

TYPES OF INTRA-ORGANIZATIONAL NETWORKS AND UPWARD STRATEGIC COMMUNICATION

TOSHIHIKO KATO^{*}, TSUYOSHI NUMAGAMI^{*}, AND MASARU KARUBE^{**}

Abstract

This paper explores the relationships between intra-organizational networks and information flows using survey research from 137 business units of established Japanese firms. We focus specifically on the upward flow of strategic information from the middle and operational levels, and mainly examine the relationships between intra-organizational networks and upward information flow. The results reveal that an increase in the number of superiors who must be persuaded of an initiative's merits is highly detrimental to strategic information flow within an organization, whereas support from superiors tends to increase information flow. Based on these results, we contend that the state of intra-organizational networks, especially those involving superiors, is a key factor in activating emergent strategies in a business organization.

I. *Introduction*

The formation of strategy in an organization is not solely the responsibility of top management and corporate staff; more employees are involved in the process than might be theoretically expected. This view, running contrary to the orthodoxy of strategic management, has been discussed over time (e.g., Bower, 1970; Burgelman, 1983; Bower and Gilbert, 2005). In line with this perspective, some management scholars have taken an interest in the role of organizational communication and middle management in strategy formation (e.g., Nonaka, 1988; 1994; Floyd and Wooldridge, 1992; 2000; Dutton and Ashford, 1993).

Building on the ideas of previous studies, this paper examines the relationships between organizational characteristics and the upward flow of strategic information from relatively lower levels of an organization including middle managers. The core of this analysis is based on quantitative data collected from a questionnaire survey of 137 business units in 21 major Japanese firms. In the analysis, we presume that upward-flowing information relating to strategy is a key to realizing effective emergent strategy in a business organization as a whole.

In order to explore this idea, we focus particularly on intra-organizational networks centered on middle managers as a sort of organizational characteristic. Individual relationships and networks without formal lines of authority are indispensable for effective organizational management. Therefore, the perspective of social network theory has been applied to

^{*} Graduate School of Commerce and Management, Hitotsubashi University, Naka 2-1, Kunitachi, Tokyo 186-8601, Japan.

^{**} Institute of Innovation Research, Hitotsubashi University, Naka 2-1, Kunitachi, Tokyo 186-8603, Japan.

organizational studies (e.g., Hansen, 1999; 2002; Pappas and Wooldridge, 2007).

On the other hand, some attributes of intra-organizational networks may be different from those of social networks, since a network among members of an organization may be connected to its formal structure and its attributes can at least partly reflect some characteristics of the underlying organization. In this study, we adopted some original measurements concerning intra-organizational networks in order to distinguish between a middle manager's relationships with higher-ranked persons and those with persons of equal rank. The results of our analysis suggest that differences in these attributes can result in contrasting effects upon strategic information flow in a business organization.

II. *Theoretical Background*

1. **Strategic Behavior and Middle Management in an Organization**

Since the emergence of the academic field of management strategy, normative and analytical approaches to strategy have been dominant. Such theories carried, at least implicitly, the assumption that the agents formulating strategy are distinct from those implementing strategy. In tandem with this assumption, the orthodoxy has sought its theoretical foundations in economics, classical industrial organization theory, game theory, and so on. From this theoretical viewpoint, the formulation of strategy can be considered to be a rational process, decoupled from sociological factors.

On the other hand, there have been views critical of the rational strategy formulation perspective. One such archetypical idea was posed by Mintzberg and Waters (1985), who insist that strategic planning is never completely realized and that the actual behavior of a firm is a conflation of intended strategy and unintended consequences. This latter element, independent of ex-ante planning, is called emergent strategy.

The concept of emergent strategy is closely related to organizational process, because the realized strategy of a firm derives not only from strategic planning rationally formulated by the upper layers of the hierarchy, but also from the autonomous behavior of the lower levels. Bower's classic study (1970) revealed that multiple layers, including lower management, engage in the resource allocation process in a large diversified firm. In line with Bower's discussion, Burgelman (1983; 2002; 2005) examined the case of Intel longitudinally, and found that autonomous behavior in its lower levels contributed to a fundamental change of the firm. The transition of Intel's core business from semiconductor memory to microprocessors was the joint product of top and middle managers.

Based on this perspective, the division of labor in the formation and implementation of strategy becomes vague even in a large hierarchical organization. In the process of strategy formation, middle managers play a more important role than had been expected. Middle managers are not just mediators, passing orders from the top management to the bottom, but are active agents essential to strategic management (Dopson and Stewart, 1990; Huy, 2001; Boyett and Currie, 2004).

Among studies concerning middle managers, Bill Wooldridge, Steven Floyd, and their associates have developed a comprehensive picture of middle management in an organization (Wooldridge and Floyd, 1990; Floyd and Wooldridge, 1992; 1996; 1997; 2000; Floyd and

Lane, 2000; Pappas and Wooldridge, 2007; Wooldridge, Schmid, and Floyd, 2008). While their interests are extensive, one of their important contributions is an analysis of quantitative data clearly indicating that middle managers play a role not only in the implementation of strategy but also in its formation. According to their research, middle managers generate new ideas on strategy and endeavor to realize them. Thus, middle managers can be regarded as a strategic asset (Balogun, 2003).

The strategic role of middle managers seemed to be prominent in Japanese firms, especially during the “golden” ’70s and ’80s. The success of Japanese firms in international markets derives, at least partly, from incremental learning and emergent strategies (Pascale, 1984; Minzberg, Ahlstrand, and Lampel, 1998), though Porter (1996) criticized the lack of formal strategy in most Japanese firms from the orthodox viewpoint of strategic management. Ikujiro Nonaka has also referred to the management of Japanese firms and has continued to propose concepts and theories to explain the importance of the organizational process. Middle-up-down management (1988), knowledge creation theory (1994), and the idea of “ba” (Nonaka, Toyama, and Konno, 2000) are the conceptual embodiments of his ideas.

2. Emergent Strategy and Communication Networks in an Organization

In order to vitalize activities relating to emergent strategy in an organization, reciprocal communication between different layers of the hierarchy is critical, since upward communication or influence from the lower levels is necessary for an integration of strategic information and realization of proper strategy overall (Schilit, 1987).

The literature on issue-selling (Dutton and Ashford, 1993; Dutton, Ashford, O’Neill, and Lawrence, 2001; Bansal, 2003; Howard-Grenville, 2007) can be considered to bridge emergent strategy and organizational communication, especially upward influence. Issue-selling is a behavior through which an individual manager in a lower level of an organization tries to call others’ attention to what he/she regards as an important managerial issue. If other members of the organization, particularly in the upper management, understand the importance of the issue and act upon this understanding, an individual concern about management is transformed into an organizational task. The sequence of issue-selling is a process of strategy formation and implementation in an organization initiated mainly via upward communication.

The communication in an organization necessary to form and implement a strategic action is not fully described along formally prescribed superior-subordinate lines, which are in fact complemented by informal ties and communication paths that emerge autonomously. Since the development of the contingency theory of organization (Burns and Stalker, 1961), an organic organizational form taking advantage of informal ties has been considered effective and especially adaptable to the turbulent environments of recent years (Halal, 1994).

Accordingly, the importance of informal social ties in an organization has been recognized in a growing body of social network literature (Burt, 1992; 2004; Hansen, 1999; 2002). From a network perspective, each member of an organization can be seen as an independent agent rather than as a passive mediator controlled by orders from the top management. Since an actor assuming such characteristics is embedded in the web of social ties inside and outside an organization (Granovetter, 1985), the degree of influence that an actor exerts over other members and resources can depend on the position of the actor in the network (central or peripheral) and on the social context faced by the actor (Stevenson and Greenberg, 2000).

To capture the position of an actor in a network, the notion of centrality is frequently utilized and operationalized, and the relationship between centrality and influence has been examined in network analysis (e.g., Brass, 1984; Ibarra, 1993; Sparrowe and Liden, 2005). The notion of centrality has also been applied to examining the influence of middle managers on the process of strategy formation (Floyd and Wooldridge, 1997; Pappas and Wooldridge, 2007). In studies of middle managers, network centrality has been measured by the number of paths emanating from an organizational actor. The authors presumed that individuals or organizational units linked with many other actors inside and outside the organization play a boundary-spanning role, and concluded that such positions in networks enable one to have a greater influence on organizational strategy.

While centrality is a useful construct in analyzing an organizational network, it may not be the only aspect of significance in terms of emergent strategy. In particular, the notion of centrality does not sufficiently express organizational characteristics relating to the process of strategy formation, because the focus of the notion is basically on the linkage between individual actors or organizational subunits. Therefore, by using another construct distinct from centrality, we can capture a fuller picture concerning emergent strategy.

The discussions in this section can be summarized into the following points: (1) emergent strategy contributes to the strategic behavior of large firms, especially Japanese firms; (2) organizational communication, particularly upward communication, has an influence on the formation of emergent strategy; and (3) certain characteristics of social ties or networks in an organization can affect organizational communication. Based on these ideas, we would like to examine organizational factors that can affect the condition of strategic communication from the lower levels, including middle management.

III. *Hypotheses: Intra-organizational Networks and Information Flow Related to Emergent Strategy*

The studies mentioned in the previous section suggest that strategic information flow from middle managers is crucial in realizing organizational strategic management. In addition, the network analysis perspective underlines the importance of networks among individuals inside and outside an organization.

Combining insights from a middle management perspective (Wooldridge et al., 2008), knowledge creation theory (Nonaka, 1994), and studies on issue-selling (Dutton and Ashford, 1993) with those from social network research (Granovetter, 1973; Hansen, 1999; 2002), we derive the following hypotheses: (1) there are positive effects of weak ties in vertical and lateral networks on intra-organizational information flow, especially that related to emergent strategy; (2) there are positive effects of supportive networks on information flow; and (3) there are negative effects of obstructive networks on information flow.

According to Granovetter (1973), weak ties (distant and infrequent relationships) play a bridging role connecting networks, resulting in efficient information and knowledge sharing, because people in one network can gain access to novel information from other, otherwise unconnected networks or from isolated individuals and groups within an organization. In contrast, strong ties are likely to provide redundant information, because people frequently exchange such information within a network in which everyone knows each other well,

resulting in high homogeneity and similarity. Thus, since the information transmitted by way of weak ties is likely to be more unfamiliar to the recipient than that frequently exchanged by way of strong ties, the knowledge acquired through weak ties is more valuable in promoting information diffusion and mutual understanding (Hansen, 1999; 2002).

Incorporating this insight into the context of intra-organizational information flow both between hierarchical layers and among individuals belonging to different organizational subunits, we can expect a positive influence of weak ties on information flow regardless of whether such ties are vertical or lateral. Specifically, we can predict that the development of weak ties within an organization promotes intra-organizational information flow activating emergent strategy. Thus, we derive the following hypotheses.

(1) Weak tie hypotheses

H1a: The more highly developed the vertical weak ties within an organization, the greater the upward flow of strategic information.

H1b: The more highly developed the lateral weak ties within an organization, the greater the upward flow of strategic information.

It is true that most social network studies have focused on the positive aspects of social networks, and that they examine the resources that people can acquire through their network relationships (Burt, 2000). As a result, there has been little research examining the negative aspects of social networks (Xia, Yuan, and Gay, 2009). Some exceptional research, however, points out that intra-organizational social networks may not only enable an actor's initiative but also constrain it (Sparrowe, Liden, Wayne, and Kraimer, 2001; Stevenson and Greenberg, 2000), and that they can have a negative effect on strategic initiatives and performance (e.g., Marx, Lechner, and Floyd, 2006).

In addition, social networks do not always have the same characteristics. Qi (2005) suggests that a supportive relationship, especially with top management, is vital for middle managers in implementing strategy. In contrast to this functional aspect of relationships, Xia et al. (2009), for instance, explicitly focus on the negative aspects of social networks by shedding light on the role of "adversarial" networks. Sparrowe, Liden, Wayne, and Kraimer (2001) found that (1) individual job performance is positively related to centrality in advice networks and negatively related to centrality in hindrance networks that thwart task behaviors; and (2) hindrance network density is significantly and negatively related to group performance.

Based on these recent insights, particularly in the social network literature, we can predict that a positive social network—defined as "social capital" or a "strategic asset"—assists an actor's initiative. In contrast, we can also predict that a negative social network—defined as a "social liability" that impedes an actor's initiative—hampers the realization of an actor's strategic idea. If we define a "supportive network" as one that enables the realization of strategic initiatives by middle managers and an "obstructive network" as one that hinders the realization of these initiatives, we derive the following hypotheses.

(2) Supportive network hypotheses

H2a: The more highly developed the vertical supportive network within an organization, the greater the upward flow of strategic information.

H2b: The more highly developed the lateral supportive network within an organization, the

greater the upward flow of strategic information.

(3) Obstructive network hypotheses

H3a: The more highly developed the vertical obstructive network within an organization, the lower the upward flow of strategic information.

H3b: The more highly developed the lateral obstructive network within an organization, the lower the upward flow of strategic information.

Moreover, we intuitively predict that the development of weak ties is positively associated with the development of both supportive and obstructive networks. Thus, we finally derive the following hypotheses. We should note that the weak ties in this paper refer to informal relationships without line authority in an organization; this definition differs somewhat from those found in typical social network literature.

(4) Weak ties and supportive or obstructive networks

H4a: The more highly developed the vertical weak ties within an organization, the more highly developed the vertical supportive and obstructive networks within an organization.

H4b: The more highly developed the lateral weak ties within an organization, the more highly developed the lateral supportive and obstructive networks within an organization.

IV. Methods

1. Sample

In order to test these hypotheses, we conducted a path analysis (with AMOS) based on a questionnaire survey of Japanese business organizations. Our research group has conducted this questionnaire survey on organization and strategy in large Japanese firms biennially since 2005. For the analyses in this paper, we utilized data from the third survey in 2009.

In the course of the survey, we first conducted interviews in person or by email and phone with corporate staff managers. The main goals of these interviews were to identify the business units in each firm, three of their basic functions, and individual respondents in each business unit, since a business unit—the unit of analysis in our study—could not always be clearly identified as an independent product or geographic division in a formal organizational chart. After the interviews, we sent questionnaires to the respondents from January through March 2009 via a staff manager in a corporate personnel or planning department. In total, we collected 874 responses from 137 business units in 21 Japanese firms.

Since the unit of analysis in this study is a business unit (BU) in a firm, we then created individual BU-level measures for our analysis by calculating the average score of at least six responses to each questionnaire item collected from middle managers in each business unit. Some of the questions, such as the number of employees in a business unit, were asked directly of the corporate staff in charge of our survey at the company or the BU staff in charge of business strategy.

The sample BUs are mainly from the manufacturing sector, including electronics, chemicals and pharmaceuticals, foods and beverages, and so on, as well as several BUs from

the retail and transportation services. The sizes of BUs measured by the number of full-time employees are wide ranging, with the smallest having 10 employees, the largest having over 6,000, and the arithmetic mean being 475. The annual sales of BUs in FY2007 range from 1 billion yen (about \$11 million) to approximately 3 trillion yen (about \$33 billion), with a mean value of 139.8 billion yen (about \$1.5 billion).

2. Measures

Upward flow of strategic information in a BU: The upward flow of strategic information in a business unit is the core dependent variable in this analysis. In order to measure the variable correctly, we adopted an original measurement constructed from the questionnaire. Of each respondent in the survey, we first asked two questions: "Supposing that the total amount of information you have with regard to the strategic direction your BU should follow is equal to 100 percent, what percentage of it do you believe your BU's general manager receives?" and "Supposing that the total amount of information your subordinates have with regard to the strategic direction your BU should follow is equal to 100 percent, what percentage of it do you believe you receive?" Responses were recorded using a ten-point scale, ranging from 1 (= less than 10 percent) to 10 (= more than or equal to 90 percent) with a 10 percent interval for every 1 point.

The arithmetic mean of the two variables was calculated as the upward flow of strategic information and then converted into a percentage. While the former question was asked regarding the effectiveness of strategic information flow from a middle manager to the general manager of the BU, the latter concerned the flow from subordinates of the respondent to the respondent him/herself. The participation of multiple layers, including middle and operational levels, in a strategic decision is significant in realizing the strategic management of an organization (Bower, 1970). Therefore, we think that this composite variable represents an organizational condition supporting the formation of emergent strategy in a business unit as a whole.

Weak ties: We adopted an original measurement of weak ties by asking the respondents for the number of the self-centric personal ties maintained within a business unit. The responses were assessed on a nine-point scale (from 1 = "10 people or less" to 9 = "more than 500") by asking respondents "How many acquaintances of senior status are there in your business unit whom you can recognize by his or her name and face?" for the measurement of vertical weak ties, and "How many acquaintances of equal status are there in your business unit whom you can recognize by his or her name and face?" for the measurement of lateral weak ties.

We then calculated the arithmetic mean of middle managers' responses within a BU regarding vertical weak ties (one-scale item) and lateral weak ties (one-scale item) and converted it into an actual number. We regard this averaged variable as representing a sort of organizational characteristic, because it captures an aspect of networks mainly ascribed to individual BUs.

Supportive and obstructive networks: Recent social network literature suggests the necessity of distinguishing between positive social networks, such as friendship or work-related advice networks, and negative social networks that might be referred to as "adversarial networks" or

“hindrance networks” (Sparrowe et al., 2001; Xia et al., 2009). In addition, extant strategic management literature has long emphasized the importance of strategic initiatives and issue-selling behavior from middle managers to their top management in promoting organizational change and renewal (Dutton et al., 2001; Howard-Grenville, 2007).

Thus, we conceptualized the positive aspect of social networking as a supportive network that can bolster managers’ strategic initiatives upwards from the middle; we also conceptualized the negative aspect of social networking as an obstructive network that can hamper those same initiatives. We then measured the prevalence of supportive networks by asking respondents about the number of senior managers of higher hierarchical rank who supported the realization of their initiatives (vertical supportive network: “How many higher-ranked members of the business unit do you believe actively support the realization of your idea?”) and the number of colleagues and associates of equal rank who supported the realization of their initiatives (lateral supportive network: “How many equal-ranked members of the business unit do you believe actively support the realization of your idea?”).

We measured obstructive networks by asking respondents about the number of senior managers of higher hierarchical rank who hampered the realization of their initiatives (vertical obstructive network: “How many higher-ranked members of the business unit do you have to persuade in order to realize your idea?”) and the number of colleagues and associates of equal rank who hampered the realization of their initiatives (lateral obstructive network: “How many equal-ranked members of the business unit do you have to persuade in order to realize your idea?”). The responses were assessed on a nine-point scale (from 1 = “zero persons” to 9 = “more than fifty persons”) asking the respondents to assume a situation in which “your business unit is going to kick off a development project that changes the business unit’s major product line.”

We calculated the arithmetic means of the responses from middle managers regarding vertical supportive networks, lateral supportive networks, vertical obstructive networks, and lateral obstructive networks separately, then converted each of them into an approximated actual number, and utilized the four variables transformed into logarithmic values in the analysis. For the same reason as mentioned above, each variable is also considered to be an organizational characteristic concerning networks in a BU.

Business unit size: The size of an organization has been recognized as a primary determinant of its structure and the configuration of its characteristics. For example, traditional structuralist perspectives on organizations predict that organizational size is associated with an increase in communication and coordination problems, which in turn affect the size of the administrative component, the number of levels in the hierarchy of authority, and the span of control (e.g., Kimberly, 1976).

Moreover, in the context of intra-organizational network size, we can expect that organizational size may affect not only the configuration of the formal organizational structure, but also the configuration of the informal structure, through an increase in the size of networks that can lead to certain direct or indirect effects on intra-organizational communication. Following this line of reasoning, we adopted business unit size as a control variable in the analysis. The size of a business unit was assessed by log transformation of the number of full-time employees working for a business unit.

Vertical distance: It has been widely recognized that the greater the size of an organization, the more bureaucratic and mechanistic its characteristics. Such a structural trait results in a greater formal distance between members at different hierarchical levels, and involves more dependence on formal decision-making processes (Grinyer and Yasai-Ardekani, 1981). In order to elucidate such possible effects, we adopted the vertical distance between a respondent and the head of a BU (general manager) as another control variable in the analysis. Vertical distance in a business unit was calculated from the arithmetic mean of middle managers' responses to the question of formal distance between them and the business unit's head.

Organization founding year: An organization changes as time goes by. In particular, we expected that a business organization would gradually deteriorate and would cease to function efficiently and effectively with age. We utilized the reversed value of each BU's founding year to determine organizational age. This information was directly requested from BU staff in charge of business strategy.

Percentage of time devoted to the BU: We also expected that involvement of a manager in the upward flow of strategic information in a business unit could depend on the effort he/she made for the BU. To measure the extent of BU work by a manager, we asked for the percentage of time a respondent devoted to jobs in the BU as follows: "We would like to ask whether you work full time for your business unit or also partly do jobs for other departments outside your business unit in the company. What percentage of your work time do you devote to your business unit?" The response was assessed on a ten-point scale (from 1 = "less than 10 percent" to 10 = "more than or equal to 90 percent").

V. Results

1. Descriptive Statistics and Checks on Validity and Reliability

Table 1 shows descriptive statistics of the variables and the indices of validity and reliability. All the descriptive statistics in the table provide actual values, whereas in the analysis, all variables except upward flow of strategic information, vertical distance, organization founding year, and percentage of time devoted to the BU were transformed into logarithmic values. Cronbach's alpha was calculated for the upward flow of strategic information ($\alpha = 0.731$), as it was the only variable composed of multiple items. Rwg, an index of inter-rater reliability, was also calculated for each of the eight variables, which were aggregated responses from the middle managers. All the indices show a fair to good level of reliability.

Table 2 summarizes the results of Pearson's bivariate correlations among the variables. Although, as mentioned above, the variables are reliable, this table suggests that most of the correlations among them are too high for a single regression model, resulting in multicollinearity problems. In addition, multilayered causal relationships can be inferred from some of the variables. Thus, we conducted a path analysis to paint a clearer picture of the hypothesized relationships among weak ties, social networks, and upward flow of strategic information in a business unit, although we must admit that intrinsic difficulties still remain in the path analysis.

TABLE 1. DESCRIPTIVE STATISTICS AND INDICES OF VALIDITY AND RELIABILITY

	Mean S.D.	Rwg	alpha
Upward flow of strategic information in BU (%)	53.236 10.446	0.501	0.731
Vertical weak ties in BU	33.964 23.047	0.781	----
Lateral weak ties in BU	36.401 27.757	0.835	----
Vertical obstructive networks	4.872 2.058	0.767	----
Lateral obstructive networks	3.826 2.028	0.614	----
Vertical supportive networks	3.054 1.119	0.780	----
Lateral supportive networks	3.497 1.378	0.732	----
Vertical distance	1.475 0.644	-----	----
BU size	475.496 921.603	-----	----
Organization founding year	1991.22 18.946	-----	----
Percentage of time devoted to BU (%)	90.879 7.920	0.787	----

2. Path Analysis

We would now like to consider the results of the path analysis. A diagram of the analysis is shown in Figure 1, and the coefficients of the major relationships that indicate standardized total effects are summarized in Table 3. The results in the figure and the table reveal some important aspects of the relationships among the variables.

First, both vertical and lateral weak ties have significant positive impacts on the four network variables: vertical supportive networks ($H4a$: 0.455; $P < 0.001$); vertical obstructive networks ($H4a$: 0.512; $P < 0.001$); lateral supportive networks ($H4b$: 0.495; $P < 0.001$); and lateral obstructive networks ($H4b$: 0.289; $P < 0.001$). However, according to the coefficients shown in Table 3, the total effect of weak ties on the upward flow of strategic information—both the effect of vertical weak ties ($H1a$: -0.168; *n.s.*) and that of lateral weak ties ($H1b$: 0.012; *n.s.*)—is not statistically significant. Thus, $H1a$ and $H1b$ are not supported by the result of the analysis, while $H4a$ and $H4b$ are supported. The results suggest that weak ties in a business organization may not have effective influence on a process of emergent strategy initiated by the middle and operational levels in a BU though they may shape intra-organizational networks.

TABLE 2. CORRELATION MATRIX OF THE VARIABLES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Upward flow of strategic information in BU	1										
(2) Vertical weak ties in BU	-0.452**	1									
(3) Lateral weak ties in BU	-0.514**	0.820**	1								
(4) Vertical obstructive networks	-0.509**	0.746**	0.724**	1							
(5) Lateral obstructive networks	-0.237**	0.455**	0.556**	0.659**	1						
(6) Vertical supportive networks	-0.200*	0.668**	0.589**	0.731**	0.496**	1					
(7) Lateral supportive networks	-0.267**	0.572**	0.628**	0.670**	0.698**	0.751**	1				
(8) Vertical distance	-0.444**	0.545**	0.586**	0.610**	0.304**	0.495**	0.465**	1			
(9) BU size	-0.517**	0.599**	0.700**	0.565**	0.401**	0.524**	0.496**	0.556**	1		
(10) Organization founding year	-0.034	-0.194*	-0.177*	-0.183*	0.037	-0.192*	-0.078	-0.287**	-0.211*	1	
(11) Percentage of time devoted to BU	0.158	0.091	0.002	0.055	-0.010	0.052	-0.025	-0.060	0.097	0.064	1

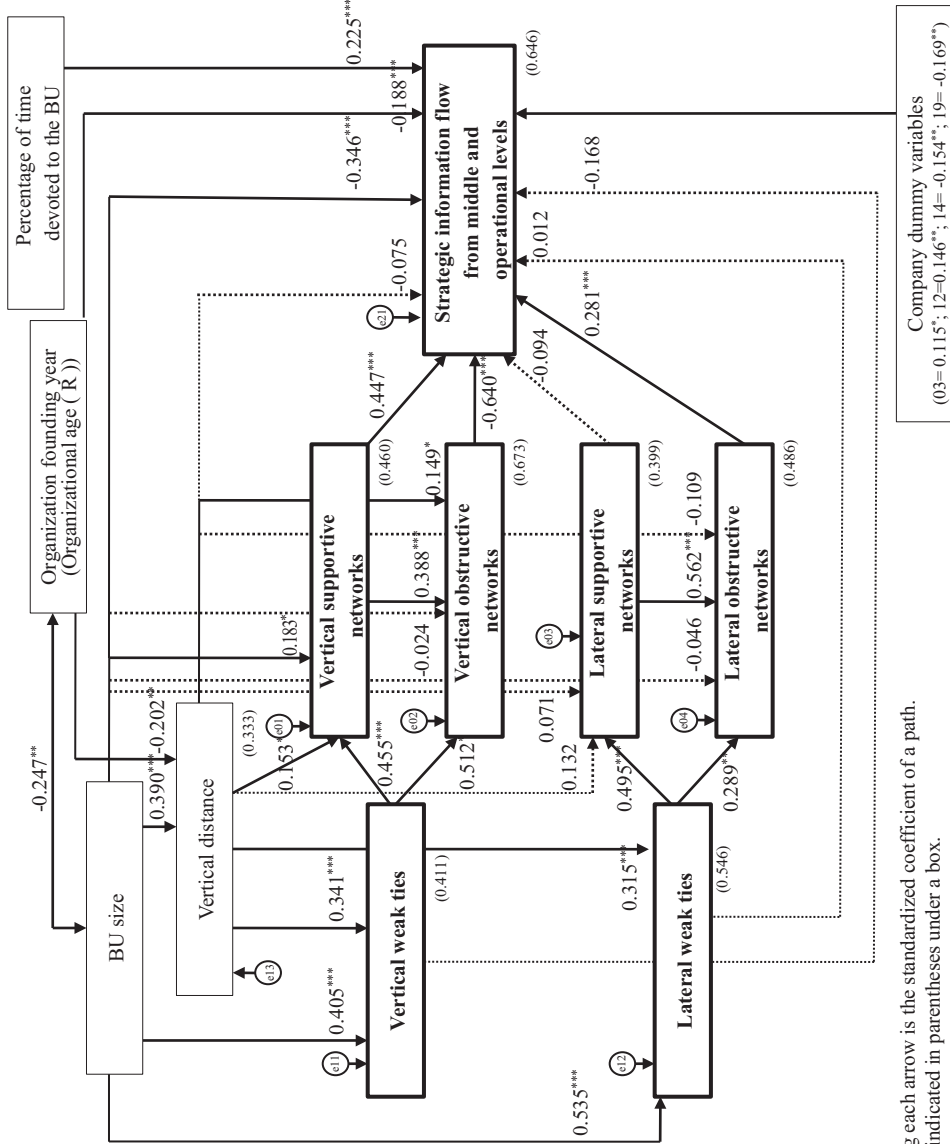
Note: $N = 137$. **: $P < 0.01$, *: $P < 0.05$

Second, whereas the variable of vertical supportive networks, which refers to the number of higher-ranked persons supporting the realization of a middle manager's strategic ideas, has a significant positive relationship with the upward flow of strategic information ($H2a$: 0.447; $P < 0.001$), there is no significant relationship between lateral supportive networks and the upward flow of strategic information ($H2b$: -0.094; $n.s.$). Thus, hypotheses regarding supportive networks are only partially confirmed. The results may be reasonable if we assume a power gap between a higher-ranked person and a lower-ranked one, even in the absence of line authority. To put it differently, informal supportive behavior by higher-ranked managers towards middle managers may play an important role in activating the formation of emergent strategy in a business unit.

Third, the variable of vertical obstructive networks has a significant negative impact on the upward flow of strategic information, as we had hypothesized ($H3a$: -0.640; $P < 0.001$). On the other hand, whereas lateral obstructive networks significantly affect the upward flow of strategic information, the sign of the coefficient is contrary to our prediction ($H3b$: 0.281; $P < 0.001$).

The positive, and seemingly counterintuitive, effect that lateral "obstructive" networks can have on the upward flow of strategic information could be ascribed to certain characteristics of lateral relationships. In order to collect data concerning obstructive networks, we asked the following questions: "How many (higher-ranked or equal-ranked) members of the business unit

FIG. 1 STRATEGIC INFORMATION FLOW FROM LOWER-LEVELS AND INTRA-ORGANIZATIONAL NETWORKS



D.F.: 60
 χ^2 : 54.258
 P=0.685
 GFI: 0.950
 AGFI: 0.900
 CFI: 1.000
 RMSEA: 0.000
 ***: $P < 0.001$
 **: $P < 0.01$
 *: $P < 0.05$
 †: $P < 0.10$

- The value along each arrow is the standardized coefficient of a path.
 - Adjusted R^2 is indicated in parentheses under a box.

TABLE 3. SUMMARY OF COEFFICIENTS IN THE PATH ANALYSIS

Independent variables (at the final step, except company dummies)	Dependent variable Upward flow of strategic information in BU
Vertical weak ties in BU	-0.168
Lateral weak ties in BU	0.012
Vertical obstructive networks	-0.640***
Lateral obstructive networks	0.281***
Vertical supportive networks	0.447***
Lateral supportive networks	-0.094
Vertical distance	-0.075
BU size	-0.346***
Organization founding year	-0.188***
Percentage of time devoted to BU	0.225***
Other paths omitted from Figure 1 for convenience	
Company dummy 12 → Vertical distance: -0.216**	
Company dummy 19 → Vertical distance: -0.165*	
Company dummy 03 → Vertical obstructive networks: -0.108*	
Correlations omitted from Figure 1 for convenience	
BU size ↔ Company dummy 03: 0.198*	e11 ↔ e12: 0.667***
BU size ↔ Company dummy 12: -0.163*	e01 ↔ e03: 0.599***
BU size ↔ Company dummy 14: -0.178**	e02 ↔ e04: 0.450***
	e02 ↔ e11: -0.194*

Note: $N = 137$. ***: $P < 0.001$, **: $P < 0.01$, *: $P < 0.05$, †: $P < 0.10$

Coefficients in the table indicate total effects in the model.

do you have to *persuade* in order to realize your idea?" We infer that the process of persuading a peer might be qualitatively different from that of persuading a higher-ranked person, as the necessity of persuasion does not always mean "obstruction" or "interference," and can provide an opportunity to discuss matters in a constructive way. In the process of persuading an equal, the peers might seriously discuss the ideas with each other and could potentially reach a better organizational strategy proposal than the original. By contrast, having to persuade a higher-ranked person could simply be obstructive and harmful in the formation of emergent strategy.

In addition to the hypotheses discussed above, we would like to refer to two further points that emerge from the results. Firstly, the organizational founding year has a negative impact on the upward flow of strategic information. Its total effect on the upward information flow is -0.188, significant at 0.001 (see Table 3). Because this variable is the reversed value of the BU's organizational age, the negative effect suggests that the older a business unit is, the more active the upward flow of strategic information becomes. The reason for adopting this factor as a control variable was that we predicted that a business unit would deteriorate with age in terms of the involvement of lower-level managers in the strategy formation process. The result was contrary to our initial prediction.

The second additional point concerns the size of a business unit. BU size has significant influence on the upward flow of strategic information (total effect = -0.346; $P < 0.001$). The direct and indirect effect of the variable is too large to disregard as a control variable. The size of an organization may have more important implications for organizational design associated with improving strategic information flow in an autonomous business unit than we often expect.

VI. *Discussion and Conclusion*

Whereas the orthodoxy of strategic management has presumed a rational and normative process of strategy development, some management scholars have been enthusiastic about the emergent and organizational aspects of strategy formation and have emphasized the function of intra-organizational networks centered on middle managers (e.g., Floyd and Wooldridge, 1997; Nonaka, 1988; Wooldridge et al., 2008). Recent developments in social network research have also provided us with a richer and deeper understanding of the informal side of an organization, by focusing on the position of actors and the network configuration of ties between actors within an organization.

Based on the direction of previous studies, we examined the relationship between intra-organizational networks and the upward flow of strategic information linked to the formation of emergent strategy in a business unit, utilizing quantitative data on major Japanese firms including some original measurements.

Of our eight hypotheses regarding intra-organizational networks, only four were supported by the analysis results. In particular, only the two hypotheses involving vertical networks were supported out of the four concerning networks and the upward flow of strategic information. These results suggest that relationships between middle managers and higher-ranked managers in an organization may have different attributes from those between equal-ranked employees. The state of upward information flow in a BU can depend largely on how managers positioned between a BU head and middle managers behave. Supportive behavior towards middle managers can activate upward flows of information in an organization. In contrast, excessive interference with middle managers can hinder autonomous strategic behavior in the middle and operational layers. As an aside, we should note that the behavior of the upper managers in a business unit cannot be completely ascribed to the managers themselves; at least some aspects result from the organizational management.

More importantly, the difference in influence between vertical networks and lateral networks implies some characteristics specific to intra-organizational networks. Since the difference may reflect a power gap between hierarchical layers in an organization, an intra-organizational network may have different attributes from those of social networks free from the constraints imposed by an organization. In other words, as some characteristics of intra-organizational networks can derive from the base organization to which the network belongs, it may not be possible to discuss attributes of intra-organizational networks independently of certain formal attributes of the organization. Therefore, it may not always be appropriate to apply the original perspectives and techniques of social network analysis directly to a study of intra-organizational networks. We should consider the unique characteristics inherent in networks within an organization. Our attempts to construct some original measurements are a part of our efforts to tackle this problem.

We should also pay more attention to the impact of organizational size. Size seems to be considered a classical issue of organization theory already elaborated upon, presumably because it has been discussed for a very long time (e.g., Pugh et al., 1969). According to the results of our study, however, the size of an organization is not simply a managerial problem of the past. The results suggest that the organizational size still has an influence on a current managerial issue—the formation of emergent strategy—and that more than a few business organizations do

not deal adeptly with the problem, or are even unaware of the importance of the factor. A too-large organizational unit can suffocate innovative activities and hamper sufficient communication so that they cannot be realized as effective strategy. Thus, reconsideration of organizational size can provide clues in exploring the organizational process of strategy formation and afford practical solutions to organizational design problems.

In addition, we consider that the points discussed above are related to the recent condition of Japanese firms. As we have already mentioned, Japanese firms took advantage of emergent strategy and performed well in international product markets in the '70s and '80s. However, they have faced a chronic predicament since the early '90s. To explain this situation, our research group has proposed the concept of "organizational deadweight" (Karube, Numagami, and Kato, 2009; Kato, Karube, and Numagami, 2010), defined as "an excess organizational load caused by low organizational cohesiveness that hampers cooperation for middle-level managers pursuing their organizational goals" (Karube et al., 2009, pp. 521). This sort of organizational deterioration may be linked to the serious problems faced by Japanese firms including the decline in effective emergent strategy.

These phenomena may not be specific to Japanese firms and our notions could be applicable to business organizations in other countries. In particular, firms in societies entering a mature phase may experience similar difficulties with their organizations. Based on this sort of perspective, we will further explore organizational problems hampering effective strategic behaviors.

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