Explaining Variation in Adoption of Organizational Innovation: A Social Network Approach

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ABSTRACT

This article draws from the social network theory and examines how a social network approach can contribute to our understanding of the variation in the adoption of innovative, organization-wide information systems that can help businesses achieve sustainable competitive advantage. It highlights how the extant explanations for the adoption of information systems are limited in the way that they primarily assume organizations make innovation adoption decisions in isolation. It does so by building on growing research which recognizes that organizations are not isolated from one another; rather, they are interrelated through their inter-organizational networks which provide unique learning opportunities that are otherwise unavailable. In addition, this article showcases how the unique features of innovative information systems allow firms to form new ties based on the common characteristics and information processing capabilities within a network of organizations that would otherwise go untapped. Through highlighting network externalities, this article helps generate a more complete theory of information systems adoption and improve our understanding of the role of social networks in adoption of organizational innovation.

Keywords: social network theory, technology adoption, information systems, organizational innovation

ISSN: 1941-6679-On-line Copy

INTRODUCTION

The global business environment has witnessed an ever-growing competition landscape among business organizations (Hitt, & He, 2008). This landscape has brought to the fore important questions regarding sustainable competitive advantage (Goyal, Sergi, & Esposito, 2019). In order to take on the escalating competition and ultimately improve their performance, business enterprises continually adopt organizational innovations, including organization-wide information systems (Swanson, 1997; Sabherwal, Hirschheim, & Goles, 2001; Bhoola, 2015; Goyal, Sergi, & Esposito, 2019; Alsheyadi, 2022).

How do business enterprises decide to adopt innovative information systems over time? This question has received a considerable amount of attention in the scholarly literature on adoption of technological innovation and information systems in general (Thakur, 2013; Mukerjee, Deshmukh, & Prasad, 2019; Chakraborty et al., 2022) and adoption of information systems in particular (Thong, 1999; Fan, Stallaert, & Whinston, 2000; van Everdingen, van Hillegersberg, & Waarts, 2000; McAfee, 2002; Hwang, 2005).

While the answer to this question has important implications, it is not straightforward. The primary intricacy of addressing this question may owe it in part to the ambiguity of the concept of adoption itself with different scholars interpreting it differently (Hong et al., 2014): some consider it to mean acquisition or purchase of information systems; some take it to mean implementation of information systems, and yet some consider it to mean assimilation or continued use of information systems (Fichman & Kemerer, 1999; Swanson & Ramiller, 2004). However, these varying interpretations are not the only culprits that make answering this question challenging. The secondary intricacy of addressing this question has to do with the fact that different scholars approach this question with different theoretical angles and therefore provide different explanations on how business enterprises go about adopting innovative information systems over time.

The perspectives that scholars employ to explain how organizations decide on organizational innovation adoption over time range from models which include individual, organizational, and environmental factors affecting innovative information systems adoption decisions (Sarmiento & Wilson, 2005; Jeyaraj, Rottman, & Lacity 2006), to belief-based and design-based models of innovative information systems adoption (Williams & Rao, 1998; Wixom & Todd, 2005; Chan & Ngai, 2007), to more formal models of innovative information systems adoption at the organization level including the innovation diffusion theory (Rogers, 1962; Rogers, 1983), diffusion and development theory (Kwon & Zmud,1987), three-type

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innovation theory (Swanson, 1994), learning- by-doing theory (Koellinger & Schade, 2009), and institutional theory and theory of reasoned action (Van Oorschot, Hofman, Halman, 2018). Although these perspectives provide useful insights regarding innovative information systems adoption by organizations, they are limited in the way that they primarily assume organizations are isolated from one another, and that decisions regarding innovative information systems adoption are made in isolation.

At the same time, there is growing evidence which suggests that organizations are not isolated from one another, but instead they are interrelated to each other through their inter-organizational network of social relationships and that such networks of social relationships are critical in our understanding of organizations' behavior and decision making processes over time. These inter-organizational networks are crucial because they provide learning opportunities to the organizations in the social network that are otherwise unavailable (Kilduff & Brass, 2010). In addition, and interestingly, innovative information systems in different organizations have this unique feature that they can enable formation of new inter-organizational ties and relationships within a network of organizations based on their common characteristics and information processing capabilities that otherwise would go unrealized (Sambamurthy, Bharadwaj, & Grover, 2003).

These research developments, therefore, suggest that a network perspective which focuses on the ties between organizations and the structure of their inter-organizational networks can be fruitful in understanding various management and strategic phenomena (Kilduff & Brass, 2010), including adoption of innovative information systems by business enterprises. Therefore, in this article, I address this research question: *how can a social network perspective contribute to our understanding of the variation in the adoption of innovative information systems by organizations?* By doing so, I contribute to a more complete theory of information systems adoption and improve our understanding of the role of social networks in adoption of organizational innovation.

To address this research question, I employ an integrative literature review research method (Snyder, 2019) with the purpose of critiquing and synthesizing the quantitative- and qualitative-based works on the adoption of innovative information systems in organizations. I analyze a sample of research articles, book chapters, and other published texts on this topic and generate a conceptual framework with a set of testable hypotheses to examine the adoption of innovative information systems.

The remainder of this article is organized as follows. In section 2, I offer a definition for the adoption of innovative information systems and synthesize the extant

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literature on the various explanations for this phenomenon. In Section 3, I discuss the foundations of the social network theory and its underlying concepts. In section 4, I apply the social network theory to explaining the adoption of innovative information systems in organizations and develop several testable hypotheses. Lastly, in Section 5, I highlight the contributions of this study and offer several avenues for future research.

ADOPTION DEFINITION AND EXPLANATIONS

Innovative, organization-wide information systems have a unique architecture, and present organizations with a number of benefits and challenges (Swanson, & Ramiller, 2004). Information systems support applications in manufacturing, marketing, sales, finance, and customer relationships, among others (Mabert, Soni, & Venkataramanan, 2003). By doing so, they help organizations develop competencies and gain sustainable competitive advantage (Van Oorschot, Hofman, Halman, 2018; Alsheyadi, 2022). At the same time though, they are architecturally intricate and time consuming (Stair & Reynolds, 2017; Goyal, Sergi, & Esposito, 2019), organizationally costly, and financially risky (Fichman, & Kemerer, 1999).

What is meant by the adoption of innovative information systems? Fichman and Kemerer (1999) define adoption of a technology or innovation as the process of acquisition and deployment of such technology or innovation. Swanson and Ramiller (2004) build on this definition and provide a more comprehensive view. They suggest that the journey of innovative information system adoption begins with comprehension and acquisition of new information systems, and is followed by the implementation and assimilation of such new information systems in an organization (Swanson & Ramiller, 2004). Building on Kolar's (2015) work that views adoption as the successful integration and application of business processes, Bronnimann (2023) emphasizes that adoption "defines a stage of ongoing acceptance behavior through usage of the accepted object."

Drawing on this literature, in this article, I consider the adoption of innovative information systems as the comprehension, acquisition, implementation, and ongoing assimilation of new information systems by an organization (Stair & Reynolds, 2017).

What explains the variation in adoption of innovative information systems in organizations? Scholars use a number of different perspectives in their efforts to explain how organizations go about adopting innovative information systems over

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time (Van Oorschot, Hofman, Halman, 2018). In particular, some research highlights the role that individuals, including senior executives, play in guiding decisions at the enterprise level concerning the adoption of innovative information systems. For example, Liang, Saraf, Hu, and Xue (2007) show that, through mediating various institutional pressures, senior managers have a significant effect on organizations' decisions to adopt innovative information systems. Relatedly, research in this area suggests that the personal characteristics of the senior executives such as their education, innovativeness, computer experience, and attitudes toward technology help explain how business enterprises go about their innovative information systems adoption decisions (Jeyaraj, Rottman, & Lacity 2006).

Other research focuses on the organizational characteristics of business enterprises in its attempt to explain how businesses adopt innovative information systems (Sarmiento & Wilson, 2005). In this respect, researchers suggest that several organizational factors including organizations' size (Haunschild, 1994; Haunschild & Miner, 1997; Haunschild & Beckman, 1998; Sarmiento & Wilson, 2005; Giunt & Trivier, 2007), readiness and knowledge (Chan & Ngai, 2007), openness to change and technology (Williams & Rao, 1998), structure and administrative intensity (Jeyaraj, Rottman, & Lacity 2006), and absorptive capacity (Jeyaraj, Rottman, & Lacity 2006) are important factors that help explain organizations' decisions to adopt innovative information systems over time.

Yet another branch of research emphasizes the role that the environmental characteristics play in the decisions of business enterprises to adopt innovative information systems. In doing so, this research highlights the critical effects that environmental maturity, industry type, customer power (Jeyaraj, Rottman, & Lacity 2006), external competition intensity (Chan & Ngai, 2007), and geographical factors (Sarmiento & Wilson, 2005; Giunt & Trivier, 2007) have on the decisions of organizations to adopt innovative information systems. These factors are shown to operate above and beyond the individual characteristics of the executives or the characteristics of the organizations themselves in explaining the variation in the adoption of innovative information systems in organizations.

In addition to these individual, organizational, and environmental antecedents, another branch of research draws from belief-based models to explain how organizations (and their top managers) go about their innovative information systems adoption decisions. For example, in the context of adoption of organizational web-based training systems, Chan and Ngai (2007) show that organizations' *perceptions* about the potential direct and indirect costs and benefits of the proposed web-based training systems affect their decisions to adopt such

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systems. Similarly, Williams and Rao (1998) find that one of the important factors affecting organizations' decisions to adopt automatic equipment identification systems is the positive evaluation of such technologies as *perceived* by those organizations. These belief-based models show that the way in which organizations perceive innovative information systems affects their intentions to adopt and use such systems (Cenfetelli, Benbasat, Al-Natour, & Grange, 2010).

Relatedly, research on design-based models offers a complementary explanation for how organizations (and their top managers) decide on the adoption of innovative information systems. This research demonstrates that the design and characteristics of information systems such as the quality of the information – that is, how current and accurate the information is – and efficacy of the systems – that is, how accessible and reliable the systems are – shape top executives' beliefs regarding information systems' usefulness and ease of use, and ultimately their adoption and utilization over time (Benbasat and Zmud, 2003; Wixom & Todd, 2005; Benbasat & Barki, 2007; Cenfetelli, Benbasat, Al-Natour & Grange, 2010).

Lastly, a stream of research proposes various formal models to explain the variation in adoption of information systems or innovation at the organization level including the innovation diffusion theory (Rogers, 1962; Rogers, 1983), diffusion and development theory (Kwon & Zmud,1987), three-type innovation theory (Swanson, 1994), learning-by-doing theory (Koellinger & Schade, 2009), and institutional theory and theory of reasoned action (Van Oorschot, Hofman, Halman, 2018). These formal models approach the question of why organizations adopt new artifacts differently, and therefore provide varying explanations for how business enterprises decide about their innovative information systems adoption. For instance, Koellinger and Schade (2009) propose a learning-by-doing view of information systems adoption and propose that the decision of organizations with respect to the adoption of information systems over time relies on their prior information systems adoption and the learning experience involved in doing so, such that the likelihood of adoption of new information systems increases with the number of previously adopted information systems.

While these aforementioned research works offer useful perspectives regarding the adoption of innovative information systems in organizations, they rely on an underlying assumption that organizations are isolated from one another and that they make decisions concerning the adoption of information systems in isolation from other organizations that they interact with. However, there is growing research which suggests that organizations are not isolated from one another, but rather they are interrelated through their inter-organizational network of social relationships and that organizations' network has salient influences on their behavior (Kilduff &

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Brass, 2010). This influence occurs because of the fact that inter-organizational networks, for instance, can provide learning opportunities that organizations can utilize in their information systems adoption decisions; that is, a learning resource that is otherwise unavailable in isolation. In addition, innovative information systems have the unmatched feature that they can enable formation of new ties and relationships within a network of organizations.

This growing research therefore appears to suggest that a network perspective which focuses on ties between organizations and the structure of their network can be helpful in understanding the new technology adoption in general, and adoption of innovative information systems by business enterprises in particular.

SOCIAL NETWORK THEORY

The central premise of the social network research seems to be in its avoidance of narrow, isolated research and instead in its consideration of broader context in conducting organizational research through reflecting on the social relationships between different actors, their ties, and the structure of the networks they belong to (Kilduff, Tsai, & Hanke, 2006). In this section, I review the foundations of the social network research by highlighting the core ideas and concepts in the social network theory, discussing the controversies surrounding social network research, and concluding with the research approach that I adapt in this article; that is, a dynamic stability approach to organizational network research on new technology adoption.

The core ideas governing organizational social network research include social relations (i.e., relations that connect or divide actors), embeddedness (i.e., embeddedness of actors within a network through active transactions or ties), structural patterning (i.e., involving patterns of centralization and connectivity), and utility of network connections (i.e., how social networks produce organizational outcomes) (Kilduff & Brass, 2010; Burt, Kilduff, & Tasselli, 2013; Kilduff, & Lee, 2020). The latter core idea that social networks have salient organizational consequences is particularly important because of the fact that one can utilize certain information about the network structure and actor location to predict the overall network and particular actor outcomes (Khalid, 2019). In fact, scholars have developed various theoretical mechanisms which can help explain the consequences of networks including adaptation (i.e., homogeneity of network nodes over time), exclusion (i.e., competitive situation where forming a relation

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with a specific node excludes possibility of relation with another node), and binding mechanisms (Borgatti, Mehra, Brass, & Labianca, 2009).

The social network perspective is useful in explaining a range of organizational phenomena (Li et al., 2021; Westmattelmann et al., 2021). For instance, Benhayoun and Saikouk (2022) apply the social network theory to determine the important success factors for blockchain adoption in the context of supply chain. Valeri and Baggio (2020) employ social network analysis in tourism management and what makles it more versus less effective. At the individual level, Farzin, Ghaffari, and Fattahi (2022) utilize social network characteristics in explaining customers' purchase intentions. Similarly, Lee, Kim, and Choi (2019) examine the adoption of virtual reality devices using the strength of the social ties. Susarla, Oh, and Tan (2012) employ social network analysis to study the diffusion of user-generated content on YouTube. Lastly, Lakkaraju et al. (2019) examine social influences on individuals' adoption behaviors in an online controlled experiment.

Even as the social network view is useful in explaining organizational phenomena, it suffers from some acknowledged issues as a thorough review by Kilduff and Brass (2010) elaborate. First, actors in social networks have different capabilities and attributes (e.g., preference for partnering and forming repeated relationships) and therefore actor characteristics can shape higher-level network outcomes, not necessarily the other way around. Second, while once formed networks can constrain and guide actors' behavior, actors, as creative and motivated agents, have certain levels of control over the networks as well; a relationship that is often overlooked.

Third, contrary to commonly held assumptions, subjective meanings in networks are as important as more objective relational factors because cognitive factors can "assess awareness of network opportunities and constraints" and thus determine the utility of social connections (Kilduff and Brass, 2010). Fourth, as actors form ties and cooperate with certain other actors, they exclude other potential ties and therefore put themselves in a competitive situation, suggesting that cooperation/competition debate present a challenge in the social network context. Fifth, because there are different types of ties (e.g., direct/indirect, weak/strong), boundary specification in networks research presents researchers with a challenge to decide how far they should go beyond the direct ties of the focal actors of interest.

In the backdrop of these core ideas and controversies, I advance a research perspective in this article which is consistent with the dynamic stability approach to organizational network research (Khalid, 2019). This approach represents mutual constitution and change, where actors can be understood in the context of the

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network they are embedded in and emergence of network level properties can be explained in the context of relationships between actors (Kilduff, Tsai, & Hanke, 2006).

In this respect, in this article I explore the adoption of innovative information systems by organizations in the context of the network they are embedded in. I also examine the emergence of ties and thus network level properties in the context of relationships between organizations which are enabled and governed by the unique features of innovative information systems. I argue that organizations with innovative information systems that have common characteristics and information processing capabilities can form relationships that would otherwise be impossible.

SOCIAL NETWORKS AND ADOPTION OF ORGNANIZATIONAL INNOVATION

Information systems research has benefited from social network perspectives (Worrell, Wasko, & Johnston, 2013; Hong et al., 2014; Dwivedi et al., 2015; Al-Emran, 2018; Li et al., 2021). For instance, Leonardi (2007) examines how activation of informational capabilities of information technology at the micro-level can change the overall macro-level social structure of organizations over time. By conducting an ethnographic study of a newly implemented information technology service management system in an organization, Leonardi (2007) explores how technology appropriations activate informational capabilities stored in new technologies through organizational *informal* advice networks. He argues that, through its engagement with social contexts, information becomes dynamic and capable of organizing work in new ways, and thus able to change organizational structures. This represents a unique finding which was enabled by using a social network perspective.

Moreover, Kane and Borgatti (2011) adapt a social network view and develop the "centrality-information system proficiency alignment" concept to study the effect of information system proficiency on group level performance. They argue that group level information system proficiency does not just manifest itself as a liner combination of individual level information system proficiencies, but instead is a function of distribution of information system proficiencies across group members. In fact, the results of their analysis of 468 employees in 32 healthcare workgroups at HealthProviders show that groups which had their most proficient members in highly central positions in their communication and workflow network performed better, controlling for the average level of system use, system proficiency, and interpersonal interactions.

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In addition, Kane and Alavi (2008) challenge the dyadic examination of user-system relationship and instead advocate examination of multiuser-multisystem relationships within groups to understand the effect of information systems on organizational performance; that is, the efficiency and quality of care. In doing so, they introduce multimodal networks concept in which all user-system and interpersonal interactions are considered in the examination of organizational outcomes concerning the use of information systems. Using data from 600 individuals in 40 healthcare groups in the regional division of HealthProviders and after controlling for a number of doctor, group, and patient level variables, they find that the more central is the information systems within networks (calculated using UCINET 6.97), the higher is the efficiency and quality outcomes.

Finally, Sykes, Venkatesh, and Gosain (2009) adapt a network perspective to develop a model of system acceptance with peer support where they examine the effect of individuals' embeddedness in the social network of the adopting units on their system use intentions. They argue that peers have important roles in reducing knowledge barriers concerning the use of new systems. In conducting their analyses, they analyze both network density and centrality (i.e., ties through which users receive and provide help) as well as the valued network density and centrality (i.e., ties with relevant, system related knowledge). Using data from a three-month study of 87 employees in an organizational unit, they find that network density and centrality (in both conventional and new formats) explain variance above and beyond what is explained by individual level behavioral intention and facilitating conditions.

In this article, I build on this literature to further improve our understanding of how a social network perspective can contribute to our understanding of the variation in the adoption of innovative information systems by organizations. To do so, first, I examine the effect of social networks on organizations' innovative information systems adoption decisions. In doing so, I specifically explore the adoption of innovative information systems by organizations in the context of the network they are embedded in to showcase the learning opportunities that the social network can provide to the focal organizations that are otherwise unavailable. Second, I study the effect of organizations' innovative information systems adoption decisions on their social network (Gnyawali & Madhavan, 2001). I specifically explore the emergence of ties in the context of relationships between organizations which are enabled and governed by the unique features of innovative information systems. In doing so, I analyze how organizations with innovative information systems that have common characteristics and information processing capabilities can form relationships that would otherwise go untapped.

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The effect of social networks on organizations' innovative information systems adoption decisions.

I argue that social networks provide unique learning opportunities that are otherwise unavailable to a focal organization and these learning opportunities are consequential in the decision of a focal organization to adopt innovative information technology. In doing so, I draw from the organizational learning literature that defines it as the process of "encoding inferences from history into routines that guide behavior" (Levitt & March, 1988). From this literature, organizations can learn from both positive and negative experiences (Homsma et al., 2009; Lampel, Shamsie, & Shapira, 2009; Rerup, 2009; Raspin, 2011; Reid et al., 2021). They can also learn from their own experiences (i.e., intra-organizational learning) or the experiences of other parties external to them (i.e., inter-organizational learning) (Argote, Beckman, & Epple, 1990; Baum, Li, & Usher, 2000; Holmqvist, 2003; Skerlavaj, Dimovski, & Desouza, 2010; Oh & Kim, 2022).

Inter-organizational learning, specifically, can occur through a number of means. These means include, but are not limited to, learning from common practices (i.e., frequency imitation), learning from activities of other organizations with specific characteristics such as their large size (i.e., trait imitation), and learning from activities of other organizations based on their outcomes (i.e., outcome imitation) (Haunschild & Miner, 1997). Inter-organizational learning may be intentional through sharing experiences or unintentional through stimulating innovation (Ingram, 2017).

Why might organizations learn from others in the first place? There are a number of reasons for learning from other organizations. First, the knowledge that organizations gain though experiential intra-organizational learning discounts rapidly; that is, there will be less to learn from one's own experiences over time. (Argote, Beckman, & Epple, 1990). Second, after exploiting the experience and knowledge available within organizations, organizations explore new opportunities to avoid "competency traps" that favor the "status quo" (Holmqvist, 2004). Third, while exploitative intra-organizational learning processes can generate reliability, explorative inter-organizational learning processes can generate the much-needed diversity in their learning (Holmqvist, 2003; Holmqvist, 2004). And finally, fourth, lack of information, experience, or knowledge on a certain topic or issue, can sometimes simply force organizations to turn to the experiences of others to reduce uncertainty (Baum, Li, & Usher, 2000).

In this respect, the fundamental assumption governing inter-organizational learning processes is that organizations are not isolated from one another and learn

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from each other (Reid et al., 2021; Oh & Kim, 2022), either intentionally or unintentionally (Ingram, 2017). This basic assumption is consistent with the core premise of the social network research and is therefore relevant in studying innovative information systems adoption by organizations in the context of their social networks.

In keeping with these arguments and observations, I argue that learning opportunities concerning adoption of innovative information systems are available to the organizations through their social networks. These learning opportunities are not merely a matter of mimicking other organizations' experiences (even though imitation does occur), but they also involve translation, integration, internalization, and adaptation of such knowledge for the local use within organizations (Holmqvist, 2003). Therefore, we argue that the more ties a focal organization has with others in its social network (i.e., the greater is the network "centrality") (Gnyawali & Madhavan, 2001), the greater is the knowledge that the focal organization has access to in that social network. In addition, the greater access to knowledge in a social network increases a focal organization's influence and power over other organizations' decisions (Sykes, Venkatesh, & Gosain, 2009). In such a situation, the decision of other organizations to adopt innovative information systems will be dependent on whether or not the focal organization has adopted innovative information systems. Therefore, I posit that:

Hypothesis 1: *As the network centrality of a focal organization which has adopted innovative information systems increases, the likelihood of adoption of innovative information systems by those organizations that the focal organization has ties with will increase.*

Because the adoption of innovative information systems involves the comprehension, acquisition, implementation, and ongoing assimilation of new information systems by an organization, and due to the fact that the comprehension phase relies primarily on information and is less costly than the acquisition, implementation, and assimilation phases, I further propose that:

Hypothesis 2: *The strength of the effect of network centrality of a focal organization which has adopted innovative information systems is stronger on the comprehension phase rather than the acquisition, implementation, and assimilation phases of adoption of innovative information systems by those organizations that the focal organization has ties with.*

The effect of organizations' innovative information systems adoption decisions on their social networks.

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Swanson (2007) argues that organizations adopt information systems because information systems can support the "firm-level actions and interactions in doing business with external others, and in securing a favorable business environment." He further indicates that organizations use information systems due to the fact that they can support the "firm's internal subunit-level actions and interactions that coordinate the business across its subunits" and the "firm's system-level actions and interactions among various human agents and machine systems, that serve the above levels of actions and interactions" (Swanson, 2007).

In this respect, I argue that the emergence of new ties (i.e., increases in the network density which is the proportion of actual number of ties to the maximum possible number of ties) (Sykes, Venkatesh, & Gosain, 2009) in the context of relationships between organizations are enabled and governed by the unique features of innovative information systems they adopt. That is, organizations with innovative information systems that have common characteristics and information processing capabilities (through supporting enterprise activities) may form relationships that would otherwise be impossible. In doing so, I argue that greater network density increases the level of information sharing and cooperation and thus affects the network level properties of the social network itself. I also contend that this mechanism can affect the adoption of innovative information systems because it fundamentally modifies the structure of the social network through formation of new ties between adopting organizations. Thus, I hypothesize that:

Hypothesis 3: *As the network centrality of a focal organization which has adopted innovative information systems increases, the density of the social network will increase due to the increased formation of new ties between adopting organizations.*

CONTRIBUTIONS AND AVENUES FOR FUTURE RESEARCH

In this article, I explore how business enterprises go about their decisions concerning adoption of innovative, organization-wide information systems over time. To do so, I adapt a social network perspective. I argue that inter-organizational networks are crucial in understanding how organizations behave and make decisions over time through providing learning opportunities that are otherwise unavailable. I further argue that innovative information systems have unique features that can enable formation of new ties and relationships based on their common characteristics and information processing capabilities within a network

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of organizations that would otherwise go untapped. In doing so, I contribute to a more complete theory of information systems adoption and improve our understanding of the role of social networks in adoption of organizational innovation.

Notwithstanding these contributions, I acknowledge that my study has three limitations which can provide opportunities for future research. First, the adoption of innovative information systems is a multi-level phenomenon that affects and is affected by actors at different levels. Therefore, a multi-level network view of this phenomenon might provide additional fruitful pathways for future inquiry. Second, my discussion of the effects of network centrality on the adoption of innovative information systems relies on the assumption that the adoption of innovative information systems by organizations generates a net positive performance outcome. However, in some cases this may not hold true and future research may investigate the potential conflicting effects of positive and negative performance outcomes of innovative information systems adoption in a social network context.

Third, my discussion of the effects of network density on the adoption of innovative information systems could be extended because of the fact that I do not currently take into account the effects of network density on the structure of the social network through formation of new ties between organizations that do not adopt any new information systems. Accounting for the nonadopter social networks may prove to be fruitful in better explaining the variation in the adoption of innovative information systems in organizational settings.

Lastly, a fruitful avenue for future research is to empirically test the proposed theoretical predictions that I offer in this study. Holding all else equal, scholars can investigate whether there is a statistically significant positive correlation between network centrality and the adoption of innovative information systems in organizational settings. They can also empirically uncover the disparate strength of this effect on the comprehension, acquisition, implementation, and assimilation phases of adoption of innovative information systems. In addition, researchers can empirically investigate how the density of the social network changes due to the formation of new ties between adopting organizations. Taken together, these advances will help product a more robust understanding of the role of social networks in adoption of innovations in organizations.

ISSN: 1941-6679-On-line Copy

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