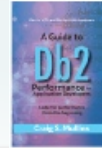




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Enterprise Leadership

Social Networks: A Whole Different Reality Under the Radar

by Craig S. Mullins

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Imagine facing the prospect of a large-scale downsizing. Not the most enjoyable thing to think about, but not unrealistic either in today's business climate where "doing more with less" and optimizing ROI are common practices. So you grab the company org chart and the latest employee reviews and try to come up with a plan that minimizes impact on the business. You review the data and earmark for dismissal the poor performers and those employees who do not seem to be key parts of the most profitable business lines.

But is this approach optimal? Perhaps not. What you see on the company's organizational chart does not really accurately depict how things actually work in your company. There is an underlying social infrastructure that exists in most organizations. It is informal, but functionally powerful. And rarely is it evident just how critical this informal network is until a piece of it is removed.

Consider our downsizing scenario: what would be the impact of laying off a critical component of the informal network? Even if your corporate policy manuals outline standard operating procedures can you be sure that they are being followed? Over time the informal employee network takes over tasks and the work gets done appropriately and on time. But most executives do not understand how this informal network operates in their company. Hence, they do not typically understand how information is flowing, who picks up their requests, and who doesn't. Clearly, a social network, operating under the radar of the official organization chart, can impact business processes.

"Technically, a social network is the set of social relations that connect people and or groups, such as friendship or advice giving," says Dr. Kathleen Carley, of the Institute for Software Research Department in the School of Computer Science at Carnegie Mellon University in Pittsburgh, PA. Dr. Carley is the Director of [CASOS](#), the Center for Computational Analysis of Social and Organizational Systems.

CASOS is a university wide interdisciplinary center that brings together network analysis, computer science and organization science. By combining computational and social network techniques CASOS works to develop a better understanding of the fundamental principles of organizing, coordinating, managing and destabilizing systems of intelligent adaptive agents engaged in real tasks at the team, organizational or social level. In other words, CASOS works to better understand the way things actually work in the real world.

Social Networks and Social Network Analysis

Basically, a social network is a system composed of multiple elements related in some way. Each element in the network may or may not have a relationship with the other elements.

The word "social" is used to define "social networks" because the most common type of element in the network is a person. However, social networks need not be composed entirely of relationships between people, but can be made up of anything that can have a relationship with something else. For example, social networks have been defined for trade patterns in cities and proteins in the human body.

The term social network analysis is used to refer to the set of graph-theory based algorithms applied to any network, preferably networks that include humans or groups as at least some of the nodes. Traditionally, managers look at the attributes of the people (individual elements of the network) they manage. Social network analysis looks at the relations between the elements. This is a significant change.

Consider, for example, conducting a survey of your organization in which everyone is asked: "Who are the people you are most likely to discuss technical problems with?" and "Who are the people you are most likely to go out with for lunch or after work for a drink?" (perhaps among other questions). The results of these two questions will not likely be the same. But both are useful social network maps.

Social network analysis is the process of collecting data, organizing it in useful ways and examining the network structure to understand its influence on real world events. It is possible to compare the structure of a healthy organization to an unhealthy one, or of a successful startup to an unsuccessful one.

A manager with access to the social network mappings within the organization becomes empowered to view the operations of the company with a clearer perspective and understanding of how things are actually happening. Social network analysis can enable management to identify emergent groups, potential areas of information blockage, and other key actors within the organization who can effect change.

Consider, for example, the employees who are well-respected as technical gurus, or founts of knowledge on a particular aspect of the company's business. Every company has a few such employees that everyone else relies upon. It would be to management's benefit, first of all to know who these gurus are, and secondly, to be able to leverage them and their network to successfully launch new initiatives and practices. A new initiative can have a much better chance of succeeding when it is being championed by the leaders – that is, the gurus – who already have the trust of the organization.

Dr. Carley notes that CASOS has developed a tool, named ORA, to help provide management with information on social networks. When fed the appropriate data, the tool can deliver a management report with the pertinent social network information to the business executive.

An interesting application of social network analysis being conducted by CASOS is the investigative research of e-mail from Enron Corporation. The e-mail being reviewed is voluminous in that it covers a 3 and a half year period. The data contains a large amount of information on interaction, communication, knowledge, cognition, resources, tasks and relationships on an individual and group level in Enron. According to Dr. Carley, the analysis shows

dramatic shifts in the social networks in response to corporate events such as change in CEO, president, etc. The social network was used to pass information, reduce concerns, and promote the adoption of ideas.

Crossing Organizational Boundaries

It is also possible for companies to look at the inter-organizational networks among companies or the social network of an individual, such as a CEO, that extends across multiple organizations. In such cases the CEO can use his social network to vet ideas and do information gathering to reduce risk before making major decisions.

A better understanding of inter-organizational networks can be critical for up-and-coming companies as it helps them better position themselves relative to their competitors. Dr. Carley notes that many companies actively build the network of relations with those companies whom their competitors are also linked to. Highly influential companies are often key nodes in the inter-organizational network. For example, Microsoft would have a higher level of connections to other companies than its smaller competitors. By growing these links, large influential companies can become, effectively, network monopolists and serve to control the flow of information in these inter-organizational networks.

Inter-organizational networking is useful at the personal level, too. The concept of social networks has moved online, such as in the example provided by [LinkedIn](#). LinkedIn is a popular online service that facilitates business-oriented connections. Basically, LinkedIn makes it possible to track your own, personal social network. By keeping your contact information up-to-date, and inviting your trusted associates to join and keep their information current, LinkedIn enables you to easily manage your social network – and to take advantage of others'. Imagine the power of being able to quickly and easily interact with all of your historical business contacts and to ask them to put you in contact with the influential contacts in their social networks.

Taking it Further with Meta-Networks

In today's complex business environment, to address practical problems, we need to move beyond social networks to consider the meta-network context. That is, we need to consider the relations of people to people, knowledge, tasks, and so on.

A business executive that can move beyond just information on the connections among personnel to consider knowledge and tasks as well opens up avenues for additional understanding. This additional information can help the executive identify hidden competencies and emergent leaders, as well as helping to put together new teams. Moreover, this information provides new guidance and help for the human resources department to do better personnel management and identify points where training could be beneficial. Essentially, it enables more adaptive behaviors to be implemented.

What About Personal Privacy?

Of course, the practice of social network analysis can open up issues of personal privacy and companies will have to balance the gain of such study against its potential pitfalls.

One such pitfall is perception. The informal nature of a social network can seem to become more formal if it is used by management to further its goals. If staff becomes aware that management is analyzing their "social" network to further business goals it may be perceived as an invasion of privacy.

And what about the gurus who, once identified, may become inundated with additional work? Care must be taken to balance the opportunities for leveraging a social network against a potential backlash of disgruntled employees believing they may have been taken advantage of.

A service such as LinkedIn is voluntary. Subscribers choose to use the service and each time an invitation is sent the receiver can choose to accept or decline the invitation. As such, this opt-in approach can help to alleviate concerns of intrusions on personal privacy.

Of course, sometimes privacy is less of an issue. When the data is publicly available privacy is not usually a big concern, although some may still have issues with the mining of large volumes of data. When privacy is an issue, names and attributes can be anonymized. As Dr. Carley points out, "sometimes, it is beneficial to look at relationships in terms of roles - doctor to nurse to pharmacist, rather than in terms of people's names. This role based approach also helps to alleviate potential privacy concerns."

At times, the results of social network analysis can be useful in terms of summary or aggregated statistics. For example, it may be helpful to know how strongly a group is connected or how complex of a task environment they face rather than the details on specific individuals. In general, such summary data is useful for comparing different divisions or branches in the same company.

For the field as a whole, as for many other scientific fields, data-privacy is a double-edged sword. On the one hand, discovering new ways of de-identifying data, yet preserving the statistical properties, is leading to important scientific advances. On the other hand, concerns about privacy can get so carried away that important data is not gathered and analyzed and policy makers are making important decisions in the dark or with the wrong data. "Overall, there are many key questions that need to be answered in this way," points out Dr. Carley, "and we need to develop new tools for de-identifying and re-identifying nodes and relations in networks so as to ensure appropriate and meaningful privacy levels that do not overly compromise the use of network science to inform policy and provide goods and services to the public."

The Bottom Line

It can be just as, if not more important to understand the informal social fabric of your company than the official organization. The study of social and organizational systems can open up important insight for businesses in terms of how things really get done – and the implications this has on running the business. This field can offer busy executives additional insight into their business and how it functions.

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