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FEATURED CONCEPT

It's Who You Know

Inside social network analysis

This is the first article in a series on collaboration, which is fast becoming recognized as an essential, yet often hidden, ingredient in working efficiently and effectively. This series focuses on tools and methods that can demystify collaboration and help IBM's clients harness its power.

This article introduces the major social network analysis concepts and their application to business problems.

Six months after a management consulting firm lost a lucrative contract with a large financial institution, it learned that another internal group had worked on a project with the prospective client and had in-depth knowledge of its business operations. If that crucial knowledge had been shared, the outcome might have been different.

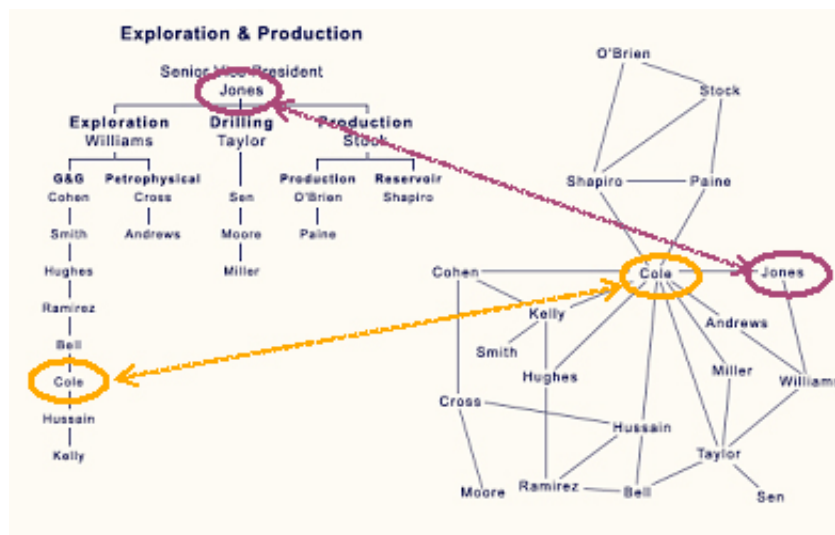
This is just one example of the opportunities that large companies can miss if they fail to understand that success

depends less on reporting structure and more on an informal web of contacts. In the past, companies that encountered a loss of business like the one above might conduct a survey and interview employees to discover what went wrong. Now, IBM's On Demand Innovation Services is promoting an approach called social network analysis or SNA, which has been gaining currency among business consultants as an effective method for revealing the hidden connections that drive how work gets done.

Beyond the organizational chart

Social Network Analysis is a set of survey methods and statistics that reveals the hidden connections between people. The outcome of an SNA shows where collaboration is breaking down, where talent and expertise could be better used, where decisions are getting bogged down or where opportunities for innovation are being lost. The data give leaders the information they need to take actions: perhaps including making role and responsibility changes that would foster cross-group communications; developing methods for improving trust; using technology to reach others more effectively; or realigning reward and incentive programs.

Understanding how a company works used to be as easy as looking at an organizational chart. But in a networked organization (which most companies now are), the chart is no longer an adequate guide. Consider the following diagrams, ¹ which represent the production division of a large petroleum company (names have been changed):



The diagram on the left shows the organizational chart for a group within the company. The company's upper management undertook an SNA to find out how this group was preparing to

share important information; the result is shown in the diagram on the right. This representation shows that mid-level managers, particularly Cole, are playing a pivotal role in the group's communication network. Not only was Cole linked to many people, making him very central to the group, but he was also the only link between the cluster of people at the top, representing production, and the rest of the group, who were involved in other distinct yet critical activities. The SNA and additional interviews also revealed that the leader of the group, Jones, was not central in the informal network. Prompted by the diagram, the group undertook further investigations and learned that Jones had become removed from many of the day-to-day workings of the group. As a result of the SNA, upper management made significant changes to the group, including formalizing Cole's role.

Ties that help

The important ties between individuals or groups can be categorized in many different ways, each serving a unique and helpful role in the network.

- **Are ties direct or indirect?** A direct connection is the connection between two people. As we saw in the previous example, Cole had many direct connections in the network of people in exploration and production of the petroleum company. He was central in this network. Central people have more influence in their network, tend to receive better performance reviews, and be more satisfied with their jobs than people who are less central. Ties can also be indirect - as when two or more people are linked through intermediaries. This can be a positive role for the company - as when the intermediary is pivotal in linking between groups, as Cole does between the production and the rest of the group. Or negative - as when intermediaries block the flow of information.
- **Are ties strong or weak?** Strong ties are characterized by frequent interaction, feelings of closeness, and multiple types of relationships. For example, a strong tie may provide you with emotional support, job-related information, and a person to go see your favorite sci-fi movies with. On the other hand, it also requires a good deal of energy to maintain. A weak tie may not provide as much social support, but it is easier to maintain and can provide you with new information. Weak ties can be critical for innovation. For example, a researcher is much

more likely to learn about a line of relevant research in an otherwise unrelated field from a casual acquaintance than from a good friend. This is because good friends tend to have access to the same information whereas casual acquaintances tend to offer new information. In business settings, it is important to have a good balance between strong and weak ties.

- **Are ties one-way or two-way (reciprocal)?** When a tie goes in both directions, we think of it as being reciprocal. This is important because reciprocal ties are generally stronger than ties that only go in one direction. For instance, a group will generally function better when a key decision-maker is not only sought after for information and advice, but he or she also seeks information from the group. But one-way ties can be useful too - as when a novice approaches a recognized expert in the group, but he or she would not expect the expert to reciprocate.

Anatomy of an SNA

Group. An SNA is conducted with a group of people, typically between 25 and 150 at a time. The group could be as simple as a discrete workgroup, such as a distributed software development group or a sales team or the group could be a community of interest, the business unit in a single organization, or the leading companies in a particular industry.

Relationships. Ties can represent a range of relationship types. For example, a tie can indicate if one person likes, trusts, respects, reports to, communicates with, and/or gets information from another. Ties vary across relationships. There may be many ties under the awareness category, but very few ties for communicates with or trusts.

Attributes. There are often barriers to collaboration. For instance, the people who develop new products might not be speaking with the people who market and sell those same products; the people who work for a managing consulting company in France might not be sharing their client experience with the people in the U.S.; people who have been with the company for a long time might not be sharing their knowledge with new hires. If these important ties are not maintained, a company needs to know if it is just a few people or the group as a whole that is not working together? These generalized effects result from aggregating ties within and between attributes, such as business unit, geography, length of time in the company.

Applying SNA

The hypothetical management consulting firm scenario mentioned at the beginning of the article is a good example of a company that needs to improve its consultants' awareness of related projects. Before embarking on potentially costly organizational changes and other initiatives, the executive leadership should commission an SNA to study consultants who have been with the company for varying lengths of time, work in different geographies and different practices, and are at different management/employee levels. The results should demonstrate where information is not getting communicated.

Questions in the SNA might include: "How aware are you of the projects done by this person in the past 12 months?" and "How often does this person provide you with information you need to develop client proposals?" By looking at who was central in the awareness and information-sharing networks, IBM consultants could show the company which people the team tended to go to for information. By looking at how often people from each group interacted with each other, the SNA might reveal that consultants who had been with the company the longest tend to get information from each other; while newer employees only turn to each other for more information if they are located in close physical proximity. IBM consultants would then conduct follow-up interviews to find more in-depth information, such as if time pressures might be a reason that members of the team have few opportunities to develop relationships with newer employees or those in a different geography. The results of the SNA could give management the information they need to take corrective actions. For some clients with similar problems, ODIS consultants have recommended the following actions: initiating a mentor system to help new employees, coaching individuals to spend more time with people who are further away, sponsoring events several times a year to bring people together from different parts of the company, and developing an award program for any new engagements that are won as a result of existing relationships from outside the immediate team.

Business applications of SNA

- **Knowledge management and collaboration.** Help locate expertise, seed new communities of practice, improve cross-functional knowledge-sharing and strategic decision-making across leadership teams.
- **Team-building.** Facilitate post-merger integration or help

leaders identify how to structure teams for innovation or structure and manage distributed teams.

- **Human resources.** Identify and monitor the effects of workforce diversity, hiring practices and leadership development to improve on-boarding, retention, employee satisfaction and productivity.
- **Sales and marketing.** Speed or expand the adoption of new products, technologies or ideas as part of an overall communication strategy.
- **Strategy.** Support planning and strategy for engaging in partnerships and alliances.

By working with the informal networks, leaders have the tools to capitalize on the existing human capital within their company.

[Read the second article in a series on collaboration.](#)

¹ Cross, R., Parker, A., Prusak, L., & Borgatti, S.P. 2001. [Knowing What We Know: Supporting Knowledge Creation and Sharing in Social Networks](#). *Organizational Dynamics* 30 (2): 100 - 120

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