Susan said: "What he has shown to us, we used." Another example was the relationship between Susan and Stacey. Susan perceived from her exchange with Stacey how Susan could use a list to track open issues in recurrent meetings. Interestingly, in this case, the relationship was not the relationship between an expert (e.g. Stuart) and an ordinary user but between two users on the same expertise level.

Table 5 shows that imitating was particularly prevalent at the start of the post-implementation phase. Imitating was thus a frequent strategy at a time when users lacked knowledge about possible uses of SP and when they were not confident enough to explore SP on their own. Hence, unlike the other two perception processes, imitating allowed even users with low knowledge and low confidence to recognize ways in which they could use SP for their work.

Process	Necessary Conditions
Imitating	Advice Networks
Exploring	Self-efficacy to use
Transferring	Knowledge to use
Guided Configuration	Advice Network
Delegated Configuration	Advice Network & Perceived Complexity
Autonomous Configuration	Self-Efficacy to configure & Knowledge to configure
Initial Use	Collective Knowledge (Use)

Table 6 Affordance Actualization Process Phases and Necessary Conditions

Exploring Depends on Self-Efficacy. Relatively few users engaged in exploring. George and Susan did not engage in this process because they felt insecure: "I am still afraid of changing something because I could destroy the site if I play around too much." (George, 5th interview). In contrast, those users that engaged in exploring had the belief that they were able to find new possibilities to use SP. In the literature, the belief of being able to execute a task successfully is often referred to as self-efficacy (e.g. Bandura 1977). Our data suggests that self-efficacy is a necessary condition for exploring. Marvin, a project manager, had high self-efficacy and explored SP: "... Learning by doing, trial and error. It works either out or not. This [strategy] works pretty well." He was not afraid of damaging something but was fascinated by the options SP was providing: "First you observe the tool: 'Ah this is possible and that.' And you find a ton of functionalities." Although self-efficacy was a necessary condition, high self-efficacy did not imply that users were constantly exploring. For instance, Marvin explored in the beginning, but after a while, he stopped exploring, focusing on the uses of SP with which he was familiar at that time.

Transferring Depends on Knowledge to Use. George perceived many affordances through transferring, whereas Susan did not perceive any affordances through transferring. This difference can be attributed to a key necessary condition for transferring: knowledge of the use of SP. George had basic knowledge of the use of SP from his prior job, and he extended this knowledge as he continued to actualize new affordances with SP. We refer to this as knowledge to use, i.e., the knowledge users gain by using SP for different purposes over time. For example, George had built up his norm repository with Stuart. Therefore, he knew that documents could be stored and organized with SP. Later, he had the goal to store document templates centrally. Based on his experience he realized that he could actualize this affordance with SP as well: "I told them ... templates are not different from other documents. ... I want to have these templates in SP in order to control them." Thus, George transferred a previous use case, i.e., organizing a norm repository, to a new one, i.e., organizing document templates. George engaged in transferring from the beginning, since he knew SP from his previous organization and knew its potentials: "When I remember back [i.e., to my previous organization], the others were impressed what I could do with SP." With each further actualized affordance,

he extended his knowledge and it was more likely that he could transfer his knowledge to a new use case. Thus, a certain amount of experience is needed to gather enough knowledge to use. Susan, in contrast, did not perceive any affordances by transferring. Lacking prior experience and using SP only to a limited extent, she did not acquire enough knowledge to use. She did not use the system intensively: "We just let things slide and are not intensively involved [in using SP]. ... I do really not have many ideas of what we could do with SP." (2nd interview); "We just worked with the list [machine reservation], but have not created anything new" (3rd interview); "We do not use it [SP] frequently, that is not going to make it easier." (4th interview). Therefore, she did not fulfill the necessary condition for transferring.

Affordance Actualization Processes

Guided Configuration Depends on Advice Networks. George and Susan were both guided in at least one instance of an affordance actualization. An important necessary condition for guidance to occur was that a guide, i.e., a person with sufficient knowledge to guide the user through a specific configuration, was willing to help. In our case study, all guides were part of the advice network of the user. Thus, it appears that advice networks are a necessary condition for guided configuration. For example, Stuart repeatedly guided George: "And this [i.e., the norm repository] is what I am currently working on with Stuart. He gives me exercises and then we meet and realize something. That is working fine." After Stuart's termination, George relied on another relationship from his advice network, the relationship with an external SP expert. The same external SP expert also supported Susan's guided configurations in the trainings session. Guided configuration produced increases in knowledge because it allowed users to experience how to configure the technology.

Delegated Configuration Depends on Perceived Complexity and Advice Network. George delegated configuration on one occasion, whereas Susan never delegated configuration. This difference may be explained by two necessary conditions: high perceived complexity, i.e., the user perception that the configuration task is very complex, and advice network. For example, George delegated the initial creation of his norm repository site to Stuart: "When I first contacted Stuart, I made up my mind what I wanted to achieve. Then I went to Stuart and discussed my requirements with him. ... He [Stuart] then created the site based on my inputs." George perceived the initial creation as complex because it includes the site creation and modifications in layout: "... I cannot create new sites or modify the layout. I also do not want to do so because I have no training and do not know if I am doing it right." Therefore, after the initial discussion, he delegated the configuration to Stuart. This required that Stuart be part of his advice network, i.e., that he could delegate the configuration to him. Susan did not delegate configurations because she did not perceive any affordances that would require complex configurations and lacked a strong advice network.

Autonomous Configuration Depends on Knowledge to Adapt and Self-Efficacy. All observed users, except for Susan, engaged in autonomous configurations. The necessary conditions for autonomous configurations were that the users had sufficient knowledge to adapt and had sufficient self-efficacy, i.e., they believed to be able to execute the configuration successfully. For example, George configured his template repository on his own only after he had previously configured smaller changes: "I can configure a column or a dropdown if needed." Although George had a low self-efficacy regarding the use of some features, he had a high self-efficacy regarding the use of other features, such as columns. The reason for this was that he had repeatedly engaged in guided configurations, in which he configured these functions again and again. Thus, for these specific configurations he had high self-efficacy, whereas in general he showed relatively low self-efficacy. Furthermore, he also had the knowledge to configure the specific features.

Initial Use Depends on Collective Knowledge. Our data analysis points to one necessary condition of the last step in the affordance actualization process: initial use. Initial use required that other users, who had not been involved in the actualization process before but who should participate in the collaborative use of SP, understand how to use the configured artifact. For example, Susan addressed this condition by creating a manual for her colleagues: "I wrote a short manual. The focus was only on our document and how to check it in and out." The problem was that users, who were not involved before but who were also involved in the machine reservation process, had no knowledge about SP. Users did not know about SP or did not know enough to use the created artefacts. In the chosen setting, a collaborative environment, the use scenarios required that all users who should participate in the collaborative use scenario had sufficient knowledge. We refer to it as collective knowledge, i.e., knowledge that the users needed to possess collectively.

When Affordance Actualization Processes Were Stuck

The necessary conditions help to explain why not all affordance perceptions culminated in affordance actualizations. Specifically, after the initial perception of an affordance, there were two phases in which the actualization of the affordance sometimes remained stuck: (1) Between perception and configuration and (2) between configuration and initial use. An example of the first category is Marvin's attempt of using the survey feature. Marvin never configured a survey with SP although he perceived the possibility to do project reporting with the survey feature. Surveys in SP require configuration. Since Marvin did not have the knowledge to configure surveys, autonomous configuration was not possible (no knowledge to adapt). Furthermore, no one in his advice networks used surveys in SP; thus, there was no one who could have guided Marvin through the configuration or to whom Marvin could have delegated the configuration (no person with sufficient knowledge in advice network). Since the necessary conditions for autonomous, for delegated, and for guided configuration were not met, Marvin could not arrange for configuration and, hence, could not actualize this affordance. An example for the second phase was an affordance actualization attempt by Ulf. Ulf had to collect activity reports from several users. To reduce his effort, he configured a SP list that contained the needed fields. Then he sent an email to the users with a link to the list and demanded them to enter their activities in the list. Although some users successfully added their activities, many failed and replied to Ulf with the activities written in emails. Ulf sarcastically noted "An email with texts and I can enter them manually. Perfect." The result of this affordance actualization attempt was that Ulf could not collect activities with his SP list. Thus, the perceived affordance was ultimately not actualized because not all users had the required knowledge, i.e., the necessary condition (collective knowledge) was not met.

Discussion

This paper was motivated by the lack of knowledge about the processes through which users realize the potentials for action, or affordances, offered by collaboration platforms. To address this gap, we conducted an exploratory case study of affordance actualization processes on collaboration platforms. We found that affordances are actualized through a three-step process. In a first step, users perceive affordances by imitating, by exploring, or by transferring. In a second step, users often (but not always) need to arrange for configuration, which may occur in delegated, guided, or autonomous ways. In a third step, the collective of users involved in the collaborative task starts using the platform in the conceived way. Our emerging theory suggests that the occurrence of particular processes is contingent on user characteristics (self-efficacy, perceived complexity and knowledge) and on external factors (advice networks and collective knowledge). Vice versa, user characteristics (e.g. knowledge) are also influenced over time by affordance actualization processes, which may enable different affordance actualization processes over time.

Contributions

Our research contributes to the literatures on technology affordances, feature use, and collaboration platforms by (1) proposing a taxonomy of and explanations for affordance perception processes, (2) introducing configuration as an important phase in the affordance actualization process and (3) analyzing the affordance actualization processes of generic features in collaboration platforms over time.

The existing literature provides limited insights into the variety of processes that lead to *affordance perception*. For instance, Leonardi noted that "perceptions of affordance lead people to change their routines" (Leonardi 2011), but he did not inquire how and when these perceptions arise. Other scholars (e.g. Bernhard et al. 2013; Markus and Silver 2008) were more explicit about the role of information in affordance perceptions when they argued that users may perceive affordances from external information or from the symbolic expressions of the technology. Yet, these scholars were less explicit about the processes through which users obtain this information and about the conditions under which users engage in these processes. Research on feature use (e.g. Maruping and Magni 2015), in turn, has examined one particular affordance perception process, exploring, and the conditions, such as team empowerment, under which users engage in this exploring; but in line with the focus, this research has not examined affordance perception processes beyond exploring. Our study reveals that not only exploring but also imitating and transferring can result in affordance perception. Much like many roads do lead to Rome, several alternative processes can result in the perception of an affordance. Importantly, although these processes produce the same outcome (i.e., the

perception of an affordance), they depend on different necessary conditions. Imitating requires advice networks, transferring requires knowledge to use, and exploring requires self-efficacy. This implies that people can perceive new affordances even when the necessary conditions for one or even two perception processes are not met. For instance, when users lack the self-efficacy required for exploring and the knowledge required for transferring, they may nonetheless draw on their advice networks to imitate other people's use. In sum, our study proposes a taxonomy of affordance perception processes and explanations for their occurrence in the context of collaboration platforms use. We believe that this is an important step towards explaining more fully how and when users perceive affordances from collaboration platforms.

Our second contribution is the incorporation of *configuration* into affordance actualization processes in the context of collaboration platforms. Configuration is largely absent from many current conceptualizations of the affordance actualization process (Bernhard et al. 2013; Strong et al. 2014). Indeed, configuration may not be an essential element of affordance actualization processes in the context of IT that is hard to change, such as relatively rigid software packages that do not allow for much customization. In such settings, users may merely start using what the IT already offers. In contrast to such rigid IT, collaboration platforms are highly malleable (Kallinikos et al. 2013). They invite users not only to perceive action potentials but also to configure the platform in such a way that the actions become possible. Our findings show that it is problematic to omit configuration from the affordance actualization process. In the cases that we studied, configuration was often an obstacle that prevented users from actualizing affordances. Thus, configuration processes are an important element if one aims to explain how and when users realize the full potential from collaboration platforms. Our results not only point to the importance of configuration, they also reveal three alternative processes through which users can arrange for configuration: delegated, guided, and autonomous configuration. Like our uncovered affordance perception processes, the three configuration processes yield the same outcome (i.e., the collaboration platform is ready for the conceived use) but rely on different necessary conditions. Hence, users may arrange for configuration even if the prerequisites for one or two configuration processes are not met. For instance, when users lack the knowledge and self-efficacy required for autonomous configuration, they can still draw on their advice networks and ask peers to guide them through the configuration process. In conclusion, we contribute to a more nuanced perspective on affordance actualization processes in the context of collaboration platforms by incorporating different types of configuration processes and explanations for their occurrence.

The third contribution is the longitudinal perspective on affordance perception and actualization processes in the context of collaboration platforms. Although the literature has recently began to explore sequences of affordance actualization processes (Strong et al. 2014), this work has not yet examined whether and how affordance perception and actualization processes change over time. Our findings show that as users gain knowledge and self-efficacy through their initial affordance perceptions and actualizations, this enables, over time, new types of affordance perceptions and actualizations. Specifically, whereas users initially often perceived affordances by imitating, they increasingly perceived affordances by transferring as their knowledge grew due to affordance actualizations. Moreover, they were increasingly able to autonomously make the configuration changes required to actualize these perceived affordances. These findings may be specific to collaboration platforms, and perhaps other types of highly malleable IT, where users can use the same features to actualize a variety of affordances over time. In such contexts, users can increasingly draw on their knowledge about generic features with which they become more and more familiar to invent and independently implement new uses of these features.

Future Research

The identified affordance actualizations processes open up new avenues for research. Future research could look in greater detail at imitating and transferring—affordances perception processes that have been less frequently examined in the literature. Alternatively, a broad study could include all types of affordance perception and configuration processes in one integrated study in order to explain the various conditions and processes through which users ultimately actualize affordances. Another avenue for future research is more case studies that examine affordance actualizations in collaboration platforms. Such case studies might reveal further processes not uncovered in this study. Such case studies could also help to validate the identified mechanisms and influencing factors. The showed sequences of affordance actualization processes also require further research. Although our study points to knowledge and self-efficacy as important factors for these dynamics, their interplay needs further analysis. Another avenue for future research is the lasting

impact of affordance actualizations in collaboration platforms. During our study, some users left the organizations and left behind artefacts they have configured to actualize affordances. Other users continued some of these affordances, but some artefacts only remained as legacy and unused. The factors, when affordance actualizations have a lasting impact and are imbricated in routines (Leonardi 2011), need further analysis. This would further our understanding of how affordance actualization could result not only in immediate but also in sustained outcomes. Furthermore, more studies should focus on the perspective on generic features and their use for collaboration platforms.

Practical Implications

For praxis, our findings help to support the post implementation phase of collaboration platforms by providing a detailed view on how users actualize affordances. Organizations can use this information to enable their users in actualizing affordances. In a temporal perspective, our findings suggest that users will mostly be perceiving affordances through imitating in the beginning. Thus, organizations should facilitate advice networks to meet the necessary condition for imitating. Therefore, key users should be enabled to promote the collaboration platform. These key users should be trained to gain knowledge about the platform, be given discretion to support and train others and actualize affordances on their own. The selection of key users should incorporate their self-efficacy. Key users with a high self-efficacy are more likely to explore the platform and perceive new affordances through this exploration. The forming advice networks will not only support affordance perception through imitating but also configuring through guided configurations, which also depends on advice networks. In later phases, our data suggests that the role of advice networks diminishes, since users more often engage in transferring to perceive new affordances instead of imitating. The users can gain the required knowledge to use in the initial phase through participating in actualizing affordances with others. Managers can foster ongoing affordance perception and actualization in later phases by encouraging users to use and configure the collaboration platform on their own (Jasperson et al. 2005). This may strengthen the self-efficacy of users and lead to autonomous configurations. If configuration remains a widespread obstacle, because users and their advice networks lack knowledge to configure, organizations can provide active offerings to execute configuration, i.e., delegated configurations. These offerings can be provided by “facilitators” or “chauffeurs”, i.e., experts trained to implement artefacts on the collaboration platform (Kolfschoten et al. 2012). These experts can also diffuse examples of affordance actualizations, which will support transferring and imitating. Furthermore, organizations should preclude problems in the initial use phase through missing collective knowledge. Therefore, all users should have a basic understanding of SP (Gallivan et al. 2005). Organizations should provide a basic training for this. Nevertheless, users, who actualize affordances, should also be made aware to provide guidelines and information to participating users how they should use the created artefact. All our findings focus on collaboration platforms with a low restrictiveness; a high restrictiveness may require other strategies (DeSanctis et al. 2008).

Limitations

Our study has some limitations. First, we only observed the affordance actualization processes at one organization in a specific scenario, analyzing a small set of users. It may be that other affordance actualization processes exist for collaboration platforms, but did not occur in our data collection. Future research can explore this. Additionally, it is important to acknowledge some specific conditions of our empirical setting. Alpha postponed trainings for SP until summer 2016, i.e., one and a half years after the planned go-live. These trainings had only a marginal impact on our observed users, since they already had acquired needed knowledge. In scenarios with an official training in the beginning, other results may occur, e.g. such trainings may influence the technological frame (Leonardi 2013) or could limit the users to only use specific possibilities of SP. In addition, the open policies applied by the IT department invited configuration by end-users. In other scenarios, more restrictive policies (DeSanctis et al. 2008) may suffocate configurations in other scenarios and lead to different dynamics more comparable to existing affordance actualization literature (Leonardi 2013; Strong et al. 2014) respectively standardized use (Saga and Zmud 1994). We also did not focus on the negative aspects of the open policy, like inertia or reinventions (Boudreau and Robey 2005), for the organization, which may lead to performance loss.

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