



Social network analysis: A tool for evaluating and predicting future knowledge flows from an insurance organization



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ARTICLE INFO

Article history:

Received 5 January 2016

Received in revised form 17 June 2016

Accepted 21 July 2016

Available online 3 August 2016

Keywords:

Knowledge sharing

Future knowledge flows

Social network analysis

Strategic planning and implementation

Insurance sector

ABSTRACT

The paper aims to identify the individuals who influence the knowledge sharing processes from an internal social network and to forecast the future knowledge flows that may cross it. Exploratory research is employed, and a four-phase methodology is developed which combines a social network analysis with structural modeling. This is applied to the internal enterprise social network used by a British insurance company. The main results emphasize the most influential groups, their relationships, future knowledge flows, and the connection between the network's heterogeneity and structure, and employees' future knowledge sharing intention. These findings have both theoretical and practical implications. The theory is extended by proving that a social network analysis can be used as a tool for evaluating and predicting future knowledge flows. At the same time, a solution is offered to decision-makers so they will be able to: (i) identify the potential knowledge loss; (ii) determine leaders; (iii) establish who is going to act as a knowledge diffuser, by sharing what they know with their coworkers, and who is going to act as a knowledge repository, by focusing on acquiring increasingly more knowledge; (iv) identify the elements that influence employees' future knowledge sharing intention.

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1. Introduction

The current, dynamic and uncertain knowledge-based economy not only shows that knowledge and innovation go hand in hand but it also supports their transformation into critical factors for the economic growth (Grant, 1996; Nonaka and Takeuchi, 1995). Either intentionally or unintentionally employees and organizations acquire and share knowledge and such knowledge is used for further abstractions and re-interpretations to make it suitable for a certain situation or environment and acts as a precondition for innovation. For these processes to take place, it is increasingly acknowledged in the organizational studies (West and Bogers, 2014) that cooperation must be established among members and that networks must be developed.

Against this backdrop, the need for managers to develop policies and procedures that encourage both intra- and inter-organizational knowledge creation and sharing and, at the same time, that take advantage of the fast development of collaborative and communication technologies (Ahmad et al., 2014; Yin et al., 2015) is increasing. However, the analyses done so far do not answer this challenge by providing an instrument for analyzing and predicting knowledge flows. Most focus on either the

influence factors of knowledge sharing (Kamoche et al., 2014) or its effects (Bianchi et al., 2011; Marabelli and Newell, 2012), and neglect aspects like knowledge dynamics. Therefore their analysis is static, even though knowledge is dynamic and fluid and it changes shape and content from one individual to another. As the SECI model reveals, tacit knowledge may be transformed into explicit knowledge and vice-versa (Nonaka and Takeuchi, 1995); knowledge flows from one individual to another or to a group and from a group to each individual. Along the way, it is enriched with new insights, ideas, thoughts, experiences etc. Still previous researches only reflect the past knowledge flows that cross the team or the organization without considering that these flows may have been used or enriched. At this level, they provide decision-makers with an image of the past which encourages them to assume that the same patterns will be followed in the future.

Most past analyses have resulted from questionnaire- or interview-based surveys (Ritala et al., 2015; Tasselli, 2015). These appeal to the short-term memory of respondents and do not reflect real knowledge flows, but the most recent ones. A difference is made by scholars who concentrate on analyzing the knowledge sharing process that occurs in the academic community (Hu, 2013). In this case, the analysis is based on real data provided by articles that have been written during a given time period.

Moreover, previous studies about knowledge sharing (Bianchi et al., 2011; Kamoche et al., 2014) have tended to focus only on the “know how” and “know what” knowledge type. Although this information is

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useful as it helps develop a potential knowledge map, and it asserts the intangible resources that the company possesses, sometimes it is more important to know who holds the necessary resources. In fact, Huang (2009) argues that members need to understand who knows what, while Hu (2013) demonstrates that people with a large number of social links with others strongly impact the diffusion of innovations. Although they adopt an external perspective, Arend et al. (2014) emphasize the importance of “know-who” by proposing a knowledge disaggregation based on two dimensions: familiarity and source of knowledge, of which the latter practically defines who owns knowledge and who the “recipient” that holds it actually is.

Therefore, at the organizational level, there is a research gap related to analyzing the actual knowledge flows that occur in a company and anticipating the future knowledge sharing processes. This gap could be bridged by using social media technologies based on communication and interactions, which are capable of providing real data. These represent the starting point for a social network analysis (SNA) which is capable of empirically identifying central individuals, discovering patterns, detecting sub-groups and predicting future interactions (Chau and Xu, 2007; Rohrbeck et al., 2015). Furthermore, knowing who knows-who may facilitate employees understanding and also the processes of knowledge sharing. On the other hand, it may bring forward who better knows what is happening in a specific area, and who is capable of mobilizing groups. However, in this area, the main focal point lies mainly on the “object” shared rather on the subjects involved in the process.

Basically, the main gaps identified in the knowledge management literature are related to: (i) using data from secondary and subjective sources (questionnaires, interviews etc.); (ii) analyzing knowledge flows from a static perspective although knowledge dynamics is well recognized; and (iii) neglecting who knows what knowledge type. Therefore, the main research question would be: could an SNA serve as a tool to evaluate and predict the future knowledge flows that may cross an internal enterprise social network?

Hence, we aim to address the research challenges mentioned herein. The current paper is organized as follows: Section 2 highlights the nexus that links knowledge sharing, knowledge loss and SNA. Then, Section 3 moves forward by proposing a methodology to analyze the knowledge sharing process from an internal social network and by predicting the future knowledge flows that may occur among an insurance company's employees. Following these coordinates, Section 4 presents the main research findings and then Section 5 discusses the major implications and limits of our insights. This article closes by drawing a couple of conclusions and offering further research directions.

2. Literature review

2.1. Enterprise social networks: an external and internal approach

Given the high level of dependence recorded among individuals and companies, a new economy emerges, called socialnomics (Qualman, 2009), economy of relations (Robison and Ritchie, 2010) or economy of integrity (Bernasek, 2010). This is based on trust and integrity (Fernandes et al., 2016) and its development is supported by the enterprise social networks.

From an abstract perspective, an enterprise social network is a web-based platform that “supports users in contributing persistent objects to a shared pool, which enables public responses to these objects, allows profile information to be presented, and connects users via features like Following or Friendship request” (Behrendt et al., 2014, p.560). From a restrictive perspective, an enterprise social network is a web-based platform which allows “workers to: (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages,

connections, text, and files communicated, posted, edited, and sorted by anyone else in the organization at any time of their choosing” (Leonardi et al., 2013, p.19). As it can be noticed, both approaches emphasize the importance of sharing explicit and tacit knowledge inside and outside companies' boundaries, and highlight the two research directions adopted in previous studies.

One research stream concentrates on external enterprise social networks, described as hedonic systems that provide enjoyable experiences while satisfying users' emotional needs (Premkumar et al., 2008), and brings forward the advantages of using them to establish sustainable relationships with firm's external stakeholders. According to Wyld (2008) the firms that communicate with their customers using Facebook or Twitter improve their corporate image. Other studies go further and present these platforms as an opportunity for: (i) obtaining research and technical support (Evans, 2008); (ii) building brands and increasing customer's retention (Fernandes et al., 2016); (iii) recruiting (Pei et al., 2011); and fostering internationalization (Zhou et al., 2007).

The other research stream receives less attention from management academics and practitioners, and focuses on the advantages and disadvantages of using an internal enterprise social network; this is perceived as a hedonic and utilitarian system that increases employees' communication effectiveness and efficiency (DiMicco et al., 2009). According to previous studies the use of an internal social network tends to: (i) connect groups of individuals who do not share the same physical space or cultural profile (Shirky, 2008); (ii) increase employees' productivity and motivation (Chui et al., 2012); (iii) positively affect employees' performance (Rodriguez-Rodriguez et al., 2015; Wu, 2013; Zhang and Venkatesh, 2013); (iv) improve communication and collaboration (Kwahr and Park, 2016; Sarker et al., 2011); (v) allow managers to identify experts and informal networks, and to access their resources (Behrendt et al., 2014); and (vi) foster individual and organizational learning (Scott et al., 2016). According to Qualman (2009), networked employees can be successfully involved in innovation, wealth creation and socio-economic development.

Nevertheless, the outputs generated by the internal and external enterprise social networks depend on the company's financial and timely investments in information technology and on employees' informational systems proficiency (Kane and Borgatti, 2011). They must know how to create content, how to foster stakeholders' involvement, and how to analyze and interpret the results. If the first two issues can be solved through training programs, the same cannot be claimed when it comes to the last aspect. As Behrendt et al. (2014) argue, there is paucity of research that develops analytical methods capable of extracting the added value of an enterprise social network and using it in managerial decision making, and an SNA alone is insufficient (Kane et al., 2014; Venkatesh et al., 2013).

Another problem that is brought forward only at the internal social network level is related to employees' psychological isolation. Kane et al. (2014) state that using an internal enterprise social network could reduce the variety of real-life relationships that, in the long term, could reduce employees' direct interactions, which would generate their psychological isolation. In other words, they would become better in virtual communication and the use of social skills in real life would diminish. These assumptions are contradicted by Zhang and Venkatesh (2013) who prove that online communications complement, rather than replaces, offline communications.

2.2. Knowledge sharing: know what, know who, know why and know how

In the last 50 years, knowledge has become a critical factor for company's success and the hardest one to define. Some researchers adopt a social approach (Nonaka and Takeuchi, 1995; Nonaka and von Krogh, 2009) and present knowledge as a metaphor or fluid capable of incorporating an organized set of factual declarations, ideas and experiences, shared systematically with others by using a common communication environment. Others support the technological

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