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Exploring Cohesion in a Thai Multinational Manufacturing Company: A Social Network Analysis Approach

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Abstract

This study explores the concept of "cohesion" within a multinational manufacturing company in Thailand that has recently undergone post-merger integration. Employing a quantitative approach and adopting a social constructivist epistemological stance, this research analyzes cohesion through the lens of social network analysis. Although conventional measures of cohesion (N=315 'ego-seeds'; n=21,416 ego-alter pairs) yield scores above the midpoint of the scale, our examination of network cohesion scores and network graphs at the organizational, group, and individual levels challenges the notion of cohesion in this case. We also investigate the strength of weak ties. Furthermore, the network graphs provide unique insights into participants' perspectives that are not captured by traditional research methods. The findings suggest that cohesion in this context requires not only work-related group connections but also social and inter-group associations and reciprocity at a broader organizational level. These insights advocate for the incorporation of theoretical models based on the social identity approach to enhance post-merger integration processes involving inter-group relations. By examining a post-merger integration case, this study contributes to our understanding of how to enhance cohesion as a desired outcome of successful mergers and acquisitions.

Introduction

Mergers and acquisitions (M&As) have fluctuated in recent years (Deloitte, 2023), but show a long-term increasing trend (IMAA, 2023). A key goal of M&As is the rapid integration into a cohesive organization that meets financial and strategic objectives (Cotton & Hart, 2003; Shook & Roth, 2011). However, the number of English research publications on organizational cohesion in the context of M&A remains disproportionate to the number of M&As occurring worldwide. While the number of M&As worldwide increased from an average of 28,000 cases to an average of 52,000 cases annually during the period between years 2002 and 2022, a search of English publications around 'organizational cohesion' and 'mergers and acquisitions' during the same period on Google Scholar yielded only between three and 11 articles annually. Notably, there is a lack of research on this topic in the context of Thailand. Publications addressing "organizational cohesion" in "mergers and acquisitions" are a very small fraction of the total M&A cases, particularly in Thailand.

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M&As reorganize two or more social groups into a "new entity," reshaping group membership and its meaning in relation to the pre-merger state (van Knippenberg, van Knippenberg, Monden, & de Lima, 2002). Therefore, studying the post-merger relationships between individuals from different groups is both relevant and necessary.

As Reffay and Chanier (2003) note, task completion is driven by cohesion, with cohesion and interaction reinforcing each other(Homans, 1950; as cited). A high degree of organizational cohesion leads to a high level of employee engagement (Getha-Taylor, 2009). Together with a network perspective of communications (De Jong & Zwijze-Koning, 2009), researching the success of M&As through interactions and cohesiveness (Park, Song, & Lim, 2016) is both timely and relevant.

Problem Statement and Objectives of Study

Given (a) the increasing trend of M&As, (b) the general lack of English-language research M&As in Thailand (Tharinee & McLean, 2014), (c) the limited research on organizational cohesion in the context of M&As,, and (d) a need to understand degree of integration from a network perspective, there exist a knowledge gap to enable successful M&As that result in cohesive organizations delivering desired outcomes in Thailand. Therefore, the objectives of this study are to (a) address this knowledge gap, and (b) enable human resource professionals to better navigate and guide M&As towards successful outcomes in Thailand. This study aims to explore the concept of 'cohesion' (see literature review section later) within a multinational manufacturing company in Thailand that has recently undergone post-merger integration. This exploration is conducted through the lens of social network analysis via the examination of network cohesion scores and network graphs at the organizational, group, and individual levels. The strength of weak ties is also analyzed.

Operational Definition

For an organization composed of interconnected individuals, cohesion refers to the sense of belonging and pride in group membership (Bollen & Hoyle, 1990), the collective desire to achieve shared goals, the willingness to form and maintain social ties, and the attraction to the group (Carless & De Paolo, 2000). The relationship structure is visualized through a social network map (Burt, 1992; Uzzi, 1999), allowing for a comparison between perceived cohesion and actual cohesion (Tulin, Pollet, & Lehmann-Willenbrock, 2018).

Literature Review

1. A Brief on Mergers and Acquisitions

M&As are expected to increase after a turbulent three years (Deloitte, 2023). Historically, only 25% of M&As have achieved their desired financial or strategic objectives over the past 30 years (Marks & Mirvis, 2010). However, 67% of respondents claimed success in acquisitions completed within the last three years (Harding et al., 2023) highlighting the continued importance of integration planning and execution (Deloitte, 2023).

Pitkethly, Faulkner, and Child (2003) proposed a continuum for measuring assimilation, ranging from 1 to 7, with 1 representing "not integrated" and 7 representing "fully integrated." This continuum can also reflect the impact of regulatory requirements (e.g., hold-separate mandates) or business strategies (e.g., brand retention) on the integration process. Additionally, it can describe the stages of post-merger integration. Deliberate and focused efforts to ensure assimilation and drive post-merger success (Chakravarty & Chua, 2012) are essential and should not be left to unfold naturally.

People are the centerpiece of any M&A and understanding the matrix of relationships within the organization is critical, particularly from a cohesion perspective (Chakravarty & Chua, 2012). Studies on community dynamics (Cohen, 2001) and ethnic groups (Barth, 1998) provide valuable insights into how individuals respond to M&As, where groups may be forced to abandon previous identities (e.g., Fischer et al., 2007). Examining social boundaries and categories-particularly in terms of how well different groups blend-can offer a deeper understanding of human dynamics in the context of an M&A (Cohen, 2001).

2. The Notion of Cohesion

In discussing group cohesion, it is crucial to understand the relationship between the 'self,' our interactions with others (their 'self'), and our interactions with the surrounding 'collectivities' (Jenkins, 2002). Figure 1 illustrates key points: (a) how individuals perceive themselves and those around them, (b) how social interactions influence the 'self,' and (c) how the 'self' is situated within a communal model. This communal model is interpreted from a social anthropological perspective (e.g., Tajfel, 1981, where 'collectivity' drives the three orders) and a social

psychological perspective (e.g., Barth, 1998, where the three orders describe the 'collectivity'). We argue that these interactions influence group cohesion; an individual's evaluation of their relationship with the group and its interactions impacts their sense of belonging and morale (Bollen & Hoyle, 1990; Halloran & Kashima, 2006).

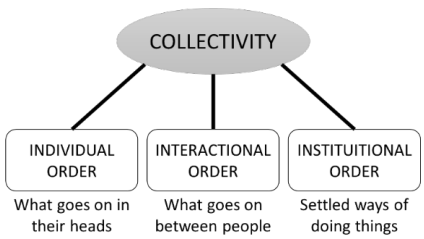


Figure 1 Interactions within a 'collectivity' according to Jenkins (2002, p. 19) and Goffman (1983).

Scholars have debated the distinctions between social cohesion and task cohesion (e.g., Siebold, 2007) and their impact on performance (Griffith, 2007). We follow MacCoun's (1993) definitions, where social cohesion refers to the sense of attachment and intimacy among group members, and task cohesion refers to a collective commitment to achieving common goals. Although various definitions exist (e.g., Etzioni, 1975; Zander, 1979), these terms provide a useful framework for understanding cohesion in this study.

Hogg and Abrams (1988) described the 'group' as analogous to the structure of a molecule, where "individual atoms are people and interatomic forces are interpersonal attraction" (p. 96). A view of such interpersonal attraction could provide insight to how teams blend in post-merger integration.

The variables of interest in this study include the sense of belonging, morale, individual attraction to group, social cohesion, and task cohesion. are variables.

3. Social Network Analysis

Social network analysis (Scott, 2017; Scott & Carrington, 2011; Wasserman & Faust, 1994) has advanced in the field of human resource and organizational development, although it has not yet become mainstream (Storberg-Walker & Gubbins, 2007). Social network graphs illustrate what Burt (1982) described as the social context in which (a) a member's position within the collective arrangement, (b) influences the member's thinking, and (c) the member's actions, which are in turn shaped by the collective arrangement, thereby (d) reinforcing the collective arrangement itself. This concept is visually similar to Figure 1 (Cartwright & Harary, 1956; Cartwright & Zander, 1953; Festinger, 1950).

Quantitative cohesion metrics (e.g., degree, density, distance, diameter) quantify the cohesiveness of relationships depicted in social network graphs, while the graphs visually represent how relationships around concepts such as 'belonging' or 'morale' manifest within a group of actors, based on data collected (Moreno, 1934).

The social network graph serves as both a system view and a theoretical model of interconnections and embodiment (Burt, 2005; Granovetter, 1973), making it highly relevant for understanding relationships between actors in an M&A, particularly in terms of collective coherence, given the tendency of individuals to be drawn together by similarity (Mirc, 2016). Through the lens of social network analysis, both quantitative and visual representations of post-merger integration emerge, illustrating the concept of 'collectivity' as shown in Figure 1.

Conceptual Framework

A conceptual framework, as shown in Figure 2 and established based on the reviewed literature, guides this study in achieving its objectives. Post-merger integration 'cohesion' is measured by (a) sense of belonging, (b) morale, (c) social cohesion, (d) individual attraction to group, and (e) task cohesion. These measures are analyzed through the lens of social network analysis, both quantitatively using network cohesion metrics and visually through network graphs generated from collected data. The analysis is performed at the organizational, group, and individual level. The strength of weak ties is also examined.

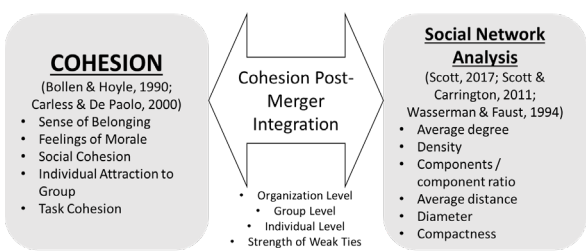


Figure 2 Conceptual framework applied to this study informed by literature review.

Research Design and Methods

A quantitative approach is employed to study the concept of 'cohesion' through network cohesion measures, grounded in a social constructivist epistemology (Adams, 2006; Berger & Luckmann, 1967). This stance assumes that participants' realities are shaped by social interactions and their perceptions of relationships within the group. The study is conducted as a case study (Yin, 2014) of a multinational manufacturing company that has recently undergone post-merger integration, using social network analysis to elicit and represent the relationships between actors This study has been approved by the Ethics Committee in Human Research from the authors' institution (certificate number: 2021/0038) as well as the management of the research targets.

1. Research Setting

Figure 3 shows a schematic representation of our research design. Social network graphs are created based on data collected within a multinational company that has undergone several M&A processes. Key quantitative descriptors of the social networks are calculated. Visualization (see Herz et al., 2015) is used to understand (a) the structure (cohesion), (b) importance of actors relative to each other, and (c) the meaning of ties within the network (Froehlich, 2020).

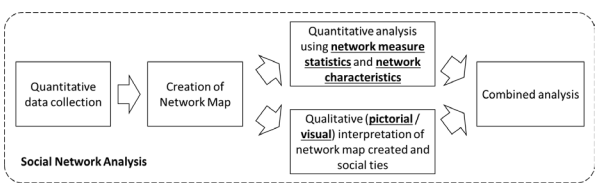


Figure 3 Schematic representation of research design consisting of quantitative data collection and analysis of data and visual interpretation of result; adapted from Froehlich (2020, p. 128, Figure 11.1)

2. Case of Interest

The two research-target manufacturing sites in Thailand both have a history of M&A activity, as summarized in Table 1. Figure 4 highlights key milestones involving these two sites. Initially brought together through an M&A in 2012 (referred to as 'Co. A + Co. C' in Figure 4), no merger occurred due to a regulatory 'hold separate' order until 2014. Even after the merger commenced, the two manufacturing sites continued to operate separately, as they produced goods for distinct market segments. Consequently, no integration was necessary, and business continued as usual.

In 2016, the parent company (Co. A1) acquired another company, forming Co. A2 (see Figure 4). The two Thai manufacturing sites did not consider merging until 2019 with the launch of the 'One Thailand' initiative. They remained separate legal entities until 2021, when full integration began following their merger into a single legal entity. The post-merger integration process of these two sites was only completed in 2023—more than a decade after the initial acquisitions in 2012. At the time of this study, the senior management team at both sites, as well as at the corporate level, consisted of individuals from Co. C (the company acquired in 2012).

3. Participant Selection

This study aims to assess the state of post-merger integration by examining cohesiveness within a multinational manufacturing company in Thailand. The goal is to analyze interactions based on participant responses. Participant selection is guided by the following criteria:

(a) Participants from both manufacturing sites (A1 and B in Figure 4). As post-merger integration involves employees from both sites, it is essential to examine 'cohesion' across both locations.

(b) Participants engaged in roles requiring regular interaction with the other site (e.g., engineering). This helps to assess cohesion from the perspective of cross-site collaboration and how teams work together to solve problems on a daily basis.

(c) Participants proficient in English. To avoid the need for back-translating surveys into Thai and to minimize misinterpretation of the questions or their intent.

(d) Participants from senior management, middle management, and professional levels. This stratification is intentional to capture insights from varying perspectives and to analyze social network graphs (e.g., manager-professional connections, manager-manager connections). This group forms the sampling frame for the study.

(e) Participants representing diverse demographic profiles (e.g., age, gender, tenure, ethnicity, citizenship).

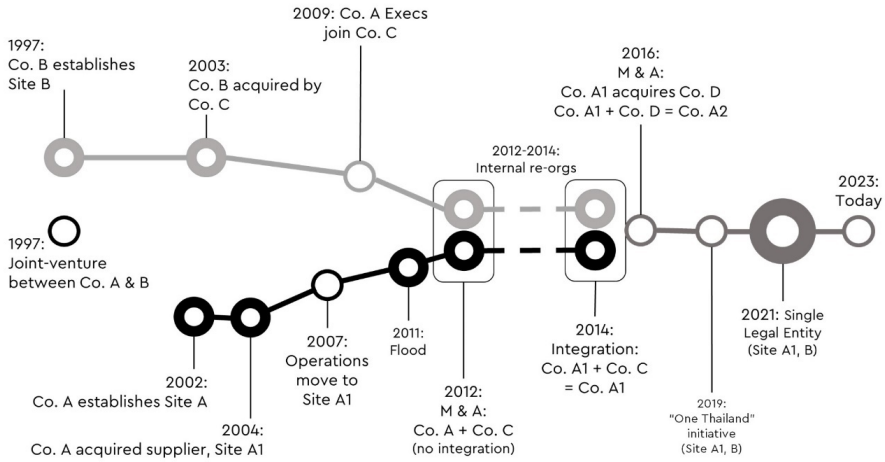


Figure 4 Schematic representation of the history of M&As of Company A involving the two manufacturing sites (research target) in this study. Reconstructed from company profile and archive documents.

Table 1 Key activity milestones and M&A activities of case of interest in this study.

Period	Era	Key Activities	M&A
2002 – 2007	Vertical Integration	Industry-wide vertical integration of key suppliers into business.	Co. A acquired key component suppliers; expanded into new region(s) through acquisition(s).
2002 – 2014	Market consolidation	Consolidation of major players in the industry.	Co. B acquired by Co. C (2003) Co. C acquired by Co. A; Co. A partially divested to another competitor as part of the M&A (2012)
2015 – 2023	Growth / decline cycles	Consolidation of product technology and re-focus on market.	

4. Sampling

Table 2 presents the population (N=1038), divided into three role-based strata, which form the sampling frame for selecting random "ego-seeds" and valid participants. We proposed a bounded study design, concluding when the target sample size of n=300 (minimum n=281; see Cohen, 1992; Granovetter, 1976) was reached (Heckathorn & Cameron, 2017). Purposeful "snowball" sampling (Frank, 1979, 2011), more accurately termed "link-tracing" (Heckathorn & Cameron, 2017), was employed. In this method, participants nominate the next individuals to be surveyed based on existing network links (Spreen, 1992).

"Link-tracing," initially proposed by Coleman (1958) and Goodman (1961), investigates how social networks are organized (Heckathorn & Cameron, 2017). This differs from the non-probability "snowball" sampling commonly used in qualitative studies (Goodman, 2011; Heckathorn, 2011). We initiated the "link-tracing" process with 20 randomly selected participants from each stratum in Table 2 as "ego-seeds" (Kowald & Axhausen, 2012). These 60 participants comprised the first "wave," who then nominated participants for the subsequent wave, continuing until the target sample of 300 participants was reached. If a wave ended before reaching the target of 300 participants, a new wave of 20 randomly selected (non-duplicate) individuals from the sampling frame would be initiated as "ego-seeds" to restart the process. Nominated participants outside the sampling frame would not be asked to nominate others and would not count toward the target sample. This process is illustrated in Figure 5.

Table 2 Level, role, and population size of the sampling frame of target participants of this study; total population size N = 1038.

Staff Level	Role / Position	Population
S1: L112, L111, L110	Senior Management staff (directors, senior directors, and vice-presidents)	43
S2: L109, L108	Middle management (manager, senior manager)	515
S3: L107	Working professional or first line supervisor	480

5. Data collection

Content validity of the instrument was confirmed using item-object congruence (IOC) by a panel of five lay experts (Gable & Wolf, 1993) and found to be congruent to what they intended to measure. IOC was performed before the instrument was deployed for data collection.

Data was collected using a network survey. The instrument consisted of five item-questions (see Table 3). For each of the item-questions, the participant

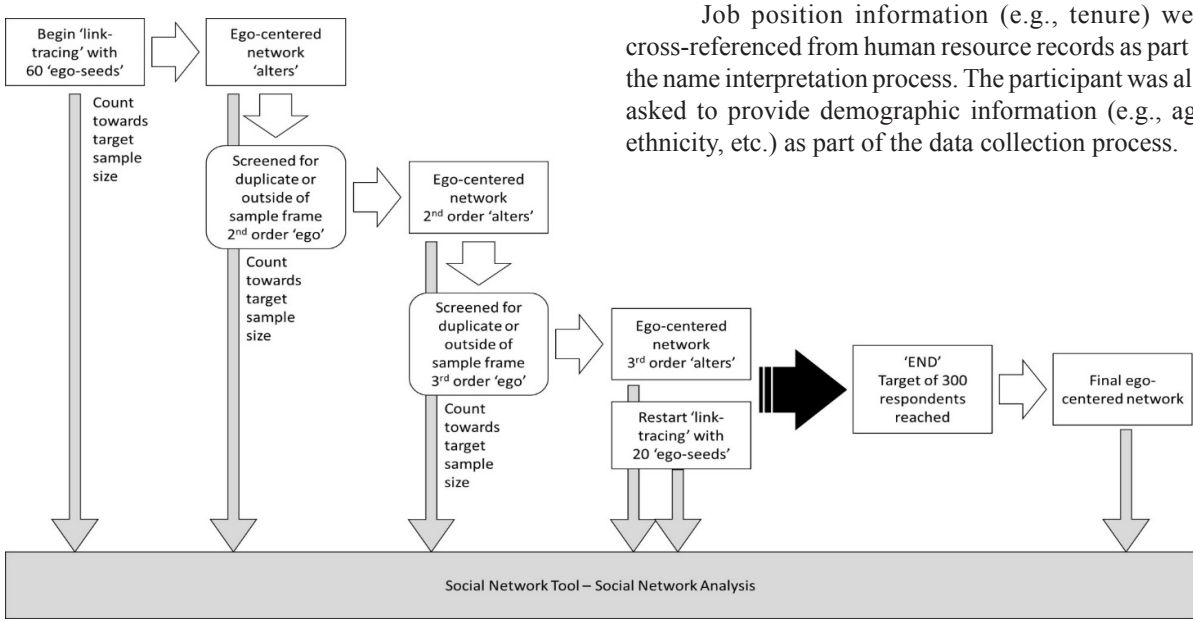


Figure 5 'Snowball' process for quantitative data collection based on 'ego-centered' networks.

names a minimum of five people whom they can relate specifically to in the context of the item-question (Mirc, 2016). This formed the name generating feature of the network survey. The participants were also asked to input a measurement for each named individual in a six-point Likert scale (1 = strongly disagree, 6 = strongly agree). We also surveyed proximity between participants and named individuals using the Inclusion of Other in the Self Scale (Aron et al., 1992), a single item, visual measure of perceived relatedness between two persons (see Figure 6).

A participant receiving the network survey was asked to:

(a) Complete the survey consisting of five item-questions. Participants are allowed to skip any question that they are not comfortable responding to.

(b) For each question they are comfortable responding, provide a list of names of at least five people whom they associate with the item-question.

(c) For each of the names input an item score on a six-point Likert scale in relation to the item-question. The participant is also allowed to skip scoring any of the names if they feel uncomfortable doing so.

(d) For each of the names input a proximity score (Figure 6) of perceived relatedness. The participant is also allowed to skip scoring any of the names if they feel uncomfortable doing so.

Job position information (e.g., tenure) were cross-referenced from human resource records as part of the name interpretation process. The participant was also asked to provide demographic information (e.g., age, ethnicity, etc.) as part of the data collection process.

As the risk of non-completion increases with fatigue of naming individuals, it was only possible to include selected items with the highest factor loading; see Table 3 for details.

Table 3 Level, role, and population size of the sampling frame of target participants of this study; total population size N = 1038.

Item	Question	Measure
Q1	I feel that I am a member of a team with (name)	Belonging
Q2	I am excited to be working with (name)	Morale
Q3	For me, being with (name) in a team is one of the most important social groups to which I belong	Individual Attraction
Q4	I would like to spend time together with (name) outside of work	Social Cohesion
Q5	(Name) and I are united in trying to reach the organization's goals for performance	Task Cohesion

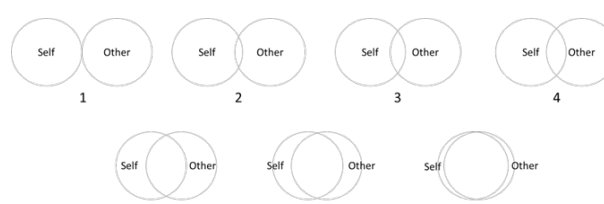


Figure 6 The Inclusion of Other in the Self (IOS) Scale (Aron et al., 1992) adapted to a seven-point Likert scale to measure perceived closeness between two actors; adapted from Aron et al. (1992, p. 597, Figure 1) and Aron et al. (2004, p. 107, Figure 5.1).

6. Data Analysis

Data was analyzed using UCINET 6 (Borgatti, Everett, & Freeman, 2002) and visualized using Netdraw 2 (Borgatti, 2002).

Results and Findings

Scholars have previously debated the shift between different levels of analysis within a study (compare Moul, 1973, to Singer, 1961, for and against, respectively). Social network analysis provides multiple levels of analysis, specifically in (a) describing, (b) explaining, and (c) predicting functions as posited by Singer (1961). We will discuss findings on relation pair responses (Table 4) at the (a) organizational, (b) group, and (c) individual levels. Where item responses were received, basic descriptive statistics were calculated (Table 4). Overall, the results are positive and above the mid-point on the respective Likert scales. Table 4 shows that while participants provided names, they did not always provide scores for those individuals. The standard deviations for responses to item and proximity measurements for Q2 and Q4 are higher than for the other item-questions, indicating a wider range of responses (i.e., spanning the full Likert scale). The item-question responses also captured bipolar affect (Russell & Carroll, 1999). Similarly, the standard deviation for the proximity of relationship measurement across all item-questions (Q1 to Q5) is relatively high, suggesting a wide range of responses. Given that proximity is based on perceived relatedness, it is likely to elicit bipolar affect.

1. Organization Level Cohesion

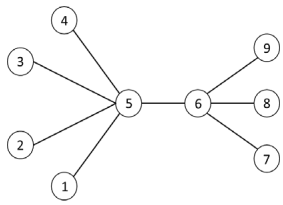
A key network statistic is network cohesion, which describes how closely connected actors are. Network cohesion, as measured by items targeting the construct "cohesion," offers an alternative perspective to conventional survey statistics. The network cohesion measures and their corresponding interpretations are summarized in Table 5 (for a detailed mathematical explanation, see Carrington et al., 2005; for applications in social behavior, see Makagon et al., 2012). A directed graph approach was used to distinguish actor A's orientation toward actor B and vice versa (Scott, 2017).

Table 4 Overview of response to study for the construction of social network graphs and descriptive statistics for responses to the item-question collected in the study.

Item	Elicited Relation Pairs (Social network ties)		Survey Data Collected (Response pairs)		Response to Item (Ego-Alter pairs)			Proximity of Relationship (Ego-Alter pairs)		
Respondents	Responses	Respondents	Responses	Responses (N)	Mean	Std Dev	Var	Mean	Std Dev	Var
Q1	303	1978	298	1948	5.27	.84	.71	5.25	1.23	1.51
Q2	292	1714	287	1684	5.01	1.02	1.04	4.97	1.47	2.17
Q3	295	1928	288	1883	5.28	.89	.79	5.28	1.28	1.63
Q4	245	1510	240	1486	4.89	1.18	1.40	5.14	1.41	1.99
Q5	301	2041	295	2016	5.38	.82	.67	5.24	1.34	1.80
	315	21824								

Table 5 Directed network cohesion statistics describing how well nodes are connected for items under the construct 'cohesion' and corresponding interpretation.

Statistic	Q1	Q2	Q3	Q4	Q5	Interpretation
Number of nodes	1100	1018	1090	975	1108	
Number of ties	1922	1657	1859	1453	1965	
Average Degree	1.747	1.657	1.706	1.490	1.773	Less than two connections per actor; low cohesion
Density	0.002	0.002	0.002	0.002	0.002	Near 0.0, indicating isolation; low cohesion
Components	955	932	951	885	976	Mid-high, 50% to 61% of ties; low cohesion
Component Ratio	0.860	0.915	0.872	0.908	0.881	Near 1.0, indicating isolation; low cohesion
Size of Largest Component	77	57	95	53	71	Low, 5.4% to 8.7% of ties; low cohesion
Proportion	0.070	0.056	0.087	0.054	0.064	
Average Distance	7.398	7.331	7.469	6.257	5.841	Low, indicating smaller groups; low cohesion
Std Dev Distance	3.710	3.873	3.387	3.185	2.675	
Diameter	21	18	19	18	15	Low, indicating isolation; low cohesion
Compactness	0.008	0.007	0.009	0.006	0.007	Near 0.0, indicating small cliques; low cohesion



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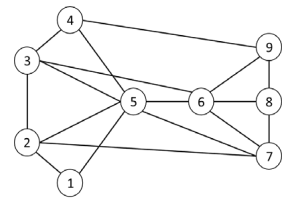

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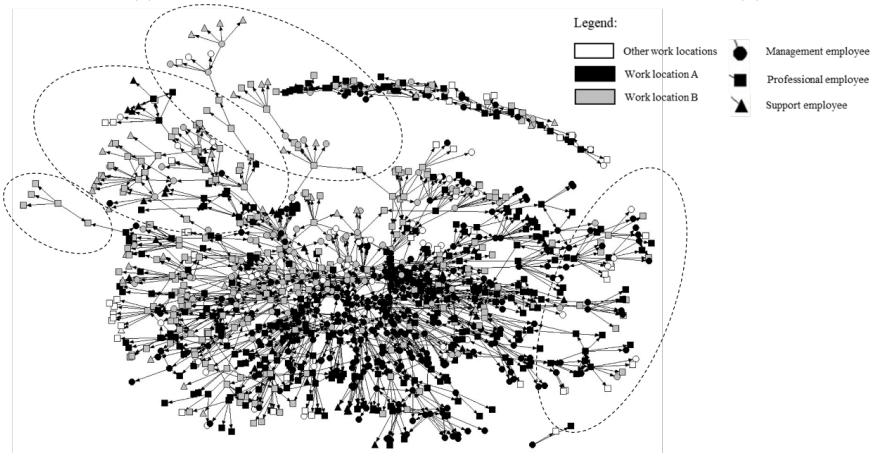

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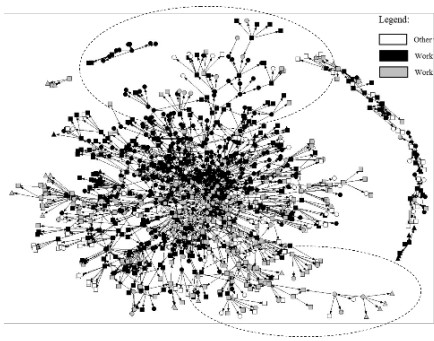

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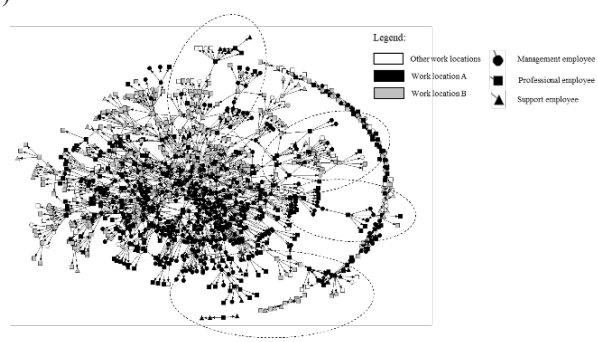

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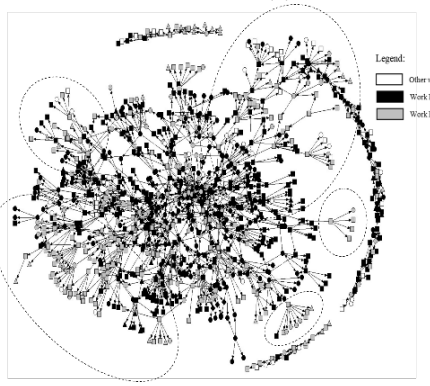

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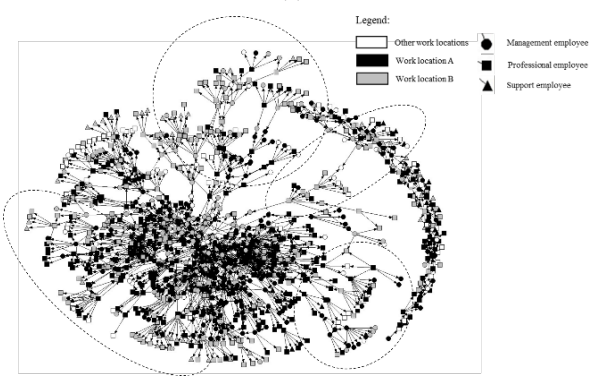


(g)

Figure 7 (a) Example of low cohesion network, (b) example of high cohesion network, and network graphs elicited from data collected for measures (c) 'belonging', (d) 'morale', (e) 'individual attraction', (f) 'social cohesion', and (g) 'task cohesion'.

All five measures of "cohesion" reveal network statistics indicating low cohesion (Table 5). While conventional descriptive statistics (Table 4) appear positive, the network cohesion measures (Table 5) show low levels of cohesion, contradicting the notion of cohesion in this case.

Five network graphs were analyzed for cohesion characteristics (Figure 7, panels (c) through (g)). The visual criterion for assessing cohesion is demonstrated in Figure 7(a), which illustrates a topology with "low cohesion," and Figure 7(b), which illustrates a topology with "high cohesion." In panels (c) through (g) of Figure 7, encircled areas highlight examples of "low cohesion" topologies. The more prevalent these "low cohesion" groups (as in Figure 7(a)), the lower the network cohesion metrics. For instance, Figure 7(c) shows four "low cohesion" groups, Figure 7(d) shows two, Figure 7(e) shows four, Figure 7(f) shows five, and Figure 7(g) shows four. These visual observations support the low cohesion conclusion drawn from Table 5.

A secondary visual criterion involves the mix of colored shapes, where colors represent different work locations. A balanced mix of colors within a group suggests equal participation across locations, contributing to the concept of "cohesion," though it may not necessarily improve the network cohesion measures. As seen in Figure 7(c), the same colors cluster together within the "low cohesion" groups, indicating limited mixing between work locations, further supporting the conclusion of low cohesion. Similar patterns can be observed in Figure 7 panels (d) through (g).

Two key observations emerge from examining Figures 7(c) through 7(g): (a) the networks consist of connected clusters, rather than forming one large cluster, and (b) the clusters are predominantly of the same color (gray or black), with little mixing. For cohesion to be achieved, connections should form a larger cluster, and the colors (work locations) should be more mixed. This explains the low cohesion measures observed and the final conclusion. Encircled areas within the graphs highlight characteristics inconsistent with "cohesion."

2. Group Level Cohesion

We next examined the groups with the highest group degree centrality (i.e., non-group actors connected to the group). The cohesion measures and their interpretations are presented in Table 6. Although some cohesion traits were observed (see Table 6), the results generally indicate low cohesion. Consequently, the network cohesion measures do not support the thesis of cohesion for the group with the highest group degree centrality in this case.

Five network graphs for the groups with the highest group degree centrality were reviewed for cohesion characteristics (see Figure 8). In Figure 8, panels (a) through (e), the encircled areas highlight examples of "low cohesion" topologies. Figure 8(a) shows three examples of "low cohesion" groups, where most actors from the same site connect primarily with each other (groupings of similarly colored shapes), indicating a low mix of participants and, therefore, low cohesion. This pattern is consistent in Figure 8(b), which shows three examples of "low cohesion," Figure 8 (c) with four, Figure 8 (d) with three, and Figure 8 (e) with three. A low mix of different colored shapes visually indicates low cohesion.

Three key observations emerge from reviewing Figure 8:

(a) While actors connect across different sites (e.g., black-colored versus gray-colored shapes, as in the sequence EE-4808 → EE-4798 → EE2565 in Figure 8 (a)),

Table 6 Directed network cohesion statistics for groups identified with the highest group degree centrality and corresponding interpretations.

Statistic	Q1	Q2	Q3	Q4	Q5	Interpretation
Number of nodes	82	138	133	95	121	
Number of ties	181	260	256	188	292	
Average Degree	2.207	1.884	1.925	1.979	2.413	Average two connections per actor; low cohesion
Density	0.027	0.014	0.015	0.021	0.020	Near 0.0, indicating isolation; low cohesion
Components	50	107	93	63	78	Mid-high, 53% to 70% of ties; low-mid cohesion
Component Ratio	0.605	0.774	0.697	0.660	0.642	> 0.5, indicating some isolation; low-mid cohesion
Size of Largest Component	33	32	41	33	44	Low, 12.3% to 18.2% of ties; low cohesion
Proportion	0.402	0.232	0.308	0.347	0.364	
Average Distance	3.862	4.455	5.124	4.125	4.154	Mid, indicating mid-sized groups; mid cohesion
Std Dev Distance	1.724	2.097	2.339	1.840	1.641	
Diameter	10	10	10	9	8	Low, indicating isolation; low cohesion
Compactness	0.163	0.102	0.111	0.139	0.140	< 0.20, indicating small cliques; low cohesion

(b) These actors are primarily management staff (represented by circle shapes),

(c) The other actors connected to these individuals are mostly from the same site (e.g., EE-4034 in Figure 8(b), EE-3157 in Figure 8(c)). The encircled areas highlight characteristics that contradict overall cohesion.

In summary, the visual evidence from Figure 8 and the numerical data in Table 6 do not support the presence of cohesion in the groups identified within the broader organizational context.

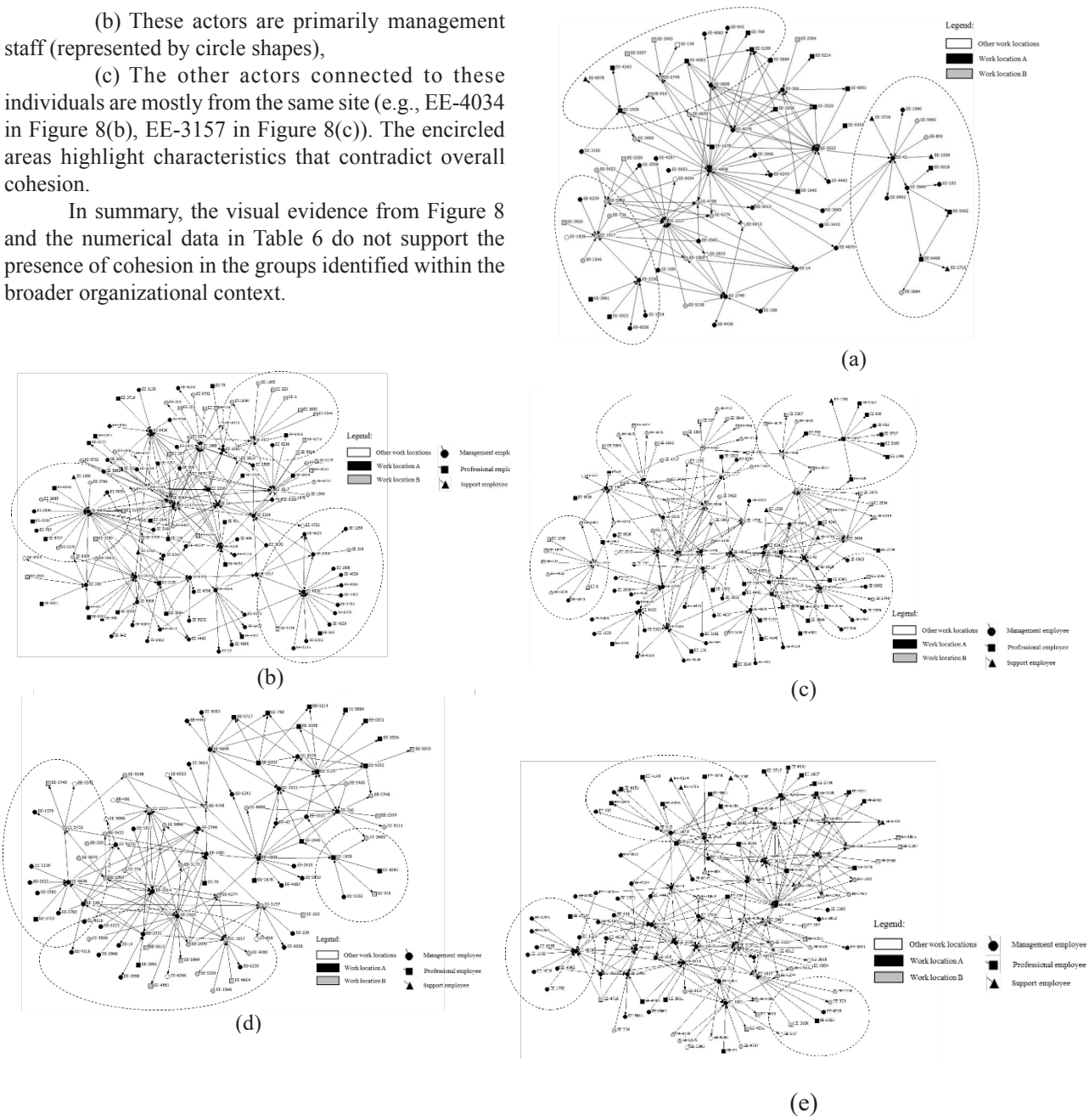


Figure 8 Network graphs elicited for actors included in groups with highest degree centrality for measures (a) 'belonging', (b) 'morale', (c) 'individual attraction', (d) 'social cohesion', and (e) 'task cohesion'.

3. Individual Level Cohesion

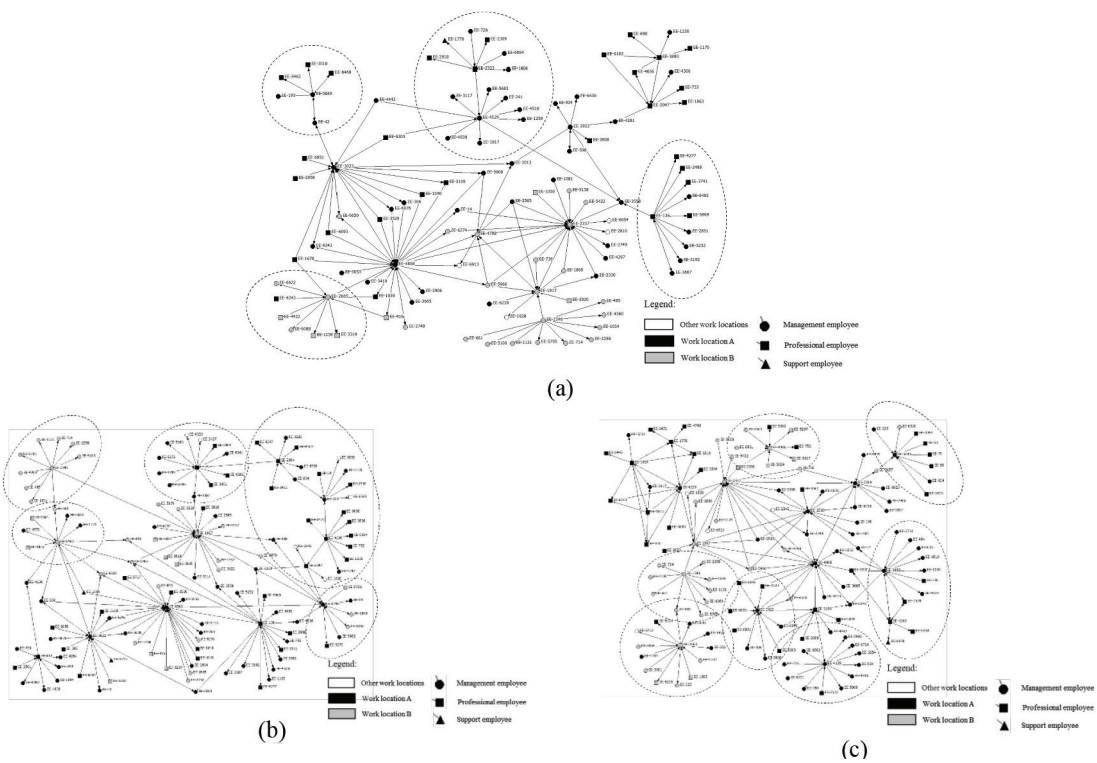
Lastly, we examined connected individuals with high scores on network parameters (e.g., centrality measures). The cohesion measures and their interpretations are summarized in Table 7. Based on Table 7, we conclude that "cohesion" is not numerically evident among well-connected individuals.

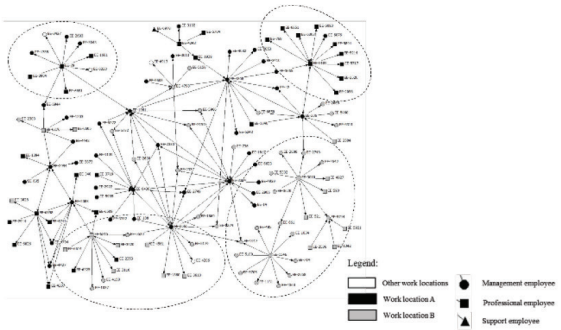
Table 7 Directed Network Cohesion Statistics and Corresponding Interpretations for Key Participants Identified with High Scores in betweenness centrality, closeness x5centrality, degree centrality, disruption to reach, contribution to fragmentation, and contribution to distancing.

Statistic	Q1	Q2	Q3	Q4	Q5	Interpretation
Nu Number of nodes	170	212	159	169	217	
Number of ties	244	268	239	238	299	
Average Degree	1.435	1.264	1.503	1.408	1.378	Low, less than two connections per actor; low cohesion
Density	0.008	0.006	0.010	0.008	0.006	Near 0.0, indicating isolation; low cohesion
Components	138	187	126	141	173	Mid-high, 53% to 70% of ties; low-mid cohesion
Component Ratio	0.811	0.882	0.791	0.833	0.796	> 0.5, indicating isolation low cohesion
Size of Largest Component	18	22	26	23	28	Low, 7% to 10.9% of ties; low cohesion
Proportion	0.106	0.104	0.164	0.136	0.129	
Average Distance	3.956	4.285	4.677	3.851	4.734	Mid, indicating mid-sized groups; low-mid cohesion
Std Dev Distance	2.142	2.311	2.319	1.922	2.277	
Diameter	11	11	11	9	11	Low, indicating isolation; low cohesion
Compactness	0.038	0.025	0.050	0.032	0.032	Near 0.0, indicating small cliques; low cohesion

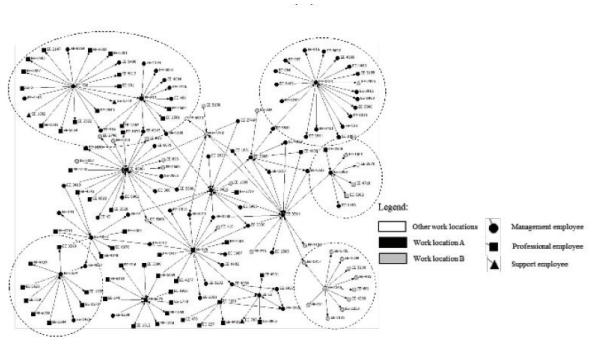
Five network graphs of actors with the highest centrality and other network parameters were reviewed for cohesion characteristics (see Figure 9). As in the previous sections, Figure 9, panels (a) through (e), highlight "low cohesion" groups in the encircled areas. Figure 9 (a) shows four examples of "low cohesion" groups, Figure 9 (b) shows five, Figure 9 (c) shows seven, Figure 9 (d) shows four, and Figure 9 (e) shows five. In fact, most of the groups in each panel of Figure 9 exhibit "low cohesion" topologies.

It becomes immediately apparent from Figure 9 that the immediate connections to central actors (at the center of the groups) are primarily from the same work location, with few exceptions (indicated by similarly colored shapes connecting to each other). This suggests that participants focused on relationships within the same work location, despite having worked with members from different locations (as per the participant selection criteria). At the individual level, the social network graphs indicate "high cohesion" among actors within the same workgroup or location. However, the lack of connections





(d)



(e)

Figure 9 Network graphs elicited for actors with highest network parameters for measures (a) 'belonging', (b) 'morale', (c) 'individual attraction', (d) 'social cohesion', and (e) 'task cohesion'.

between these tight-knit clusters and across the broader group indicates "low cohesion" at the organizational level. This insight might not be revealed in a conventional quantitative study focused on statistical responses.

While Figure 9 and Table 7 might visually and numerically suggest "cohesion" within workgroups (i.e., between individuals), the findings do not support cohesion in the broader organizational context.

4. The Strength of Weak Ties

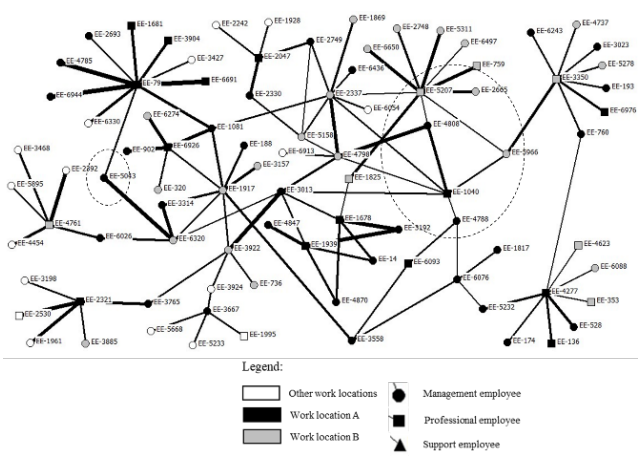
Network graphs visualized using proximity responses were reviewed, highlighting the strength of ties, indicated by the thickness of the connections (see Figure 10). Strong ties represent high levels of social involvement, while weak ties indicate lower levels of interaction. Weak ties—such as acquaintances or informal relationships—may not seem important in a network or workflow, but they actually serve as "bridges" between close-knit groups that would otherwise be isolated from one another (Granovetter, 1973, 1983).

Examples of weak ties, such as EE-5207 to EE-4808, EE-1040 to EE-4788, and EE-79 to EE-5043 in Figure 10 (a), and EE-2337 to EE-3314 in Figure 10 (b), illustrate the crucial role these "bridges" play in streamlining workflows within the organization.

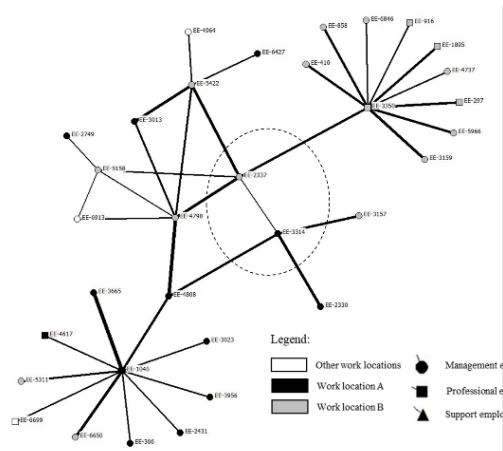
Discussion and Implications

Social network analysis provides insights into how individual (micro-level) interactions relate to broader organizational (macro-level) patterns (Granovetter, 1973). This analysis reveals the following key insights:

(a) Actors serve as "bridges" between groups, facilitating workflows and access to resources across the network, including different work locations (denoted by color). For example, actor EE-4737 (gray) acts as a bridge between EE-1081 (black) and EE-3350 (gray) in Figure 8 (c).



(a)



(b)

Figure 10 Network graphs elicited using proximity scores for (a) 'morale' and (b) 'individual attraction' to illustrate the contribution of weak ties.

(b) Actors are part of a larger network than they might realize. This insight could encourage deeper collaboration and workflow optimization across the organization. For instance, in Figure 9(a), actors EE-4442 (black) and EE-6303 (black) bridge EE-3023 (black) and EE-4129 (black), who connect with EE-3558 (black), who in turn connects with EE-2337 (gray), EE-5955 (gray), EE-4808 (black), and back to EE-3023 (black).

(c) The critical role of weak ties as "bridges" (see Figure 10) should be emphasized.

However, the network graphs also reveal the following limitations:

(a) Actors often focus on their immediate work scope and colleagues, reflecting cohesion at the work-group level rather than across the organization. For example, actors EE-3023 and EE-4808 in Figure 9(a) are supervisor and subordinate, and their connections are also limited to others in the same work function, as verified through human resource records. This impacts network cohesion measures.

(b) Actors are more connected with others from the same work location rather than across locations. Examples include EE-4939 (black) in Figure 8(b), EE-3157 (gray) in Figure 8(c), EE-136 (black) in Figure 9(a), and EE-1546 (gray) in Figure 9(b). While network cohesion measures remain unaffected, visual interpretations of cohesion from the social network graphs suggest otherwise.

In summary, the current research shows a lack of cohesion within the case study, addressing our research question. Notably, being well-connected does not necessarily equate to cohesion based on social network analysis. True cohesion requires broader connections across the organization. However, the network measures analyzed in this study do facilitate the transfer of information and knowledge within the organization (Lechner, Frankenberger, & Floyd, 2010; see Figure 11).

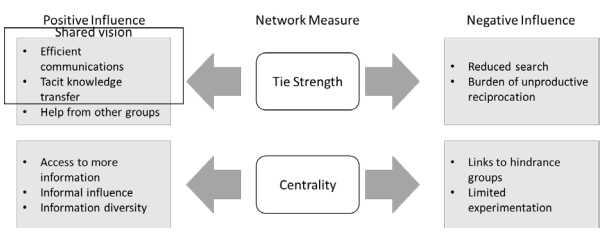


Figure 11 Pros and cons of relations in a social network; adapted from Lechner et al. (2010, p. 872, Figure 1)

1. Implications for Theory and Human Resource Development

This study has demonstrated that social network analysis provides valuable insights into organizational cohesion. Human resource professionals involved in post-merger integration efforts could consider utilizing social network analysis to assess integration progress and implement targeted interventions. Influencers, particularly those in bridging roles, can be identified to assist in the assimilation of groups. Weak ties, often overlooked, may reveal key influencers who can facilitate this process.

Additionally, human resource professionals could leverage frameworks like CIIM or SIDE to establish a super-identity linked to community engagement, enhancing employee experience or guiding the design of job advertisements and interview processes for potential hires. Frameworks such as IPM or UIT could be used to initiate dialogue or inform change management interventions.

The evidence points to several theoretical frameworks based on the social identity approach (Tajfel & Turner, 1979; Turner et al., 1987), as summarized in Table 8. These frameworks are relevant for (a) explaining the nuances observed in this study, (b) enhancing the study in future research, and (c) developing human resource development (HRD) programs to improve organizational cohesion in the context examined.

Table 8 Summary of theories that are relevant to the case of interest.

Theoretical Model	HRD Focus
Common Ingroup Identity Model (CIIM; Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993)	Building an overarching / higher order 'identity' to reduce intergroup prejudice (e.g., 'One Thailand' initiative, Figure 4).
Ingroup Projection Model (IPM; Wenzel, Mummendey, & Waldzus, 2007)	Projecting a group's strength (e.g., business orientation) as higher order identity to boost value of all groups but be aware of discrimination versus a higher sense of belonging.
Social Identity model of Deindividuation Effects (SIDE; Postmes, Spears, & Lea, 1998)	Preventing / addressing anti-social behaviors developed due to anonymity under group identity; reducing the division would reduce intergroup conflict.
Uncertainty-Identity Theory (UIT; Hogg, 2007)	Establishing well-being and psychological safety identity to reduce fear of uncertainty.

2. Limitations and Recommendations for Future Research

This study focused on participants from a single case, which limits its context and generalizability. The authors recommend expanding the research to other

M&A cases in Thailand to enhance generalizability. Additionally, the application of social network analysis could be extended to other constructs relevant to M&A success, particularly those supported by social theories outlined in Table 8. Thirdly, this study was conducted during the COVID-19 pandemic, which may have had a mediating effect (Cruwys et al., 2020; Haslam et al., 2021; Jetten et al., 2020). The authors suggest repeating the study longitudinally to gain a more comprehensive understanding.

Conclusion

Social network analysis was employed to assess the state of cohesion in the case of a multinational manufacturing company in Thailand undergoing post-merger integration. While network cohesion measures presented a different, and generally negative, perspective compared to conventional survey statistics, they provided valuable insights at three levels of analysis, contributing to a deeper understanding of organizational cohesion in the context of M&A.

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