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Completed Research

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Abstract

Enterprise Social Network (ESN) applications offer new opportunities for organizations to innovate. This paper proposes a new theoretical framework that explains how ESN applications facilitate ideation, socialization, and collaboration which in turn fosters the innovation culture of knowledge sharing, transparency, and risk tolerance. This study suggests that organizations maintaining this innovative culture will be able to find higher success in driving product, process, and social innovation, especially when management support is present. A key proposition is how dimensions of innovation culture, namely knowledge sharing, transparency, and risk tolerance mediate the effects of ESN applications on measures of firm performance namely product or service, process, and social innovation. The findings have implications for theory and practice, especially concerning building an organizational culture using social technologies such as ESN that foster innovative behavior.

Keywords

Innovation, Innovation Productivity, Innovation Culture, Enterprise Social Network, Affordances.

Introduction

According to McKinsey, 84% of executives believe that their future success is only sustained by innovation (Nieminen 2018). Innovative value-creation is thus the key driver of success for many modern organizations (Kylliäinen 2019; Planbox 2019). Recently, the implementation of Enterprise Social Networks (ESN) to improve innovation has caught the eye of many organizations as they claim to enhance collaboration practices, allow knowledge sharing, and strengthen effective communication (Dittes and Smolnik 2019). In theory, using an ESN platform that easily allows employees to share and discuss new ideas should foster innovation (Recker et al. 2016). ESN platforms also facilitate knowledge sharing and collaboration with peers beyond functional boundaries (Engelbrecht et al. 2019; Sun et al. 2019; Tian et al. 2018). These tools are not only used in developing new products or services but also in improving the processes and social impact of organizations. While utilizing an ESN seems a reasonable decision, some researchers are still skeptical of its impact on innovation because of the complexity of the innovation process (Recker et al. 2016). This speculation is in line with current debates around the role of social technologies in enabling (Abhari et al. 2020) or facilitating a new form of innovation (Annosi et al. 2020). Understanding the role of ESN in fostering innovation can help evaluate the practicality of social integration in turning employees' creative potential into innovative assets and useful versatility (Saldanha et al. 2017).

In this study, we shed some light on the underlying mechanism that explains the relationship between ESN applications and innovation. We discuss how ESN drives product, process, and social innovation, not solely because of employees' engagement, but through fostering an innovative culture within that organization.

We use an affordances lens to study ESN platforms and characterize them as digital technologies affording ideation, collaboration, and socialization for innovation (Burgess et al. 2017; Leidner et al. 2018). We then argue how ideation, collaboration, and socialization contribute to enhancing the culture of innovation and thereby innovation productivity, especially through encouraging management support (Dauber et al. 2012; Hsu et al. 2019; Verdu-Jover et al. 2018). Lastly, we provide a list of propositions to inform future research.

Literature Review

Innovation Productivity

New product and service development help organizations to stay competitive by creating greater value for their customers. However, innovation productivity is not limited to new products or services, innovation in the business processes is also critical to achieving organizational goals and enhances organizational performance and growth (Rujirawanich et al. 2011; Snihur and Wiklund 2019). Process innovation facilitates the process of new product development as well (Baregheh et al. 2009; Zimmermann et al. 2016). The application of new technology, new organizational structures, or new administrative systems to drive innovation productivity fall under the process innovation. Organizations also reinvent themselves in terms of social impact (Au-Yong-Oliveira et al. 2018; Mamun and Shaikh 2018). This is closely related to the notion of social innovation that emphasizes innovation for social value (Gasparin et al. 2020). Social innovation productivity stems from an organizational awareness of its social impact. For example, organizations that innovate for sustainability and minimal environmental impact represent innovation social innovation productivity. Identifying drivers, enablers, and barriers to idea generation, experimentation, and implementation is critical to understanding CSI institutionalization" (Herrera 2015). Investment in green initiatives similar to new products and processes requires organizational support and supportive culture (Halkos and Skouloudis 2018). In light of this discussion, we define innovation productivity as the sum of organization productivity in introducing new products, processes, and positive socio-environmental impact and examine how the application of ESN can drive that (cf. Turró et al. 2014).

Innovation Culture

Innovation culture is an antecedent to innovation productivity since innovation requires shared values, assumptions, and beliefs (Patrício et al. 2018). Innovation goals are easier to achieve in organizational cultures that have internalized the value of change (Büschgens et al. 2013). A culture that helps assimilate change can generate the capability to innovate continually (Verdu-Jover et al. 2018). Innovation culture refers to "the extent to which a company is suitable for developing innovation or whether it resists innovation" (Aksoy 2017). Innovation culture is thus an interpretive framework through which employees make sense of their innovative contribution, as well as their organizational commitment to the innovation process (Turró et al. 2014). In this study, innovation culture is characterized by its three critical dimensions namely, *Knowledge Sharing, Transparency,* and *Risk Tolerance.*

Knowledge-sharing. Knowledge-sharing is a trait of organizational culture that renders the employee's perception and attitude toward open knowledge exchange within defined boundaries (Estrada et al. 2016). Knowledge-sharing foster an organization's ability to continuously learn and innovate (Estrada et al. 2016). Knowledge-sharing as a cultural value helps improve innovation performance through enhancing collaboration and employee engagement in participatory problem-solving (Khan and Khan 2019; Monica Hu et al. 2009). Internal knowledge sharing mechanisms also push collaboration a step further, increasing communication inside and out of the organization. Programs like Slack, Microsoft Team, Yammer, and other enterprise social networks can only foster knowledge sharing–in support of innovation–in the presence of a culture that encourages, natures, and celebrates such actions.

Transparency. Transparency refers to the openness in reporting, communicating, and discussing opportunities, challenges, errors, or failures within an organization's boundaries (Chin et al. 2015; Liew 2019). Transparency is a cultural trait of an organization supporting innovation through openness to new ideas or learning from failures. Transparency also reduces *managerial career concerns* and thus support innovation initiatives across business units (Zhong 2018). Open reporting and soliciting feedback on innovation initiatives can also boost innovation productivity. When employees are encouraged to be open in both ideation and criticism, new ideas emerge and refine faster which in turn improves innovation.

Risk Tolerance. Risk Tolerance is an important factor when it comes to innovation culture because successful organizations understand that failure is a natural part of the innovation process (Biemans and Griffin 2018). Research suggests that tolerance for risk and change are prerequisites of any form of innovation (Shane 1993). Fear of failure discourages employees to share new ideas or participate in new idea development. In a risk-taking culture, employees are granted permission to experiment with new ideas, encouraged to collaborate with their colleagues and customers, empowered to make decisions regarding new initiatives (Coras and Tantau 2013). Companies that lack support for risks inadvertently not only hurt their chances of spurring the next big idea but also fail to retain their creative talents (Recker et al. 2016).

ESN Applications

Organizations can become more innovative by going beyond traditional R&D and capitalizing on the insights and ideas of all employees (Recker et al. 2016). ESN applications that can afford new idea development can connect all the employees and mobilize them to innovate organically (Ellison et al. 2015). ESN applications are commonly used by many organizations to support organizational routines such as communication, relationship building, information sharing, problem-solving, project management, and task coordination (Richter and Riemer 2013).

To model ESN application we use affordances as a theoretical lens and accordingly define ESN affordances as a set of action possibilities regardless of technology features offered by these systems (Karahanna, Xu, Xu, and N. Zhang 2018; Leidner et al. 2018). This allows us to study how ESNs afford actions that are difficult to achieve with traditional communication and collaboration tools (Sun et al. 2019). Using affordances lens also allows us to study ESNs without directly modeling their features (Karahanna, Xu, Xu, and A. Zhang 2018). ESNs offer features such as user profiling, status updates and content sharing, micro-blogging, group creation and management, instant and private messaging, enterprise search and archiving rating and supporting ideas, and the ability to connect with or follow other members of the community (Chin et al. 2015; Karahanna, Xu, Xu, and N. Zhang 2018). These features afford three forms of actions in innovation context: ideation, collaboration, and socialization (Abhari et al. 2017). Using these affordances instead of features help us study a wide range of ESNs independent from their difference in implementation.

Ideation is specified as a process of generation and development of new ideas for problem-solving (it is not to be confused with innovation; ideation is to propose a new concept or rough idea while innovation is the full development and actualization of that concept or idea). By affording ideation, ESNs foster openness, creativity, and innovativeness among employees. ESNs offer various features that can individually or collectively afford ideation action. Ideation can be organically led by employees or systematically governed by the management team. Regardless, the goal of the ideation process is to produce as many good ideas as possible for subsequent selection and decision-making (Rozaidi et al. 2017). By producing more ideas, organizations increase the likelihood of producing new products or services. However, in reality, a vast amount of work is needed to fully develop a new idea for implementation. Therefore, the innovation process can be enhanced when organizations, explicitly align their idea generation and selection process using ESN capabilities with their innovation strategies (Kock et al. 2015).

ESNs also offer a group of features that employees can collaborate in developing new solutions (Håkansson Lindqvist 2019; Li et al. 2018). For example, ESNs support collaboration by facilitating formal and informal knowledge exchange between different business units that are traditionally disconnected (Ortbach and Recker 2014). Ideation without collaboration does not typically result in innovation since innovation requires the participation of different functional units (Abhari et al. 2017). Socialization affordances of ESNs enable connections between employees, establish trust among them, and facilitate knowledge processing (Dingler and Enkel 2016; Engelbrecht et al. 2019). Without socialization, employees may miss opportunities to learn about their colleagues' ideas, experience, and potential support. ESNs help increase employees' communication which is essential to establish the culture of transparency and knowledge-sharing (Engelbrecht et al. 2019). While collaboration is a goal-oriented activity, socialization is interest-oriented and that can happen independently from ideation. For example, socialization affordances facilitate experiential communication between different members of an ESN to learn about each other's competencies before extending an invitation for collaboration (Abhari and Davidson 2016).

Management Support

Management support in innovation context refers to interest and involvement that high levels of management have in an innovation project. Lack of management support creates an unsafe innovation environment and discourage employees that result in poor innovation performance or failures (Hamdi et al. 2016). Management support at all levels is essential. The first-line management may be involved with a specific task, middle management with a milestone, and then top management with the entirety of the project's finances and resources (Hamdi et al. 2016). Top management support optimizes the life cycle of innovation projects by making critical decisions in a timely manner (Hamdi et al. 2016). The role of top management is also crucial in achieving synergy between different projects and different functional units (Shaar et al. 2015). Innovation culture can encourage or demand management support (Martins and Terblanche 2003).

Proposed Conceptual Model

We propose a conceptual model that depicts how ESN could potentially support innovation productivity. Our model explains the mechanism that links ESN applications to Innovation Productivity through supporting Innovation Culture and the role of Management Support in enhancing this relationship. This model is supported by the stimulus-organism-response (SOR) theory and the organizational culture theory which shows the dynamic relationship between environmental stimuli (ESN), organization innovation culture, and subsequent behavior (Dauber et al. 2012; Jacoby 2002; Kamboj et al. 2018).
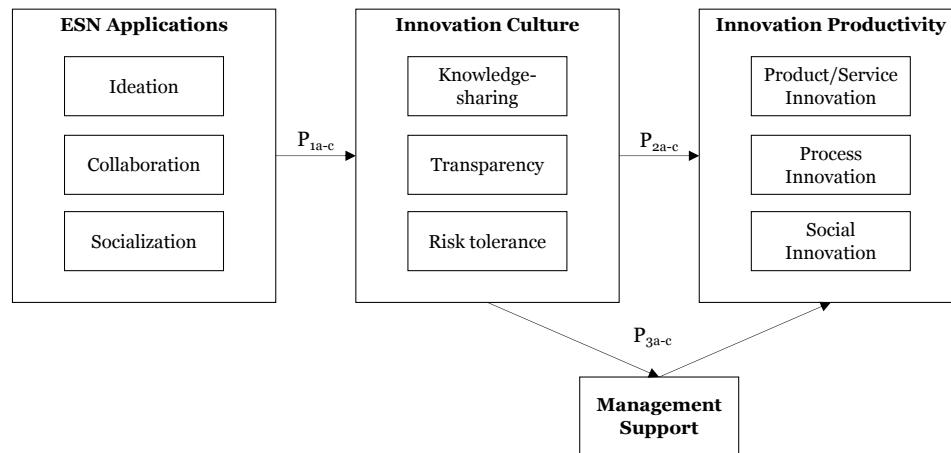

Figure 1. Theoretical Model

Table 1. Construct Definitions

CONSTRUCT	DEFINITION
ESN Application	The application of an internal, private social network to enable faster and more fluid communication and networking among employees.
Innovation Culture	A set of organizational values, norms, and artifacts that support knowledge-sharing, transparency, and risk-taking for innovation.
Innovation Productivity	Organizational performance in terms of the development of new products/services, processes, and social impact.
Management Support	Tangible and intangible support such as resources and incentives for innovation projects.

ESN applications to Enhance Innovation Culture

ESN applications have changed innovation culture in many organizations in recent years (Garmann-Johnsen et al. 2020). Given its relevance and contribution to the business, the impact of ESNs on culture has been recognized as a serious factor in management and organizational development (Aksoy 2017). One of the keys to having a culture of innovation in the workplace is to turn innovation into a habit among

employees. Only in this environment, they are encouraged to innovate while feeling involved and valued (Tian et al. 2018). ESNs allow new possibilities around one-to-one and one-to-many communication, knowledge exchanges, collaboration, acquiring information, and networking through unique social media characteristics such as visibility, persistence, editability, and association (Giermindl 2018; Treem and Leonardi 2012). These possibilities affect the culture of work in different ways. We argue ESNs support innovation culture by way of enabling or facilitating ideation, collaboration, and socialization.

Spontaneous interactions on ESNs are important factors boosting ideation (Wong 2018). Ideation when socially enabled promotes the culture of transparency, knowledge-sharing, and risk-taking (Kock et al. 2015). Among the benefits of ESN-facilitated ideation is that employees can gain confidence in ideation when they realize their contributions are appreciated. Employees realizing their values will be more creative and active in formal innovation projects as well. Furthermore, ESN encourages a positive organizational culture where all employees, not only R&D employees, feel they can contribute to the future of organizations (Hamdi et al. 2016). Likewise, collaboration, either as a formal or informal part of innovation, can be supported by different features of ESNs that allows brainstorming, dialogue, and meta-voicing (Wong 2018). Collaboration beyond functional units helps develop transparency and encourage knowledge-sharing. Collaboration also increases the employees' confidence in taking a risk when employees receive informal support from their peers across the organization (Gao et al. 2019). Moreover, socialization is one of the drivers that form a culture in which employees feel trusted to share their opinions and ask for help or support. The concept of socialization is different from collaboration. As teams, we collaborate for the same goal but socialize in our work to complete different goals. Knowledge-sharing enabled by socialization can be deemed a factor of both informal and formal exchange around new ideas, initiatives, or goals (Wong 2018). Throughout this process, ESNs make socialization between individuals easier, streamlined, and stored for future references. Thus, an organizational culture of innovation may be enhanced by a higher level of interactions and meaningful exchange between employees across different units; therefore,

Proposition 1a: *The applications of ESN in interdepartmental ideation foster innovative culture.*

Proposition 1b: *The applications of ESN in interdepartmental collaboration foster innovative culture.*

Proposition 1c: *The applications of ESN in interdepartmental socialization foster innovative culture.*

Innovation Culture and Innovation Productivity

Innovation productivity is considered as a source of growth (Carvalho and Avellar 2017). While we acknowledge that innovation productivity is driven by different factors, we focus on innovation culture as one of the understudied factors in the context of ESN. The relationship between innovative productivity and culture is not a new claim (Hurley 1995); however, how digital technologies including ESN can drive this culture is (Garmann-Johnsen et al. 2020). An organization that builds an effective culture of innovation by the mean of technology empowers its employees to boost innovation productivity (Aksoy 2017; Crespi and Zuniga 2012). Research also suggests that organizations can improve their innovative potential by including their employees in activities designed to improve innovation culture (Recker et al. 2016). Innovation culture increase employees' productivity from creative problem-solving to cost reduction. We argue that to boost innovation productivity organizations can implement ESN that facilitates knowledge sharing, transparency, and risk tolerance in an effective balance. Knowledge sharing is one of the most important communication methods within innovation projects that enhances the efficiency and effectiveness of the innovation process. As discussed, when a group of individuals can combine their efforts, ideas, plans, goals, and more, they can be more effective in their work. Further research supports this claim, by suggesting socialization in along with collaboration can improve knowledge transfer and thereby affecting innovation (Dingler and Enkel 2016). Furthermore, innovation productivity is enhanced in a culture that promotes openness, trust, and error tolerance. Cultures that openly support innovation endeavors without penalizing failures open new opportunities for experimentation with innovative ideas. This increases the chance of success especially in the development of new processes. This pro-innovation culture as a resource fosters higher new product development (Lee et al. 2017). Therefore, we expected:

Proposition 2a: *Innovation culture enhances innovation in terms of new product/service development.*

Proposition 2b: *Innovation culture enhances innovation in terms of new process development.*

Proposition 2c: *Innovation culture enhances innovation in terms of social impact innovation.*

Management Support and their influence on a company's ability to innovate

Within an organization, an innovative culture stems from maintaining transparency, risk tolerance, and the openness of sharing knowledge. Once an organization has established that culture, employees will then be encouraged to pursue more innovative projects, thus increasing product, process, and social innovation for the organization. We argue that management support would be more prominent in the presence of a strong innovative culture. Thus, management support not only directly drives innovation productivity but also motivated by the employees who are committed to innovation.

Innovation literature extensively discussed the role of management support in encouraging dynamic and participatory innovation (Kessler 2013). Without sufficient resources and support from top managers, innovative projects have a very low success rate (Rodríguez et al. 2008). In addition to providing intangible resources to foster an innovative culture, top management is also in charge of supplying more tangible resources such as funding, incentives, and explicit guidance to ensure success during the innovative process (Hsu et al. 2019). The theory of creativity suggests that employees including managers are most creative when their tasks embody intrinsic motivation (e.g. cognitively engaging, personally interesting, emotionally satisfying, or positively challenging (Kessler 2013). An organization's socio-cultural environment can either hinder or enhance innovation depending on the intrinsic value that it offers or promote (Hsu et al. 2019). Methods such as providing employees the freedom to pursue ideas, establishing a clear vision for innovative projects, and arranging collaborative, uniquely skilled teams are all ways that top management can cater to employees (Kessler 2013). Positive innovation culture can demand the management teams to support innovation by satisfying these needs. On the contrary, there are factors that top management could partake in that can also thwart creativity such as maintaining a status quo within the organization, encouraging a low-risk mindset, and excessive time pressure (Kessler 2013).

Top management support can be more effective in an environment that values trust, openness, and feedback on performance (Hsu et al. 2019; Latting et al. 2004). Lin proposed that organizational factors, such as top management support, is greatly influenced by the employees' desire to engage in knowledge sharing, which then leads to superior innovation capability (Lin 2007). Uncertainty and risk have proven to be some of the main reasons why management teams are hesitant to pursue innovative projects (Gaylen N. Chandler 2000). However, top management providing resources and clear objectives quickly erase that uncertainty and instead creates an environment of risk appetite (Hsu et al. 2019; Shaar et al. 2015). Helpful top management is aware of its employees' needs and provides additional support when it is needed (Shaar et al. 2015). Focusing on the needs of the employees establishes a sense of trust between top management and the employees, which leads to employees valuing their organization before their self-interest, and thus increases employee's desire for further development within the organization (Latting et al. 2004). Overall, management support plays a key role in improving innovation productivity within organizations and this role can be encouraged by a positive innovation culture; therefore,

Proposition 3a: *Top management support mediates the relationship between innovation culture and innovation productivity in terms of new product or service development.*

Proposition 3b: *Top management support mediates the relationship between innovation culture and innovation productivity in terms of new process development.*

Proposition 3c: *Top management support mediates the relationship between innovation culture and innovation productivity in terms of social impact innovation.*

Discussion and Conclusion

In the age of Industry Disruption, innovation culture is becoming more and more relevant not as an engine of growth but as a key to survival (Dittes and Smolnik 2019). Hence, organizations are searching for methods and tools to enhance their innovation culture and thereby improving their innovation productivity (Dittes and Smolnik 2019; Engelbrecht et al. 2019; Stray et al. 2019). Many organizations, especially those in highly competitive and agile industries have utilized ESNs as a strategic solution to accomplish these goals (Giermindl et al. 2017; Stray et al. 2019). Our preliminary study shows that ESN application has the potential to establish a strong innovative culture by encouraging organic ideation, dynamic collaboration, and effective socialization within an organization (Stray et al. 2019; Sun et al. 2019). If ESN technologies carefully selected and their applications are effectively operated, they can afford cross-departmental

ideation, collaboration, and socialization that are likely to foster a culture that supports knowledge-sharing, risk-taking, and transparency. Therefore, we pose that while ESNs are not directly supporting innovation, they obliquely drive innovation by improving a culture of innovation. We also emphasize that the organizations may strive for a culture of innovation, they can encourage and demand management support. In turn, management can support the actualization of cultural values in support of innovation productivity from product or service innovation to process improvement and social impact. Therefore, we propose that ESN applications drive innovation productivity by fostering innovation culture.

This study has multiple practical implications. First, this study provides a potential solution for Digital Darwinism by offering a new lens (affordances) to evaluate, select, and utilize ESNs to accelerate adoption and innovation. Second, this study presents an employee empowerment model through cross-departmental ideation, collaboration, and socialization that drives innovation by creating a positive innovation culture. Third, all propositions show a generalizable solution to enhance innovation culture without direct investment in organizational culture. This helps retain more talented employees since employees across all age groups are seeking employment with businesses that are striving for innovation (Kane et al. 2015). Fourth, our study provides a foundation on how to implement ESN to open innovation to all employees. ESNs can be retooled and solely use to feeding innovation pipeline when they enable employees to streamline their informal ideation activities. These all lead to fostering innovation culture and thus innovation productivity. Last, organizations can use our simple model informed by the theory of affordances to evaluate different ESN platforms that best fit their organization's innovation culture and needs.

Using our study, future researchers can further develop our model and empirically examine the influence of ESN applications on innovation culture and innovation productivity. The research community can also determine which ESN affordances and usages result in a more robust innovative culture. They can also expand our model of culture for more accuracy and relevancy. Examining different types of ESN could be also beneficial to inform how the spectrum of affordances is affecting different cultural traits. Furthermore, there are some variables that future studies should keep in mind in validating this model. The size and structure of the company may play an important role in how ESNs affect culture and drive innovation productivity. Likewise, digital culture can be an important factor in predicting the use of ESNs. Management support might also play a different role depending on the industry, organization type, and team structures. Lastly, the adoption and implementation of ESNs is a topic of interest for future research.

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