

# Problem-Solving Models for Social Network Relationships in Library Management: A Case Study of Sub-Groups at City University of Hong Kong Library

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## Abstract

Employing literature analysis, observation, and social network analysis, this study maps the interpersonal network relationships among library staff, encompassing organization-threatening subgroups, rigid organizational ties, and soft community connections. On this basis, it discusses the impact of informal communities on formal organizations. It is recommended that future human resource management utilize social network approaches to implement an integrated hard-and-soft strategy, thereby enhancing team cohesion, harmonious culture, and work efficiency within library teams.

## Full Text

### Abstract

**Keywords:** library management; crisis management; social network analysis; secondary groups; Hong Kong

**Abstract** Through literature analysis, observation, and social network analysis, this study maps the interpersonal networks among library staff, revealing three distinct patterns: organization-threatening secondary groups, rigid organizational structures, and flexible community relationships. Building upon this analysis, the paper discusses the impact of informal communities on formal organizations and proposes future application of social network methods for “hard-and-soft” human resource management to enhance team morale, harmonious culture, and work efficiency.

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Against the backdrop of streamlined (or increasingly stringent) staffing and budgets, diversified users and services, and dramatically increasing service demands, effective deployment of limited personnel to deliver multifaceted services has emerged as a new challenge for library management. In work environments characterized by limited resources and unlimited demands, the potential conflict between increased individual workloads and weakened organizational cohesion has become an urgent problem requiring identification and resolution.

Libraries in Hong Kong, Macau, and Taiwan face even more complex challenges. Like their mainland counterparts, they must confront these environmental changes and mounting work pressures. However, additional historical factors—including multilingual operations (formal documents in English, discussions in Mandarin, private conversations in Minnan or Cantonese dialects) and diverse staff identities (local, mainland, and foreign personnel)—have created complexity in established management systems. Furthermore, with relatively few library and information science programs in these regions (only one doctoral program), the ability to identify crises and opportunities in routine library work and apply scientific methods to solve practical problems has become a highly valued competency for graduates trained in mainland China.

In fact, the library and information science “knowledge toolbox” contains many developed tools that remain underutilized for solving practical library problems, with social network analysis being a prime example.

## 2 Research Status

Social Network Analysis (SNA) represents a sociological research orientation that examines structures through the lens of nodes and relationships. Recently, fields including physics, biology, and anthropology have absorbed and adapted SNA’s unique observational perspective, while mature SNA methods have gradually expanded their influence into additional domains. In fact, social networks have transcended sociological concepts and can be defined and extended through multiple interdisciplinary approaches. Relationship-centered social network research has made significant contributions to both theoretical and technical turns in contemporary sociology.

Regarding online user behavior, numerous SNA studies have emerged: Ye Xiandong et al. (2008) described and measured relationships among virtual community members and community structural characteristics, as well as the formation of member status and opinion leadership. Qiu Junping et al. (2008) employed network analysis, bibliometric citation analysis, and software tools like Pajek and Ucinet to analyze social network relationships among bloggers. Qin Xuejian et al. (2009) examined a class community on the image blog platform “Bababian.”

For organizational behavior analysis, notable studies include: Kuang Jinlin et al. (2009) discussing how social capital, social network relationship patterns, internal network structures, and structural holes influence corporate culture.

Cheng Peng (2009) exploring optimization methods for enterprise interpersonal relationship management to enhance human resource management value. Wu Xiaowei (2009) investigating how social network structures affect learning capabilities in competitive intelligence teams. Shan Wei et al. (2009) examining how network structures and characteristics influence tacit knowledge transfer within enterprises. Zhong Qi et al. (2008) empirically studying knowledge management optimization principles and methods from both “egocentric network” and “whole network” perspectives.

Most of these studies cite early works on social networks, such as Liu Jun (2006) advocating SNA methods for studying Chinese society with its particular emphasis on “relationships,” Ma Feicheng et al. (2006) researching social network models of knowledge transfer, and Cai Ning et al. (2006) studying industrial clusters. Similar community studies include Guo Liya et al. (2005) analyzing core athletes’ interaction patterns and interpersonal characteristics within sports teams.

However, as the saying goes, “water can carry a boat but also overturn it.” Social network expansion can sometimes undermine organizational efficiency. For instance, Zhu Tao’s (2009) research revealed negative relationships between emotional and informational relationships in social networks and organizational commitment—a key factor in internal marketing mechanisms. Nevertheless, as Gao Zhongjian et al. (2007) demonstrated, informal organizations within administrative structures differ from both market organizations and bureaucratic administrative organizations; they represent a networked form with unique network structures. Therefore, informal organization research should focus on network structures themselves and how to utilize them, rather than analogizing formal organizational social network relationships to explain negative impacts.

Earlier contributions of SNA to information science have been documented by Pei Lei and Ma Feicheng (2006), showing SNA’s promotion and application in information retrieval, information behavior, and informetrics, contributing to network knowledge discovery, scientific evaluation, network information behavior research, and knowledge management development. Wang Ping (2006) further proposed knowledge management applications. More recently, Wang Dan (2009), after systematically examining nearly all SNA tools, proposed new scientometric indicators for media roles.

However, empirical research applying SNA to solve library management problems remains relatively scarce. Nevertheless, as Zhang Shuren et al. (2006) argued, SNA can predict organizational evolution trends and enhance management consciousness; analyzing organizations’ external interaction networks can uncover role positioning, identify development opportunities, and implement strategic management. Yin Guopeng et al. (2006) also confirmed that SNA can provide quantitative analytical foundations and tools for organizations developing tacit knowledge management measures. Therefore, applying SNA to observe and study practical library management problems is feasible.

### 3 Research Design

Based on the literature review, this study designs a research framework encompassing concepts, questions, and methods.

**Research Concepts:** (1) Social network refers to a set of actors and the collection of various relationships connecting them (such as friendship, communication, and advice relationships). (2) Social network analysis is a structural method based on studying interactions among social actors. Social network research focuses on how actors' social relationship patterns influence their action outcomes.

**Research Questions:** (1) What forms do social networks take regarding job positions, administrative organizations, and communities? (2) If inter-departmental conflicts arise, how can social networks be opened to leverage community communication for resolution? (3) If personal conflicts arise, how can social networks be closed to utilize node control? (4) If departmental collaboration is needed, how can social networks concentrate resources to support a single department in achieving strategic goals?

**Data Collection:** Literature analysis method, using organizational relationship charts, community member lists, and community activity photos to calculate nodes (librarians) and ties (administrative and friendship relationships).

**Research Method:** Observation method, employing social network analysis techniques and Ucinet software.

Based on literature analysis, collected data were entered into spreadsheets, verified, and then visualized using Ucinet software to produce three charts.

#### 4.2 Rigid Organizational Relationships

Figure 2 [Figure 2: see original paper] reveals two key phenomena. First, the “lower-level group” on the right side has integrated into the main group—in other words, the clear divisions between “primary and secondary,” “lower and higher,” or “blue-collar and white-collar” have disappeared. Second, the central core managed by Steve on the left side has transformed, with many members previously outside the core joining it, while core members have also joined various departmental work groups. The central core persists, but its influence (and sphere of being influenced) has expanded. Except for KS, the intermediary roles of Diana and Teresa have diminished, while they now function more as gatekeepers. In other words, the former intermediaries no longer merely transmit commands and feedback but wield more significant influence over opening and closing social networks, as they serve not only as nodes but also as nodes for nodes (establishing communication bridges for librarians occupying structural holes).

### 4.3 Flexible Community Relationships

Based on the three charts, we discuss the research questions.

#### 5.1 Three Forms of Organizational Management

First, Figure 1 [Figure 1: see original paper] shows that if the organization operates strictly according to job requirements, the library would fragment into disparate, independent secondary groups. These isolated groups threaten organizational management efficiency. While this “laissez-faire” management approach appears harmonious, it actually reduces work efficiency.

If a strong administrative reporting and evaluation system with rules and hierarchical relationships is imposed above these groups, as shown in Figure 2, the management office composed of department heads functions like a central command post, connecting independent small groups. This effectively constrains most staff and enhances overall efficiency. However, this approach simultaneously creates divisions between primary and secondary groups.

Nevertheless, as discussed in the literature review, tightly knit social networks can produce both negative and positive effects. We now examine specific scenarios.

#### 5.2 Resolving Inter-departmental Conflict Through Community Communication

In daily operations, occasional inter-departmental competition arises, whether for higher positions and salaries or to reject new business and increased workloads, placing departments in constant competition. The key is ensuring this remains 良性竞争 rather than 恶性竞争.

If the library resembles Figure 1’ s fragmented state, such competition often stems from information environmental changes causing business transformations and “new” types of work. Past “laissez-faire, peaceful” management suddenly unites group members in resisting new demands and changes.

If the library resembles Figure 2’ s hierarchical system with primary/secondary groups, competition typically arises from performance contests for higher-level vacancies. When an outstanding team member is promoted, the original group loses “intangible returns,” motivating all sub-groups to compete fiercely for the single vacancy to ensure future work stability.

If the library resembles Figure 3’ s tightly integrated network, competition persists but conflict probability decreases because: (1) new business and increased workloads are shared across the entire library rather than borne by single departments, and (2) the tight network reduces secondary group importance. As everyone connects with others, the principle of “diversified investment to reduce risk” decreases absolute loyalty to sub-groups while increasing relative loyalty to the organization.

### 5.3 Controlling Personal Conflict Through Node Management

Conflicts sometimes erupt due to personal life factors or workplace friction—not physical altercations but unpleasantness, jealousy, slander, rumors, or gossip.

If the library resembles Figure 1, two scenarios emerge. First, conflicts within a secondary group cause “temporary” paralysis of that unit. Since a library is an organic whole, paralysis in one department leads to overall paralysis. Under Figure 1’ s structure, other groups cannot intervene, causing paralysis to spread sequentially until total collapse. Second, conflicts between different secondary groups create typical “departmentalism,” escalating personal conflicts into inter-group disputes.

If the library resembles Figure 2, personal conflicts are quickly contained but only superficially, creating two chronic problems. First, this administrative command management fails to address psychological issues, instead increasing work pressure. Second, such conflicts simultaneously increase pressure on key nodes like Steve, KS, Diana, and Teresa, creating a chronic condition: no change, no pressure, no conflict. Yet as noted in the introduction, user demands and administrative pressures on libraries continuously increase and cannot be avoided.

If the library resembles Figure 3, conflict’ s negative impact may diffuse faster and wider due to increased nodes and diffusion area. However, 零星冲突’ s influence gradually weakens because management can: (1) use Steve, KS, Diana, and Teresa’ s administrative authority to “hard” contain it; (2) leverage Lisa, Michollo, Jean, Germaine, Edmond, Rosa, Michael, Wilson, Henry, and Ruby’ s collaboration to “soft” persuade; (3) create new topics to shift attention; or (4) temporarily isolate serious conflicts like Figure 1’ s scenario, reopening networks after recovery.

### 5.4 Concentrating Resources Through Social Networks for Departmental Collaboration

High-quality work requires concentrating human and material resources on specific services through phased strategic goals to overcome limitations. This demands team collaboration rather than individual effort.

During examination periods, dramatically increased book borrowing and study room usage requires both more management staff and shelving support. Other departments have lighter workloads, so Figure 3’ s node influence can arrange cross-departmental support, whereas Figure 2’ s administrative commands prove ineffective while multiplying pressure on key nodes.

Similarly, during summer and winter breaks, reader services staff can support other departments. Strategies like “reference librarian-centered 2.0 services” or “special collections-centered development” require whole-library effort for optimal results, making team collaboration essential. Figure 2’ s structure creates

fragmentation and inefficiency, but Figure 3' s network enables coordination through key nodes and connections.

Modern library management trends toward streamlined staffing and budgets but increasingly diverse and multidimensional services. Only through “concentrating resources to achieve goals, shifting targets, then concentrating on the next goal” can collaboration enhance efficiency and reduce policy-induced workload pressure.

Using a cold weapons analogy, library management is shifting from massive heavy infantry to streamlined light cavalry for flexible tactical adjustment. Social network analysis provides a convenient tool to reduce central command pressure, decrease inter-departmental conflict probability, and coordinate phased strategic goals.

In summary, identifying core actors or bridge connectors allows grasping organizational dynamics. While this approach' s applicability across regions and organizations requires further practice and observation, it offers an effective pathway for humanized management and demonstrates the importance of applying scientific methods to practical problems.

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*Note: Figure translations are in progress. See original paper for figures.*

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