

Chapter 9

Analyzing Work Teams Using Social Network Diagrams

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ABSTRACT

Workplace teams are a common social structure that enables the successful completion of collaborative projects. They have been studied as “hot” teams, virtual ones, and other manifestations. For both management and team members, it is helpful to have a form of meta-cognition on teams to solve work team issues pre-, during-, and post-project. One way to systematize understandings of a work team is to apply social network analysis to depict the work team’s power structure, its functions, and ways to improve the team’s communications for productivity, creativity, and effective functioning. This chapter depicts three real-world team-based projects as social network diagrams along with some light analysis. This work finds that social network diagrams may effectively shed light on the social dynamics of projects in the pre-, during-, and post-project phases.

INTRODUCTION

Workplace teams are a particular kind of social network, with individuals serving particular professional and interpersonal roles. They originate out of a work-place context with an assumed alignment of objectives. The work teams are already an in-group for an ego node, with assumed

inclusion. There are defined functional roles within the teams. The practices of the organization and the definitions of the “proposal of work” suggest connections of the team in the larger context of the organization and even external entities outside the organization. Work places have defined “walks” for how resources, communications, and work proceed through a social network. There are hierarchies, and there are critical supervisory nodes where critical decisions have to be made. Based on workplace conventions, there are social

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expectations of particular roles—in terms of expected behaviors and obligations that are formal and informal. In the context of research, it helps to have some structural givens. The existence of defined work objectives may be used to assess the relative success of the team. Work-based teams provide fertile ground for social network analysis

In an academic context, such cross-functional teams are common across campuses. They exist in the university leadership hierarchy to solve particular problems; on various grant-funded projects; on event-planning committees; on multi-disciplinary course-building projects, and others. Because such teams are experienced on a lived level, the abstract depictions of social network diagrams may be further complemented by project narratives, which may reduce the intrinsic uncertainty of the data. Such analyses are essentially quantitative case studies. In that sense, it is important to realize that there is information that is “out of sample”—or beyond the scope of the research.

LITERATURE SURVEY

Social network diagrams, which depict entities and relationships, have been used for over seven decades in sociology and related fields, to understand human interrelationships and larger systems. Sociometry, the application of quantitative metrics to social analysis, involves the study of relationships among people usually using quantitative tools. They are used to enhance decision-making in political science, public health, law enforcement, ecology, organizational development, and other fields.

In higher education, they have been used to analyze the depth of intercommunications among members of online courses; to connect those with shared “intellectual pedigrees” (academic influences); to analyze curricular contents, and to illuminate domain and cross-domain publications. Social network visualization technology has much wider potential in application to higher education

in depicting the interrelationships on work teams that may enhance team member self-awareness, personnel management, and procedures.

The depiction of a social network diagram uses several essential elements. First are egos or nodes (a.k.a., actors, players, entities, vertexes), which represent individuals or groups in a social context. These egos or nodes are connected to each other through links (a.k.a., edges, lines), which depict the interrelationships in this network. The links may have arrows in a directed graph (“digraph”) or no arrows for a non-directed graph. Additional attributes may be defined for the various nodes and links. For example, if a node represents an individual, that individual’s demographic data, intellectual pedigree, workplace experience, or other aspects may be descriptors that help analysts understand how that individual may participate in the network. Further, link attributes may go beyond directionality to the amount of interactions between nodes (often depicted as link thickness or a link number).

Nodes and links are placed on a two-dimensional graph (with x and y axes). The centrality of a node shows the structured privilege of that node in the social network because of its thick ties to other links around it; the “degree” of that actor indicates its number of links to others and therefore its prominence in the particular network. A powerful node is a “fat node” because it has access to many in-degree (incoming) connections and resources, and it is thought to be able to magnify or amplify an effect through the network because of its popularity. A less powerful node is a “thin node,” because of its relative lack of connections (lower in-degree) and structural power. Thin nodes may also have higher out-degree than in-degree, with the assumption of a net loss of resources. Such thin nodes tend to be on the semi-periphery or periphery of a social network. Some may be “isolates” that are not connected to other nodes in a network, or they may be “pendants” that dangle with one link into a social network. Weak links (ties) have been found to be powerful to bridge

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