



Application of Social Network Analysis in International Organizational Learning

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ABSTRACT

This aim of this paper is to explain the applicability of social network analysis (SNA) in Organizational learning for the organizations expanding in international market. Internationalization is often driven by strategic asset seeking behaviour to improve their knowledge base. Learning processes require that the organization anticipates and attends to feedback, creates knowledge from that feedback, and takes action based on that knowledge. Relationships among people can be modelled as social networks in which network nodes represent people and network arcs represent relationships (e.g., friendship, advice, supervisor-subordinate relations) that change over time. Social networks also form a resource for collaborative knowledge management: the creation, exchange, and transformation of knowledge

Keywords: social network analysis, organizational learning, international organization

Introduction

The volatile, global, and technology-enhanced environment that organizations face has changed the way they operate. In this interdependent and highly connected world, people have to communicate and coordinate across geographies, functions, levels, and organizational borders to achieve success. Formal structures and leaders remain an integral part of organizations. However, individuals must also develop the ability to look beyond the organizational chart to see, understand, and engage the informal, invisible structure supporting their organization. This invisible structure is built on relationships, which create channels that often differ from those identified by policies and procedures and that cross functional divisions, managerial levels, and organizational boundaries. Understanding these connections is critical to implementing ideas, change, aligning strategy and work across organizational boundaries (Cullen, Palus & Appaneal, 2013).

In essence, networks are invisible and informal structures that have the ability to support and undermine leadership, which we understand to be the achievement of direction, alignment, and commitment toward shared goals (Darth et.al, 2008).

A network perspective is gained and enhanced through network analysis, which allows individuals to see their personal networks and the networks within their organization. Often a network analysis identifies a few key individuals, outside the formal structures, who play an instrumental role in holding together the network that supports critical and strategic processes (Hatala, 2006).

Method

This paper adopts a broader approach and explores the multitude of ways in which social network analysis may contribute to field of organizational learning.

Literature Search: From various sources like [OmniFile Full Text Mega \(EBSCO\)](#), [ProQuest Complete](#), [EBSCO Electronic Journal Services](#), Web of Knowledge database. Searches are not limited to any specific dates though most of the literature has been published in last two decades due to new-found interest if implications of SNA in field of human resource development (HRD).

Keywords: Social Network Analysis, Human Resource Development, Organizational learning

Organizational Learning

An organization may be said to learn when it acquires information (knowledge, understanding, know-how, techniques, or practices) of any kind and by whatever means (Xin – An, 2004). In daily rhetoric quite often adaptation is perceived as learning, as it provides possibility for organization to survive. However, it doesn't provide development of new insights and knowledge, being so required today to sustain.

Citing the definitions of learning by Fiol and Lyles: "Learning - The development of insights, knowledge, and associations between past actions, the effectiveness of those actions, and future actions. Author would agree that changes happening in organization and to organization bring a lot of learning with themselves, however Author also would argue that in case there are no new insights, and/or new knowledge developed it would not be appropriate to claim that organization has learned.

Today learning is not something what happens inside the organization, but that learning is located in social relationships (Kerno and Mace, 2010). This also complies with Senge's definition of organization - "a product of how its members think and interact" (Senge, 1994).

Learning organizations are essentially networks of learning relationships among individuals, groups and even organization themselves. Organizational learning is seen to be the result of interactions between individual actors' mental models and the organization's shared mental model. Communication is a central element of this process and is influenced in many ways. For example, Dewey (1938) argued that while people think and act together in a social setting, the very process of inquiry, individual or collective, is conditioned by membership in a social system that establishes inquiry's taken-for-granted assumptions. Thus, the nature of the organization's social networks influences many of the processes that affect an individuals' and the organization's ability to learn. Over time, these networks will contribute to defining the organization's learning culture.

Social Networks

Network can be defined as the set of nodes and set of ties representing some relationship or lack of relationship between nodes (Brass, 2012). In the case of social networks, the nodes represent actors and actors can be connected on the basis of similarities (same location, membership, gender etc.), social relationship, interactions or flows (Borgatti and Foster, 2003). Although other mechanism for explaining the results of network connections have been provided, most organizational researchers explain the outcomes of social networks by reference to flows of resources (Brass, 2012). See Table 1 for some elementary network properties

Network Analysis

Network analysis is a method of collecting and analysing data from multiple individuals or organizations that may be interacting with one another. (Hatala& Fleming, 2007). Network analysis allows for the examination and comparison of relationship between two actors (dyads), among clusters or cliques and among all of the actors comprised by network (Storberg-Walker & Gubbins, 2007). Network analysis provides a relatively new and dynamic means of getting at the core of network interactions, analyst from this approach look at linkage and structural properties of types of social relationship and it provides a more comprehensive picture of the nature and intensity of network relationship (Mandell & Keast, 2007)

Form of network analysis

First step for conducting an SNA is to determine what form of analysis to conduct. There are two basic forms – *ego network analysis* and *complete network analysis*.

Ego network analysis includes relationship from the point of a particular individual and can be determined through the use of traditional survey. It aims to elicit information about the people they interact with and about relationships among them. It allows researchers to assess the quality of the individual's network, such as size and diversity, or the ability to relate the attributes of ego with the attributes of alters. (Hatala, 2006). Analysing this type of information may be useful for knowledge-intensive organizations, such as in engineering, consulting and medicine where new and relevant information is critical for improved performance

Complete network analysis obtains all the relationships among a set of respondent (McGrath& Krackhardt, 2003). An example could be a department in an organization. If one wants to know how information about new tax law flows between employees of accounts department this approach would help determine which individual are looked for new information and who seeks the information.

Analyzing the network data

Once the data is collected, next step is to analyze. There are many software packages that have the ability to perform an SNA. Most notably, UCINET offers the researcher the ability to compute network measure as well as to generate sociograms through its incorporated software NetDraw (Hanneman & Riddle, 2005). Within the SNA framework there are a number of graphs structures that should be presented. The path in a relationship represents links between nodes. As with nodes, these paths involve a number of different characteristics. The characteristic should be defined in same way as the node through research question (Hatala, 2006; Rob, Chris, & Bill, n.d). For example an individual has been identified as subject matter expert (SME) it does not necessarily means that people are seeking his advice. This can be identified through an SNA. If researcher wants to identify low value paths to SME in order to implement an intervention to increase connectivity between the SME and employee. The uniqueness of SNA allows for the identification of relationships among a group of individual rather than looking at these relationships individually and this is the bases for understanding the relationships that exist within a group and the impact they may have on the individual and the network as a whole (Storberg-Walker,& Gubbins, 2007).

Social Network Analysis and Organizational Learning

Organizational learning and knowledge management (KM) are significantly impacted by informal networks and OD interventions works because it changes the informal relationship between people (Storberg-Walker, & Gubbins, 2007).

The scope of changes occurring in the business environment has increased interest in the concepts of knowledge management and organizational learning. Organizational learning has long been an issue of both practical and theoretical concern (e.g., Argyris & Schön 1978, Mirvis 1996). Organizational design is concerned with the formal tasks of differentiation, division of labor, and coordination. However, parallel to formally regulated information and communication structures; informal networks emerge in all organizations (Krackhardt & Hanson 1993). These informal interpersonal networks play an important role in organizational learning processes (Borgatti & Foster 2003, Cross & Sproull 2004, Reagans & McEvily 2003).

As organizations are comprised of people, theories of individual learning are relevant for understanding organizational learning. Piaget (1970) argued that the key to learning lies in the mutual interaction of the process of accommodation (adapting our mental concepts based on experience in the world) and the process of assimilation (integrating our experience into existing mental concepts). Although theories of organizational learning frequently build on analogies to individual learning theories the link between individual and organizational learning is relatively unexplored.

Granovetter (1983) claimed that individuals with few weak ties will be deprived of information from distant parts of the social system and will be confined to the provincial news and views of their close friends. Furthermore, organizational learning researchers argue that sound learning can only occur with a foundation of enhanced consciousness or a thorough understanding of one's environment (Nevis et al. 1995).

Burt (1992) argued that individuals whose relationships connect multiple bodies of knowledge broker the flow of information between people. This leads to greater opportunities to acquire non-redundant information and imposes fewer constraints. However, Hansen (1999) argued that only strong ties, as found in cliques, promote the transfer of complex knowledge.

Participation in and control of information diffusion underlies the social capital of structural holes (Burt 1992). Consequently, structural holes represent an opportunity to broker the flow of information between people, but at the same time they enable the brokers to control the issue that brings together people from opposite sides of the hole. If an analysis of the organization indicates that useful knowledge is acquired reasonably well but is not readily available to others, the knowledge-sharing phase of the learning cycle is interrupted. One reason may be due to an overload of information being distributed, such that few things truly stand out as being critical. Another reason is described by the expression "knowledge is power". The expression suggests that tacit knowledge will not readily be shared. Thus, "fragmented learning" is more likely to occur in organizations characterized by entrepreneurial networks where expert individuals mostly possess knowledge. The organization does not actively support interpersonal communication and consequently does not have a strong commitment of resources for learning.

Researchers in learning and social network theory have known for some time that the creation of knowledge is a social process, and consequently social relationships are important. According to this, learning – the process whereby knowledge is created through the transformation of experiences – is facilitated and constrained by membership in a social system.

SNA provides a view into the network of relationships that gives knowledge managers leverage to:

- Improve the flow of knowledge and information;
- Acknowledge the thought leaders and key information brokers (and bottlenecks);
- Target opportunities where increased knowledge flow will have the most impact on your bottom line.

There are three types of intervention following a social-network analysis:

- Structural/organizational – an analysis may indicate the need to modify the organization or to introduce people into new, specific roles to assist the knowledge transfer.
- Knowledge-network development – frequently, the SNA may provide confirmation of prior intuition, but in a way that overcomes previous resistance to action.
- Individual/leadership – everyone looks first to see his or her own position on a network map. Most individuals, and especially leaders, will rapidly correlate the map to their own perception and intuitions about the context behind the map and take their own actions, either publicly or privately.

The focus on relationships and tacit knowledge sharing in above illuminates the importance of social network perspective. The social network perspective permits conceptualizing the whole and also provides analytical tools and theoretical assumptions not found in typical quantitative or qualitative research methods. By identifying the facilitators and inhibitors to knowledge sharing, learning the OD practitioner can devise ways to manage the individuals or change the organization, functions or processes to facilitate individual, team/ process and organizational success (Parise, 2007).

Limitations in conducting SNA

One of the limitations in conducting social network analysis is methodological issues in itself, while social network data might be collected from archival record (inter-organizational alliance, email, membership in groups), or a combination of these methods. While these methods provide accuracy, it is difficult to determine what is being exchanged or how to interpret the ties.

Boundary Specification: determining the boundaries of network for research purposes is very important. It involves specifying the number of different type of networks to include as well as the number of links removed. As far as organizational research is concern, formal boundaries exist: work groups, departments, organizations, industries (Hoppe & Reinelt,2010).

Identifying network content: identifying the domain of possible types of relationships (network content) is also an issue to be considered. Generally, people tend to identify their relationships as friendship, acquaintance, work and kinship (Burt, 1992). However, interpersonal ties often tend to overlap and it is sometimes difficult to exclusively separate ties based on content. In a research by Singh et al (2022), they found that international student in the US tend to collaborate and work with people with other international students over American counterparts. However, as the roles overlap international students the interaction in Americans was limited to mostly work, academic, and professional experiences with few interactions identified as social networking.

Lack of privacy and related ethical issues: suppose if person A chooses not to participate in network mapping survey, then those results will not show that A seeks collaboration from B and C, but B and C will still report they go to A and probably there are many such people. A's ability to remove himself from the network map depends on the survey administrator, who must be clear that "opting out" and "not participating" are two different things (Brass, 2012).

Mapping evaluations from incomplete data: network survey results are more sensitive to data omissions than other kinds of surveys. In order to produce a network map that provides network members with accurate picture, a survey response rate of 75% is required (Hoppe & Reinelt, 2010).

Over simplification and misreading: SNA and Evaluation of leadership networks suggest that viewers are not used to think critically about network images and like any statistical graphic, they can be manipulated to convey a viewpoint that would not hold up to rigorous analysis (Brass, 2012).

Time consuming and time sensitive: the process of Social network analysis is data intensive and requires long surveys and extensive interviews. Conducting an SNA can be time sensitive when testing a treatment or intervention in a pre and post –test design. If membership of network are going to change is network structure the effectiveness of the intervention becomes more difficult to relate to change in network structure (Hatala, 2006).

Misuse of network measures: one of the common mistakes is misuse of density, which is a seemingly intuitive metric that is in fact very easily misinterpreted especially when networks of different sizes are compared. Link per node can be used as a measure of network connectivity that is more reliable than density (Hoppe & Reinelt, 2010).

Another misuse would be of network measure that is applying a measure designed for one kind of network to a set of data involving in a different kind of network. For example, centrality means something different in an affiliation network than communication (Bender-deMoll, 2008).

Discussion

Social-network analysis can be a one-time intervention or part of an adaptive approach to knowledge management. Social networks in an organization represent a complex system in which relationships are changing all the time, and one can never accurately predict the results of an intervention. Social-network analysis is a tool that can be used, with discretion and sensitivity, on an ongoing basis in the context of continuous organizational improvement.

The recent explosion of interest and research in the properties of networks is providing insights into the dynamics of social networks is particularly useful in planning and diagnosing communities of practice. If HRD/ OD practitioner understands the patterns of interaction, he/she can leverage this knowledge to improve the flow of knowledge and information and can identify the key information brokers (and bottlenecks).

Anklam (2002) have asserted that creating and maintaining the social networks in an organization is a leadership responsibility that can be supported by good KM practices. Depending on the context, an organization may accelerate its adoption of technologies to support expertise location, collaborative forums, virtual meetings, instant messaging and so on. Face-to-face or other real-time programs that bring people together to share their individual experience and expertise start to break down the 'don't know' barriers.

Learning needs to be seen both as a participation in practice community and a flow of previously acquired knowledge. On one hand, learning often occurs in project settings and mainly involves transfer of tacit knowledge through participation (Skerlavaj & Dimovski, 2006). On the other hand, employees who are the most often seen as a source of learning are those with above average tenure within company and hence accumulated experience and knowledge. Analyzing learning networks seems to be the best way to approach the complexity of the research question posed.

From practice-oriented perspective social network analysis applied in learning context, can provide a strong management tool to find and reward central employees in organization, to develop the fit between formal and informal organizational structure, to support reward system renewal, to help understand organizational culture within the company, to help organize education and training programs etc. (Skerlavaj & Dimovski, 2006). It offers many measures, which are aimed at recognizing the most important employees from various perspectives, not just from the learning one. Having this knowledge, managers

can better develop reward systems and motivational schemes for their employees. Knowing the structure of relationships within their organization, managers can also adjust their style on a democratic-autocratic continuum. From such an analysis significant implications for human resource professionals when planning educational and training schemes derive as well. They can better suit needs of the employees having that information. On the other hand, such a tool needs to be addressed with utmost care, since it can be very easily misused. It involves some ethical issues related to careful and concise interpretation of results.

Although the OD literature recognizes that collaboration and social network are critical to success at all levels, there is limited understanding of inner workings of such social relationships. A network perspective on learning organization gives OD scholars and practitioners new ways to manage issues, conduct research and design intervention. And integrating the social network and OD literatures enable OD scholars and practitioners to design interventions that are effective, targeted and beneficial (Storberg-Walker, & Gubbins, 2007). The degree to which the changed network is aligned with organizational goals determines the success of OD interventions (Rob, Chris, & Bill, n.d). Targeting OD interventions on strategic positions in social networks can quickly increase individual, team and organizational effectiveness. Interventions designed to purposely build close ties do not automatically solve organizational problems. Strong ties in network are less likely to provide novel information (Hansen, 1999) while weak ties though less costly in terms of time and effort may not be as useful for mobilizing complex information (Granovetter, 1973).

The key issue is identifying the optimal network configurations and conditions for a given organization for a given OD problem. Each intervention needs to be designed with the specific context in mind. This means analyzing the social network of individual, his surrounding team/ group and organizational context and designing an intervention that changes the existing structural configuration or utilizes the existing social network configuration for optimum benefit. The OD practitioners need to make visible the invisible social networks within and between organization and its internal units. The goal of social network analysis is to describe networks of relations as fully as possible (often using graphs or matrices), identify the prominent patterns in such networks, trace the flow of information (and other resources) through them, and discover what effects these relations and networks have on people and organization (Galup & Dattero, 2010). The tools for social network analysis enable such identification. Social network analysis (SNA) can reveal the success or failure elements of social networks. By understanding the network structure, the HRD practitioner will be able to identify the opportunities for or constraint on individual performance and learning.

Limitations

Scope of this paper does not allow providing a comprehensive review of extant literature on social networks. Readers are advised to refer to existing reviews. I hope that these examples will generate interest in networks as an explanatory mechanism for change in areas relevant to OD, which can include learning, knowledge management, leadership recruitment and selection.

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