

# Communication in Co-innovation Networks

## A Moderated Mediation Model of Social Affordances, Social Experience, and Desire for Learning

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**Abstract.** The aim of this study is to develop an integrative understanding of the factors fostering communication activities in co-innovation networks. Participants in these social networks must communicate actively to foster collaboration and idea generation, but communication may not develop naturally, even if the platform provides the software features to do so. This study clarifies the mechanism underlying the relationship between co-innovation platform affordances and communication. We explored the role of sociotechnical affordances, social experience, and desire for learning that are believed to influence individuals' continuous communication intentions. We outline how social technology affordances that enable socialization may affect actors experience and behavior and ultimately the co-innovation outcomes. We conclude with a discussion of future explorations of this perspective.

**Keywords:** Co-innovation · Socialization · Communication · Social affordances · Experience · Desire for learning

## 1 Introduction

Communication and information technologies (ICTs) have created new opportunities for firms to innovate, by engaging external actors in innovation processes (Gassmann et al. 2010). A recent and notable development involves the application of social technologies to extends opportunities for collaboration across the spectrum of innovation activities to individuals who are socially-engaged in the co-innovation process (Wu et al. 2016). These co-innovation actors – independent members of a co-innovation community – are the key source of intellectual and social capital in co-innovation projects. Social technologies afford massive multi-agent socio-professional interactions among social actors, which transform innovation from a firm-based R&D process to a collective social experience (Martini 2012). In this setting, communication activities play a key role in driving and supporting co-innovation outcomes by increasing participation, egalitarian engagement, and ideation.

Recently we have seen a shift in Information System (IS) and Human-computer interaction (HCI) research from a predominant focus on the features and potential impact of digital innovation platforms to the exploration of how actors experience and co-create

value in these sociotechnical environments (Lusch and Nambisan 2015; Yoo 2010). In a co-innovation network, actors' socio-professional experience has been found to be crucial to network productivity and efficiency (Nambisan and Nambisan 2008). We define socio-professional experience as the socialization experience gained in a professional community or triggered by professional interactions. It is a form of actor experience gained at the intersection of social and professional interactions. Co-innovation networks are professional communities enabled by social mechanisms and socialization is the main aspect of co-innovation processes. Therefore, in a co-innovation network, actor experience is neither purely social (because of professional goals) nor merely professional (because of social triggers).

An actor's socio-professional experience is associated with the interactions between the actor and the social features of the platform that connect the actor to the other members of the network. The social features of the technology platform enable the possibilities of socio-professional interactions that, if actualized, will form the actor's socio-professional experience. We conceptualize these possibilities as sociotechnical affordances (social affordances in short) (Zhao and Rosson 2009). Social affordances, therefore, refer to the properties of a social technology — co-innovation platform in our case — that permit socio-professional actions. Social affordances are potentials (action possibilities) that enable social exchange and may lead to experience formation.

Recent research suggests that social affordances may increase social experience formation due to the possibilities the former offer for interaction and exchange between social actors in a professional setting (Treem and Leonardi 2012). However, more possibilities are not necessarily associated with positive experience and even the higher intention to socialize. This uncertainty about the associations between affordances, experience, and intention has not been properly addressed yet. To this end, this study represents an early effort toward explaining how affordances-driven co-innovation experience influences an important aspect of co-innovation, that is, actors' continuous intention to communicate (or socialize) with others in the co-innovation network. Modeling and measuring this effect can provide new insights to understand, explain, and predict the consequence of technology affordances (Leonardi 2013; Volkoff and Strong 2013). The findings enhance our understanding of the effect of platform social affordances on actors' continuous intention to communicate by investigating the mediating role of actors' socio-professional experience. The study also reveals how the intervening effect of socio-professional experience is moderated by the actors' desire for learning.

The remainder of this paper is organized as follows. In the next section, we review relevant prior research on social affordances, actor experience, and socialization. We then present our research model and develop the hypotheses. Next, we report our research method and the results of hypothesis testing. We conclude the paper with a discussion of the results, contributions, and future study avenues.

## 2 Background

Social technologies provide functionalities to support the process of human social interaction. However, social technologies go beyond computer-mediated communication as simple realizations of communication media by enabling social relationships and affording new ways of social value co-creation (Sutcliffe et al. 2011). The benefits of engaging social actors by using social technologies have been argued persuasively (e.g. Parameswaran and Whinston 2007; Sutcliffe et al. 2011; Zhou 2011). However, basic research is as yet needed to understand the underlying mechanisms fostering or hindering social engagement and participation in technology-mediated social networks (Curley et al. 2013; Gassmann et al. 2010).

Actor socialization mediated by a social platform is the initial and essential phase of co-innovation (Abhari et al. 2016b). Platform technologies connect social actors who are often physically dispersed to establish virtual innovation communities and facilitate cooperative telework. Social actors who use the platform develop their own social norms and experience, as the nature of the platform affordances both constrains and facilitates social participation (Wellman et al. 2003). While there appears to be overall agreement on the effect of platform technology on actor experience (Martini et al. 2013), the effect of technology affordances on actors' socialization experience and intention is yet the subject of debate. We argue that understanding the underlying mechanism with respect to the human factors affecting this relationship is a critical step to inform the design of co-innovation platform technology.

### 2.1 Communication in Co-innovation Networks

Co-innovation networks engage individual actors in reciprocal value exchanges to build a knowledge-driven socially-enabled enterprise and co-create new organizational, individual, and shared values (Lee et al. 2012). Communication between actors such as networking and sharing knowledge is an inherent aspect of co-innovation processes (Paulini et al. 2013). Due to the distributed nature of the co-innovation process, actor communication is also a key to the success of innovation process (Gressgård 2012). Connecting actors and facilitating collaboration are the two primary goals that co-innovation networks can achieve through communication functions. For example, these networks rely on actors' continuous communication to build co-innovation team and develop shared interests, professional relationships, and trust among the members. Continuous communication helps actors establish and enhance their socio-professional image and identity. Furthermore, maintaining effective communication among actors facilitates and supports inter- and intra-project collaboration (Nambisan 2013; Paulini et al. 2013; Wu et al. 2015). Communication activities familiarize actors with one another thereby facilitating collaboration activities. With limited communication between actors, and between actors and the innovation sponsor, establishing such working relationships is impossible. Likewise, collaboration activities involve actors discussing opinions, sharing knowledge, asking for help or votes, or participating in general discussions. Although communication may lead to collaboration, they are different processes in terms of actor goals and expected outcomes. Actors communicate

to learn, network, self-promote or share their understanding without necessarily teaming up with other actors to improve a specific new product or solution.

Communication is a goal-directed behavior and therefore, human factors such as motivation, goals and personalities can maintain or discourage communication (Füller 2010; Füller et al. 2014). For example, the actors with a higher desire for developing their creative skills are more likely to participate in communication activities because of the of ample learning opportunities (Lakhani and Wolf 2006). Co-innovation environments facilitate actors' interactions with other professionals who openly share their expertise and thus help actors acquire new knowledge, enhance competencies, and gain first-hand experience (Füller et al. 2014; Weber 2004).

## 2.2 Sociotechnical Platform Affordances

There have been several attempts to model the relationship between IT artifacts and actor behavior using an affordance lens (Majchrzak et al. 2013; Strong et al. 2014; Treem and Leonardi 2012; Volkoff and Strong 2013). Affordance refers to the possibilities of actions afforded by the designed features of an IT artifact (e.g. Grgecic et al. 2015). Co-innovation platforms have a variety of social technology features and functions that enable ideation, collaboration, and communication (Gloor 2006). The affordances of a co-innovation platform depend on the interactions between actors' perception of the technology and their context-specific goals (Leonardi 2013; Majchrzak and Markus, 2013; Strong et al. 2014; Volkoff and Strong 2013). For socialization goals, affordances are associated with communication and networking possibilities that different socio-technical features of co-innovation platforms offer to its users (Treem and Leonardi 2012). Therefore, we can define platform social affordance —or sociotechnical affordances — as the perceived opportunities that the social space provides for the emergence of social actions (Kreijns 2004).

Whether social affordances triggers and forms socialization depends not only on the technological properties but also on the actor's ability to perceive the possibilities (Gaver 1991; Norman 1999). From the perspective of a social actor, social affordances are potentials and opportunities to perform goal-oriented communications. Social affordances can be purposefully designed in the co-innovation platform to enable socialization, although the actors may not choose to act on the affordance.

Previous studies have associated social affordances with tasks such as messaging, chatting, developing and sharing personal profiles, and networking (Sutcliffe et al. 2011). These interactional properties facilitate co-innovation tasks through communal or social interactions in a relatively complex co-innovation network (Mathiesen et al. 2013; Mesgari and Faraj 2012; Olapiriyakul and Widmeyer 2009).

## 2.3 Socio-professional Experience

The social context of co-innovation communities offers interactivity and socialization opportunities (Dingler and Enkel 2016). These networks constitute a socio-professional space wherein goal-oriented social relationships are formed among the actors and a common set of professional values are established and co-created

(Nambisan and Watt 2011). When actors relate to other like-minded professionals, they experience value co-creation in different forms and capacities (e.g. pragmatic, social, cognitive and hedonic values) (Kohler et al. 2011; Nambisan and Nambisan 2008). Socio-professional experience is one of the key values co-created within co-innovation spaces (Lusch and Nambisan 2015) and it can affect actors' attitude toward (P. Nambisan and Watt 2011) and participation in the co-innovation process (Kohler et al. 2011).

Socio-professional experience is formed through the actor-to-actor interactions such as discussions, knowledge sharing, and social networking. It is neither fully social nor fully professional; rather, it is socio-professional because it depends on social norms and mechanisms while being initiated by professionals with professional goals in a professional space. This form of experience is enabled or facilitated by affordances such as social connectivity, social interactivity, and profile management (O'Riordan et al. 2012). For example, a visible list of connections and a profile page in a co-innovation social space enable actors to present themselves and find other actors to collaborate with Kietzmann et al. (2011). Social affordances that enable these possibilities contribute to the formation of experience that ranges from socio-professional presence to self-actualization.

### 3 Research Model

Design features that provide actors with better social cues offer richer socio-professional experience and enhanced communication in co-innovation networks, thereby generating greater opportunities for value co-creation (Lusch and Nambisan 2015). These opportunities do not reflect solely the technological features of the online environment; instead, they reflect how well the actors and their activities or interactions can shape the sociability potential of the online environment for other members (Kreijns et al. 2004; Nie 2001). These opportunities are actualized in the form of socio-professional experience as a result of the interaction between the 'social space' enabled by social affordances, the 'social mechanisms' defined by the social context of the network, and the 'social intention' motivated by actors' goals. Therefore, when goal-directed actors perceive the sociotechnical potentials of a co-innovation network (as a socio-professional space), they may utilize the social technology features and social mechanisms to enhance their socio-professional experience. Integrating research on platform affordances with the actor social experience literature, we expect that in co-innovation networks, *actors' perception of Platform Social Affordances positively influences their Socio-professional Experience (H1)*.

The positive socio-professional experience offered by the various activities and social media channels may motivate communication activities among actors to acquire new knowledge, enhance competencies, and expand their professional network (Füller et al. 2014; Weber 2004). Additionally, socio-professional experience often enhances actors' self-perception as members of the co-innovation community, and thus increases their continued intention to engage in community dialogues and social interaction (Lusch and Nambisan 2015; Näkki and Koskela-Huotari 2012). The higher the intention,

the higher the actual participation in communication activities. Therefore, we expect that *actors' Socio-professional Experience positively influences their Continuous Intention to Communicate (H2), which in turn leads to Actual Communication (H3).*

We argue that actors' socio-professional experience mediates the relationship between their perception of platform social affordances and their continued intention to communicate with others in the co-innovation networks. While an IT artifact cannot directly drive actors' activities, the consciousness constructed through actors' experience of the space can (Yoo 2010). Accordingly, we expect that the continuity of actors' intentional activities such as communication is the result of their personal experience shaped by the possibilities offered by the space (Yoo 2010). In other words, actors' continuous intention may be negatively affected if actors cannot experience the possibilities afforded by the platform. Therefore, we expect that *the effect of Social Affordances on Continuous Intention to Communicate is mediated by Socio-professional Experience (H4).*

Prior research has validated the significant relationship between the desire for learning new skills and participation in value co-creation (Lakhani and Wolf 2006). Actors with positive socio-professional experience are more likely to participate in co-innovation networks if they are motivated to learn or develop their innovation skills (Füller 2010). For example, positive socio-professional experience with a Q&A system would lead to a higher intention to ask questions only if the actor is motivated to learn more by using the Q&A system. Therefore, considering the literature on actor differences in co-innovation motivations (e.g. Gemser and Perks 2015) and the previously discussed direct effect of socio-professional experience on continuous intention to communicate, we expect that *the higher the level of Desire for Learning, the greater the indirect effect of perceived Platform Social Affordances on Continuous Intention to Communicate via Socio-professional Experience (H5)* (Fig. 1).

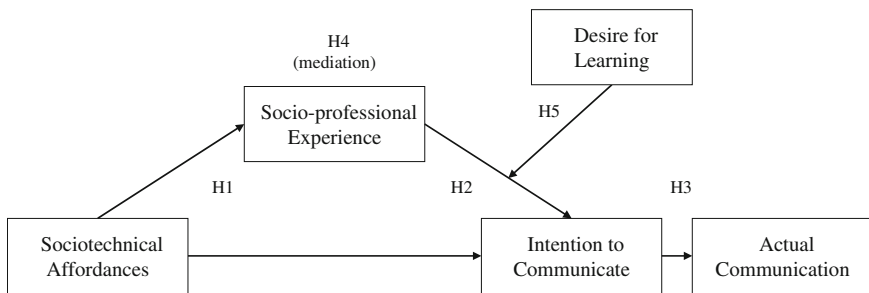


Fig. 1. Conceptual model

## 4 Method

To test our research model, a field survey was conducted to gather data on actors' socio-professional experience, desire for learning, their perception of platform social affordances, continuous intention to communicate, and actual communication in a co-innovation network (Quirky.com). Quirky is a social product development network with

diverse co-innovation tools and processes as well as learning opportunities that make it an appropriate setting for this study. Quirky solicits new product ideas for broad categories of consumer products and shares up to 10% of revenue with the actors who contribute to product ideation, selection, design, development, and promotion. As part of the ideation process, prospective inventors can submit their ideas for social evaluation. The submitted ideas, if selected by the community, are collaboratively designed, developed, and commercialized by network members. The developed product ideas are then put to production by Quirky and finally distributed via the Quirky website and its retail partners. At the time of our study, this network of 1,500,000 members had collaboratively developed and launched more than 150 consumer products.

The measurement items for continuous intention to communicate (reflective), socio-professional experience (reflective), social platform affordances (formative), and desire for learning (reflective) were respectively adapted from Chen (2007) ( $\alpha = 0.84$ ), Nambisan and Baron (2009) ( $\alpha = 0.86$ ), Abhari et al. (2016a, b) ( $\alpha = 0.90$ ), and Oreg and Nov (2008) ( $\alpha = 0.82$ ) – see, Appendix A. The actual communication activities were measured by four proxies, namely number of messages actors sent and received as well as the number of followers and followees they had.

Partial Least Squares (PLS-SEM) using SmartPLS 3.0 (Ringle et al. 2015) was employed to test both the measurement and structural properties of our research model. PLS analysis is preferred over other analytical techniques because (a) it simultaneously assesses the psychometric properties of the measurement items (i.e., the measurement model) and analyzes the direction and strength of the hypothesized relationships (i.e., the structural model), and (b) it facilitates the modeling of formative constructs (Hair et al. 2013). Covariance-based SEM was not recommended for this study because the goal of the study was theory development (not theory testing) and sample size for each group was smaller than 200 (Hair et al. 2011).

To test the moderating effect of desire for learning on the relationship between social experience and continuous intention to communicate, we categorized responses into two groups with high and low desire for learning respectively. The discretizing was limited to only two groups to satisfy the minimum sample size required for each group. To compare the group-specific effects (Baron and Kenny 1986; Sarstedt et al. 2011), we used nonparametric Henseler's MGA method built on PLS-SEM bootstrapping procedure (Sarstedt et al. 2011). This new approach combines the advantages of previous methods because (a) it relies only on bootstrap outputs; (b) it does not affect the estimate of the group difference; and (c) it does not require distributional assumptions (Sarstedt et al. 2011). The new approach uses the empirical cumulative distribution provided by bootstrap re-sampling as the basis for calculating the probability of differences in subgroup parameters (Henseler et al. 2009).

## 5 Results

### 5.1 Descriptive Statistics and Respondents' Profiles

Participants were 229 Quirky's members who completed a web-based survey. Most of the respondents were females (52%), between 26 and 65, and over 70% received at least

some college education. Close to 60% of the respondents were employed full time or part time. More than 60% of the respondents had more than six months' experience with Quirky and more than 70% visited Quirky at least once a week. Over 80% of the respondents had also received monetary credits for their contribution, an indicator of co-innovation success.

## 5.2 Evaluation of Reflective Measurements

The evaluation of reflective measurement items involves the test of construct reliability (item reliability and internal consistency) and construct validity (convergent validity and discrimination validity). Construct reliability indicates how well the items correlate with their corresponding construct. All the loadings of the measurement items on their latent constructs exceed 0.7, indicating acceptable item reliability (Hair et al. 2013). In addition, Cronbach's alpha and composite reliability of all the constructs are higher than 0.7, indicating good internal consistency among the items measuring each construct (Hair et al. 2013). Three criteria were adopted to assess convergent validity and discriminant validity: (a) all Average Variance Extracted (AVE) are higher than 0.50 (Hair et al. 2013); (b) the square root of the AVE of each constructs is larger than the correlations of this construct with the other constructs (Fornell and Larcker 1981); and (c) an indicator's loadings should be higher than all of its cross-loadings (Hair et al. 2013). As summarized in Table 1, the results of these tests suggest adequate convergent and discriminant validity.

**Table 1.** Psychometric properties of first-order constructs

Construct	Items	Loading	$\alpha$	CR	AVE	LAD	SPX	CICM
Desire for learning	LAD1	0.86	0.85	0.90	0.69	0.83		
	LAD2	0.83						
	LAD3	0.80						
	LAD4	0.83						
Socio-professional experience	SPX1	0.92	0.93	0.95	0.84	0.37	0.91	
	SPX2	0.91						
	SPX3	0.92						
	SPX4	0.91						
Continuous intention to communicate	CICM1	0.91	0.89	0.95	0.70	0.36	0.69	0.84
	CICM2	0.90						
	CICM3	Removed <sup>a</sup>						
	CICM4	0.87						

<sup>a</sup>Removed due to its low loading (0.64)

## 5.3 Evaluation of Formative Measurements

The evaluation of formative measurements involves an assessment of the formative indicators' (predictive) validity and multicollinearity. Indicator validity, which gauges



the strength and significance of the path from the indicator to the construct, was estimated using the PLS algorithm method with a bootstrapping of samples to calculate the weight (relative importance) and loading (absolute importance) of each indicator on its corresponding construct. As Table 2 shows, the weights and loadings of all the indicators (except PCMA4) are significant, suggesting satisfactory indicator validity (Hair et al. 2013). We decided to retain PSA4 because of its significant loading (Hair et al. 2011). Multicollinearity among indicators was the next concern for formative constructs (Diamantopoulos and Winklhofer 2001). In this study, multicollinearity was tested by computing the Variance Inflation Factor (VIF) of each indicator. All computed VIF values are below the threshold of 5.0 (Hair et al. 2013), suggesting that multicollinearity is not a threat to the validity of the study’s findings.

**Table 2.** Weights and loadings of the formative indicators

Construct	Formative indicator	Loadings		Weights	
		Loadings	t-value	Weights	t-value
Platform social affordances	PSA1	0.88	29.16**	0.33	3.69**
	PSA2	0.87	31.29**	0.23	2.93*
	PSA3	0.92	43.07**	0.43	4.58**
	PSA4	0.85	22.49**	0.12	1.34 ns

\*p < 0.01, \*\*p < 0.00

### 5.4 Assessment of the Structural Model

The results of data analysis show that platform social affordances positively affect actor social experience in co-innovation networks (H1:  $b = 0.57, p < 0.01$ ), which in turn increases actors’ intention to communicate (H2:  $b = 0.48, p < 0.01$ ). Higher intention to communicate is also associated with the higher rate of actual communication (H3:  $b = 0.30, p < 0.01$ ). As none of the control variables (i.e., age, employment, education, gender, co-innovation experience) showed significant effects on continuous intention to communicate, they were excluded in further data analysis.

We followed established guidelines (Baron and Kenny 1986) to test the proposed role of socio-professional experience in mediating the influence of social affordances on continuous intentions to communicate. In Step 1, we examined the effects of affordances on the continuous intention to communicate ( $b = 0.65, p < 0.00$ ). In Step 2, we analyzed the impact of the social affordances on socio-professional experience and found the effects to be significant ( $b = 0.57, p < 0.01$ ). In Step 3, we assessed the relationships between socio-professional experience and continuous intention to communicate ( $b = 0.48, p < 0.01$ ). In Step 4, we built a model with both the direct effect and indirect effect (via socio-professional experience) of social affordances on continuous intention to communicate ( $b = 0.38, p < 0.01$ ). The results suggest that socio-professional experience partially mediates the impact of social affordances on intention to communicate. We also conducted a Sobel test to further assess the significance of the mediation effect. The results demonstrate that perceived socio-professional experience significantly carries the influence of the independent variable on the dependent variable (H4: Sobel  $z = 5.5, p < .01$ ).

Lastly, we tested for multi-group moderated mediation using Henseler's multi-group analysis (MGA) approach and confidence set method based on established guidelines for PLS-MGA (Sarstedt et al. 2011). The confidence set method is nonparametric, can handle relatively small sizes, and is more conservative than the other approaches and thus is less prone to Type-II errors (Henseler et al. 2009). Group 1 (105 members) and 2 (124 members) were respectively defined as groups of actors with high and low desire for learning. We limited the discretization to two levels (Low and High) and used the mean as the midpoint to have enough sample in each group. The path coefficient estimates of multi-group comparison revealed the significance difference between actors with high and low desire for learning ( $H5: b \text{ ldiff} = 0.31, p_{\text{Henseler}} < 0.05$ ) suggesting the moderation effect of desire for learning. Confirming the significance differences, the bias-corrected 95% confidence intervals did not fall within the corresponding confidence interval of the other group (0.36 – 0.79 vs. 0.1 – 0.48). Therefore, positive socio-professional experience does not always lead to higher continuous intention to communicate; rather, socio-professional affordances relates to greater intention to communicate through social experience when actors have a high desire for learning. We observed the same difference affecting the relationship between social affordances and socio-professional experience ( $b \text{ ldiff} = 0.22, p_{\text{Henseler}} < 0.05$ ). This finding suggests that social affordances may have a higher impact on actor socio-professional experience when actors have a higher desire for learning.

## 6 Discussion

In this study, we conceptualized social affordances of co-innovation platforms and examined their effects on socio-professional experience and the behavioral intention to communicate. We also explained this relationship by examining actors' socio-professional experience as an underlying mechanism. Further, we explored how actors' desire for learning moderates the experience-intention relationship. The results reveal that compelling socio-affordances leads to higher continuous intention to communicate when the actors have a high desire for learning. In other words, social affordances do not guarantee future communication among actors unless actors have a high desire for learning.

### 6.1 Theoretical Contributions

Our empirical findings lay a solid foundation for future inquiry that could advance our understanding of the relationship between platform affordances and behavioral intention. First, this study shows that actors' socio-professional experience can drive communication efforts such as knowledge sharing and social exchange in the network. Second, this study demonstrates that actors' socio-professional experience as an underlying mechanism drives the influence of platform social affordances on actors' intention to communicate in co-innovation networks. Third, confirming the relationship between social affordances and socio-professional experience, our results suggest that platform affordances play a significant role in the formation of actor's co-innovation experience.

Lastly, results of our moderated-mediation model reveal that social affordances are less influential for actors with low desire for learning. This finding highlights the need to account for individual differences, specifically actors' goals and desires, in investigating affordance-driven actor experience and behavior. Further research, however, would need to address the ways in which affordances develop other types of experience (e.g. pragmatic, usability, and hedonic experience) and how other motivations influence the impact of positive experience on actor behavioral intention.

## 6.2 Practical Implications

Several managerial implications of the present research are worth noting. The effect of affordances on socio-professional experience and continuous intention suggests that co-innovation network designers should pay more attention to social affordances as a driver of co-innovation. This study also recommends maintaining actors' participation by enhancing their socio-professional experiences such as successful networking and meaningful learning. Thus, our findings encourage monitoring actors' experience as one practical way to manage the sustainability and productivity of the co-innovation networks. Of further importance to managing relationships between actors and technology is the finding that the effects of social affordances vary in accordance with actors' desires for learning. Therefore, the right combination of learning opportunities with positive social experience can be planned by co-innovation communities to enhance the effect of social technologies on actor communication activities. Co-innovation sponsors should consider that the platform social affordances are most likely to produce a lasting effect on communication activities when the co-innovation platform engage the actors who are highly motivated to learn from other members. This study thus recommends considering the desire for learning in both designing co-innovation platforms and governing co-innovation processes. Identifying the actors who may respond more favorably to platform affordances can assist co-innovation networks in more thoughtfully engaging potential actors.

## 7 Conclusion and Future Research

Effective communication in co-innovation networks cannot be forced or mandated. Networks desiring to enhance and improve communication among actors must foster socialization opportunities. By supporting the view that social affordances augment the intention to communicate, and providing empirical evidence regarding the underlying mechanism, we have contributed to the understanding of socialization in co-innovation communities. Given the importance of sustainable communication and exchange among co-innovation actors, we hope that our findings will be useful to scholars and practitioners aimed at enhancing co-innovation efforts and outcomes.

We strongly encourage further examination of our findings through different research designs and across different co-innovation contexts. We also recognize the value, in future studies, of extending our research model to (a) include actors' actual communication behaviors; (b) examine specific types of communication activities, (c) examine

communication beyond the boundaries of a single co-innovation community; and (d) evaluate the effects of specific IT artifacts used by actors in communication or socialization with others actors.

## Appendix A – Questionnaire Items

Construct	Item	Survey questions <sup>a</sup>
Platform social affordances		<i>The platform enables me to...</i>
	PSA 1	<i>... share my knowledge</i>
	PSA 2	<i>... solicit votes/support</i>
	PSA 3	<i>... discuss new ideas with community</i>
	PSA 4	<i>... network with community</i>
Socio-professional experience		<i>My experience with this network has...</i>
	SPX1	<i>...expanded my personal/social network</i>
	SPX2	<i>...enhanced the strength of my affiliation with online communities</i>
	SPX3	<i>...enhanced my sense of belongingness to inventor communities</i>
	SPX4	<i>...helped me socialize with other inventors</i>
Continuous intention to communicate <sup>b</sup>	CICM1	<i>I intend to continue communicating with the members of this network</i>
	CICM2	<i>Even if I use alternative platforms, I will continue communicating with the members of this network</i>
	CICM4	<i>I plan to communicate with a greater number of members in future</i>
Desire for learning		<i>I contribute to the network because</i>
	LAD1	<i>... it provides me with a means of developing my creative skills</i>
	LAD2	<i>... it gives me an opportunity to learn new things about inventions</i>
	LAD3	<i>... it helps me become better in product development</i>
	LAD4	<i>... it helps me test my creativity</i>

<sup>a</sup>All measures employ a seven-point Likert scale from “strongly disagree” to “strongly agree.”

<sup>b</sup>CICM3 was removed due to low loading.

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