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## Inter-organizational Network Structures in Healthcare and Social Welfare Organizations

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# **Inter-organizational Network Structures in Healthcare and Social Welfare Organizations**

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## **Abstract**

This study aims to explore the management structure of lateral relationships in the coordination of healthcare and social welfare service using Meer-Kooistra and Scapens' (2008; 2015) concept of minimal structure. To do so, we employ the case of a Japanese start-up network for healthcare and social welfare services that uses an IT information sharing system, the "Ni-Yon Net." The case studies show that four structures—technical, social, economic, institutional—existed prior to the initiation of the "Ni-Yon Net" project. They also highlight that, in addition to attaining profit targets (economic structure), a project's social significance (social structure) is a key driver in investment decisions. This study also reveals that coordination within the healthcare and social welfare service industry is possible under specific structures when government pressure is not strong. The findings deepen the understanding of the role of management control in network settings.

**Keywords:** Network structure, Minimal structure, Healthcare and social welfare organizations, Lateral relationship, Control mechanism

## 1. Introduction

Organizations seek various types of coordination with other companies to stimulate economic activities. Several studies have investigated control archetypes in inter-firm settings by classifying the supplier–buyer relationship as market-based or hierarchical/bureaucratic and using various alternative models (Caglio & Ditillo, 2008). However, an alternative model that cannot be classified as market-based or hierarchical is the network-like structure (Håkansson & Lind, 2004, 2007). The abovementioned studies view inter-organizational relationships as embedded within a broader network, in which actors are not involved in a dyadic setting. In the context of new public management, research has focused on network-like structures in which new control structures encourage cooperation (Kraus & Lindholm, 2011; Newberry & Barnett, 2001).

However, the mechanism of management control systems in network settings remains insufficiently explored. While some studies investigate management control systems in network settings, they tend to focus on dyadic inter-organizational relationships (Caglio & Ditillo, 2008), whereas in reality, managerial issues and the role of accounting in network settings are more complex than dyadic relationships. Thus, further research that accounts for multiple parties, non interested parties, or third parties (Lind & Thrane, 2010) is warranted.

Thus, in this study, we investigate inter-organizational accounting in a network by focusing on the management structure of lateral relationships (Van der Meer-Kooist & Scapens, 2008). More specifically, we examine healthcare and social welfare service networks built voluntarily in Osaka by private organizations in the district.

The objective is to disentangle complex cooperative relationships and explain the role of management accounting in the emergence of networks that face government pressure or indirect effects of third parties. In other words, we explore structures that enable cooperation in a lateral relationship embedded in a network. Further, we draw on minimal structures (Kamoche & Cunha, 2001; Van der Meer-Kooistra & Scapens, 2008; 2015) to demonstrate the reciprocal working of four structures when a corporation joins a network.

This study makes the following two contributions to the inter-organizational accounting literature. First, we investigate complex networks that include multiple actors. We contribute to the body of research on governance structure in complex networks (Chua & Mahama, 2007; Håkansson & Lind, 2004; Mouritsen & Thrane, 2006) by elaborating on the function of structures in lateral relationships.

Second, we discuss cooperation in the context of new public management and healthcare reforms. Little is known about the critical role of management accounting and certain mechanisms in facilitating cooperation between new public management and healthcare reform. An exception is Grafton et al. (2011), although they use government intervention as a precondition for cooperation.

By contrast, we examine a case study in which government pressure is limited and explore the effects of management accounting and governance structure on voluntary cooperation among healthcare institutions.

The remainder of this paper is structured as follows. Section 2 reviews the literature on inter-organizational control in network settings in the public sector. Section 3 introduces our theoretical framework, and Section 4 presents the research methods. Section 5 introduces the case study, while Section 6 discusses the data and theoretical contributions. Section 7 presents concluding remarks, followed by this study's limitations and suggestions for future research.

## 2. Literature Review

This study is positioned at the crossroads of two research strands: studies on network settings and those focusing on cooperation or coordination among public organizations. In this section, we review each stream and clarify the focus of the present analysis.

### 2.1 Network settings

Traditionally, management accounting has aimed to control the intra-organizational aspects of business and been used in combination with cost calculations for make-or-buy decisions. Recently, however, new types of relationships such as strategic alliances or long-term close relationships with suppliers have been observed. To explain the elaborate relationships with suppliers, many studies have highlighted the importance of relationships between two firms. These relationships can be characterized as dyadic relationships. According to Caglio and Ditilo (2008, p. 878), the relationship “between two clearly identified firms, e. g., the assembler and subcontractor ‘A’” or “a generic relationship between a buyer and supplier” can be deemed dyadic. A majority of inter-organizational studies are based on this dyadic relationship (Håkansson & Lind, 2007) and many of them clarify important issues (Dekker, 2003, 2004; Gietzman, 1996; Ittner et al., 1999).

Dyadic relationships, however, are unable to discuss the complex situation involving multiple competitive buyers, suppliers, regulators, and governments. As a result, some researchers call for analyses at the network level (Chua & Mahama, 2007; Coad & Cullen, 2006; Cooper & Slagmulder, 2004; Kajuter & Kulmala, 2005; Kastberg, 2014; Mouritsen & Thrane, 2006; Thrane & Hald, 2006).

The definition of network structure remains unclear. Some studies see it from a theoretical stance, while others view network settings as objectives. The former comprises studies that adopt the industrial network approach (Håkansson, 1987; Håkansson & Lind, 2004; Håkansson & Snehota, 1995). By contrast, we view network settings within the sphere of objectives. Lind and Thrane (2010) classify inter-organizational settings into multiple categories, from single relationships to complex networks<sup>1</sup>.

In exploring networks from an objectives standpoint, the first type of network is represented by firms that manage several counterparts in one direction (Thrane & Hald, 2006). Cooper and Slagmulder (2004) focus on a case in which focal firms introduce inter-organizational cost management within supplier networks and use inter-organizational cost management as a means to reduce information asymmetry. The difference between the contexts of the relationships with each supplier affects the characteristics of the contract. On the other hand, Lind and Stromsten (2006) focus on the relationship between the focal company and its customers. A focal company changes its accounting techniques depending on its technical and organizational interfaces with its customers (Lind & Stromsten, 2006). For example, in a customer relationship with high technical and organizational interfaces, the focal company employs lifetime profitability analyses to evaluate performance because long-term development is important for the relationship (Lind & Stromsten, 2006).

Although the aforementioned studies emphasize one-to-many relationships, they capture the viewpoint of only one firm, that is, a buyer or supplier. Another type is a relationship in which one focal firm has simultaneous reciprocal relationships with multiple counterparts. Related studies reveal how a focal firm manages both upstream and downstream interactions. For example, Thrane and Hald (2006) assume that firms manage different product supply chains. In this case, an accounting protocol such as KPIs is used to coordinate both ends. In other situations, the accounting system functions as a mediator. Thrane and Hald (2006) focus on the constructive perspective of inter-organizational controls and highlight the function of accounting as both an integrated and fragmented entity within the supply chain. In addition, they describe the boundary between organizations as fluid and not necessarily coinciding with legal boundaries. Carlsson-Wall et al. (2009) view the interactions between a supplier and focal firm through the process of target costing for two components (i.e., motors and gears). In this case, a problem in one component can induce

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<sup>1</sup>While Thrane and Hald (2010) suggest five types of situations (one relationship, serial relationship in a chain, several counterparts in one direction, multiple counterparts in two directions, and complex systems or networks including third parties such as competitors) in network settings, our research focuses on three types.

the development of a second component by the firm, because both components are interrelated. In terms of problem solving, this situation describes a control pattern that cannot be explained using a hierarchical structure.

The two types of situations discussed above are considered network settings with contractors. However, a firm must manage interested parties that are not limited to those creating contracts. Thus, a comprehensive research is one that accounts for various actors such as competitors, alliance partners, and regulators (Lind & Thrane, 2010). Håkansson and Lind (2004) define the relationship between a partner and another supplier as a strategic alliance in which both are responsible for component specifications. Chua and Mahama (2007) describe a network constructed from many actors such as suppliers or other companies that own shares in the focal company (e. g., Australian Research Council). Chua and Mahama (2007) follow the transformation of a network using actor network theory (Latour, 1987) to show that accounting is not as important when a network is formed. However, when changing a network, accounting stimulates actors' behavior through the mobilization of accounting numbers, prices, or the telephone-switching system. Kastberg (2014) also discusses the networking of various actors and criticizes the mainstream literature for focusing on the mediating role of accounting in an inter-organizational setting. Kastberg also presents an alternate perspective of accounting as a destabilizing device.

As demonstrated, network settings can be complicated and this is particularly true given the interdependence among stakeholders. Some research has pointed to the need for greater emphases on the network formation process (Chua & Mahama, 2007; Kastberg, 2014). Therefore, our study focuses on complex systems or networks.

## 2.2 Network setting coordination in new public management

Inter-organizational coordination was first discussed in the new public management literature over the past ten years. Related studies suggest that government intervention or commission is a strong driver that encourages coordination between organizations. For example, the health sector reforms in Victoria (Grafton et al., 2011), modernization of government agenda (Kurunmaki & Miller, 2006), and national healthcare (Kurunmaki & Miller, 2011) are led by authorities and are not voluntary. These studies state that governments or regulators play a critical role when introducing accounting methods. Grafton et al. (2011) view inter-organizational relationships with a network setting and consider integration as an “effective collaboration, among diverse organizational entities” and that a “range of structural and control configuration could reflect effective collaboration” (p. 244). Further, the authors explain the integration of core clinical

service activities using Oliver's (1991) frameworks and the differences in reactions when organizations are mandated to form a network.

Kurunmaki and Miller (2011) discuss the influence of interventions stipulated in the 1999 Health Act. They focus on the articulation of a new policy to create partnerships or stimulate cooperation among organizations using the "flexibilities" of lead commissions, integrated provisions, and pooled budgets. In addition, the authors characterize inter-organizational relationships and management control as a hybrid organizational practice or process that emerges from government intervention. However, this does not mean they overlook local control practices. The policy is operationalized through management control practices, which they call "mediating instruments," within organizational and professional boundaries. Kurunmaki and Miller (2011) suggest that political and local viewpoints are crucial to understanding organizational collaborations and management control practices. The interest of political ideals frames a new approach to resource allocation and management. However, these management control systems are operationalized in a local setting.

Carlsson-Wall et al. (2011) focus on local cooperation between home help units and healthcare centers and show that an informal hierarchy based on professional knowledge is created through inter-organizational cooperation. They conclude that cooperation can be encouraged through social or personal control in a local context.

In sum, previous studies characterize coordination between different professional organizations in a public sector-specific context and emphasize the role of the government as a mediator. This is because solving conflicts between various professional organizations entails the obligation of cooperation imposed by the government.

On the other hand, voluntary cooperation between healthcare and social care institutions is yet to be thoroughly researched (i.e., when there is less government pressure). In Japan, there is relatively limited government pressure and one reason for this is that many Japanese hospitals are privately owned. In addition, Japan's government policies do not force organizations to cooperate. For instance, the government's community-based integrated care system aims to efficiently integrate hospital care, home healthcare, and social care; however, the government does not interfere to the extent of forcing partners to cooperate. Thus, Japan is a good case to examine the type of control that drives and encourages voluntary coordination. Given the absence of strong government interventions, we examine lateral relationships among multiple organizations.

### 3. Conceptual Framework

Understandably, the scope of control should not be constrained to the narrow view of inter-organizational control, which is used as an administrative tool by managers to influence behavior of subordinates (Carlsson-Wall et al., 2011). When discussing inter-organizational relationships, it is important to involve both non-profit and public sectors because many of these organizations have norms or values that are not observed in private sectors relationships, and non-accounting professions managed by norms, values, and self-control (Abernethy and Stoelwinder, 1995; Carlsson-Wall et al., 2011; Llewellyn, 1998). Adopting these assumptions, we explore the application of the holistic structure of control and minimal structure (Kamoche & Cunha, 2001; Meer-Kooistra & Scapens, 2008, 2011).

#### 3.1 Lateral relationship

Studies have suggested that the configuration of accounting and context encourage coordination or information sharing among organizations. Thrane and Hald (2006) note that the relationship between context or boundary and accounting is inter-related and complementary. In addition, they state that “structural set-up determines the spaces where symbolic alliances form and accounting gradually emerges as an actor that redefines supply field structures and boundaries” (p. 312). Thus, it is useful to not distinguish between the underlying context and accounting and consider both within the same dimension, which is governance structure.

To understand inter-organizational governance structure within a lateral relationship, we adopt the concept of minimal structure (Kamoche & Cunha, 2001; Van der Meer-Kooistra & Scapens, 2008; 2015). Based on Van der Meer-Kooistra and Scapens’ (2008) definition, we define lateral relationships as being characterized by interdependence, complexity and continuous change and require forms of governance that emphasize exchange of knowledge, cooperation as well as competition, flexibility, standardization, and shifts in the leadership role.

We observe lateral relationships in the context of the design and control of networks formed around new public management and healthcare reform. For instance, various professional organizations are required to cooperate under the government policy to integrate healthcare and social care. Under these circumstances, the configuration of multiple governance structure enables certain cooperative practices.

### 3.2 Minimal structure

Meer-Kooistra and Scapens (2008) suggested the notion of minimal structure on the basis of Kamoche and Cunha (2001)<sup>2</sup>, who exploit the concept to explain the process of new product development within a firm. Using minimal regulations, arrangement or creative improvisation becomes possible. Creativity occurs within a minimal structure when there is sufficient room to maneuver. We adopt the concept of minimal structure because this is the one that has been proposed in the context of lateral relationships. Ahrens and Chapman (2004) discuss how tightness of control creates room for flexible activities by dividing controls into coercive and enabling control. However, both types assume a hierarchical relationship and thus, they differ from minimal structures.

Kamoche and Cunha (2001) present two structures as minimal structures, although they do so in an inter-firm setting. Meer-Kooistra and Scapens (2008, 2015) expand this notion to lateral relationships and revise minimal structures to include four structures (technical, social, economic, institutional structure). They add economic and institutional structures to explain relationships that transcend the boundaries of an organization.

Table 1 lists the functions of the minimal structures described in Meer-Kooistra and Scapens (2008). Social structures refer to behavioral norms established by communicating or sharing the organization's cultural behaviors. Trust and integrity emerge from teamwork with these structures, which also include a tacit perspective.

A technical structure governs the technical aspects of products and production techniques (Meer-Kooistra & Scapens, 2008) and information sharing through information systems such as IT devices. Basic knowledge between the members of cooperative organizations creates a technical structure.

An economic structure is the types of transaction determined by organizations; for example, delivery and payment are structures that regulate relationships between organizations. These structures also entail the measuring of performance and contributions.

An institutional structure denotes the rules and regulations that members share and adhere to. According to Meer-Kooistra and Scapens (2008), these regulations include those established by the government as well as organizations, such as contracts and conditions of employment. Meer-Kooistra and Scapens (2008) view institutional structures differently from the notion of institutions discussed in institutional theory. Institutional structures are simply "regulations and rules (both

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<sup>2</sup> Kamoche and Cunha (2001) were inspired by jazz improvisations, which include visible structures, such as a melody, harmony, rhythm, theme, or interval, and non-visible ones, that is, call-response, eye contact, or jamming.

internal as well as external to the organization) which define how transactions and relationship should be structured” (Meer-Kooistra & Scapens, 2008, p. 374). In addition, Meer-Kooistra and Scapens (2015) use economic and institutional structures to define the sphere within which a product process occurs while social and technical structure describes day-to-day operations.

**Table 1. Overview of Elements in the Four Structures (Meer-Kooistra & Scapens, 2008)**

Economic Structure	Institutional Structure	Social Structure	Technical Structure
Nature of market: volatility and extent of competition	Law and governmental regulation	Behavioral norms and values	Basic business knowledge
Visibility and measurability of performance and efficiency	Other institutional regulations (e.g., ISO)	Communication and networking	Technological knowledge about products and processes
Characteristics of transactions: e.g., quality, delivery, and payment	Type of contract	Teamwork and information sharing	Employees’ technical competencies
Characteristics of physical and non-physical asset investments	Organizational arrangements	Trust and integrity	Information systems and information-processing techniques
Frequency and volume of transactions	Formal nature of relationship	Leadership	Available accounting procedures and techniques
Length of relationship		Arrangement for individual and organizational learning	

In this study, we adopt the concept of minimal structure to explain the governance structure that encourages cooperation within a network setting; in particular, we use the four structures to show that groups embedded in a network maintain order, correspond flexibly, and share information.

#### 4. Method

We use a single case study method (Yin, 1989) to clarify the structure of network settings. We do so for two reasons: first, there are a limited number of cases in Japan that can be used to construct network settings for healthcare and social welfare services because most service providers are privately owned organizations. Second, a single case study is best suited to clarify the structure of network settings. More specifically, a single case study allows us to account for the numerous aspects in a network setting and the many stakeholders who generally have ulterior motives.

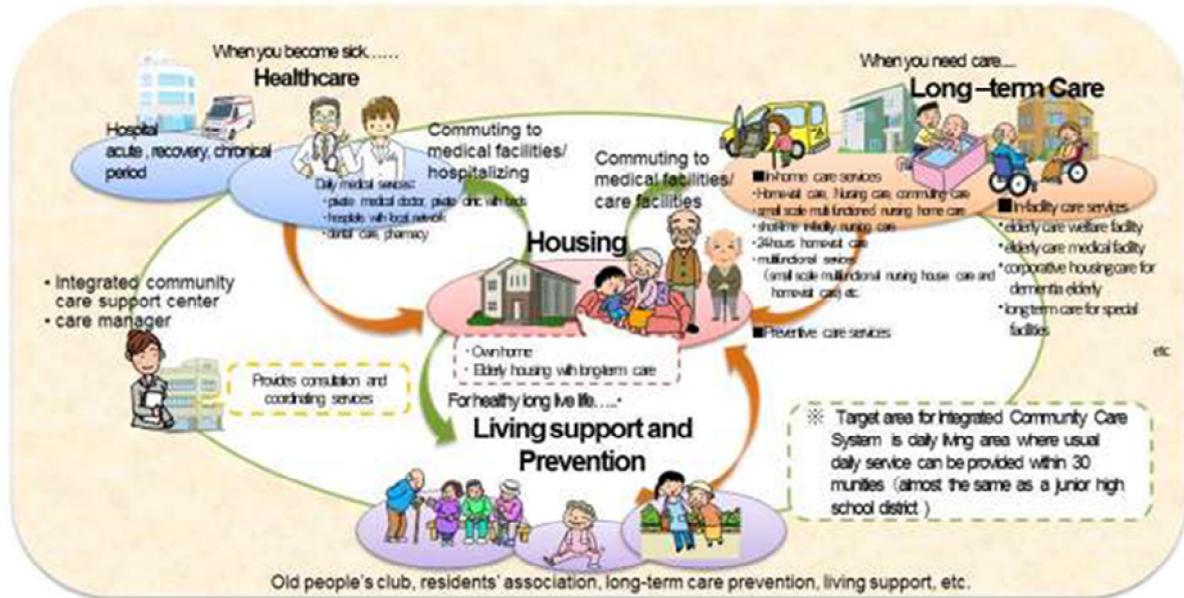
We focus on a healthcare and social welfare service network in Nishiyodogawa-ku in Japan's Osaka district. The area facilitates a shared, electronic information system that maintains health records ("Ni-Yon Net") and is used for healthcare services. The network consists of a large hospital (Chibune General Hospital of Aijinkai Healthcare Corporation), a medical association<sup>3</sup> in Nishiyodogawa-ku, several health clinics, home-visit nursing stations, and homecare workers' offices.

The number of elderly people in Japan is expected to peak by 2025 and this prompted the Japanese government to set up the community-based integrated care system. This reform has two main objectives: improve sustainability by revising the remuneration for care-providing facilities and integrate the establishment of a new service system (Figure 1). These goals are expected to produce an efficient and effective healthcare and social welfare service network in each district. However, unlike in Europe, the healthcare and social welfare services in Japan are mainly provided by private non-profit organizations. Thus, the networks are voluntarily built by private organizations in each district.

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<sup>3</sup> A medical association is a professional organization representing a physician.

Figure 1. Community-based Integrated Care System by 2025



Source: MHLW (2014) report on the study group for Japan's International Contribution to "Active Aging"

Given these conditions, Chibune General Hospital plays an important role in the Nishiyodogawa-ku network. The Hospital decided to invest in the voluntary provision of an improved shared system for the region. This unique system is called "Ni-Yon Net." A member on the board of directors of Aijinkai Healthcare Corporation, who is also the vice deputy chairman of a medical association in Nishiyodogawa-ku and the department director of internal medicine at Chibune General Hospital, mainly facilitated the shared, electronic health record system and created "Ni-Yon Net," which was later used by other organizations in the Nishiyodogawa-ku network.

We conducted a semi-structured interview with individuals associated with the Nishiyodogawa-ku network and the "Ni-Yon Net" project (e.g., board of directors of Aijinkai Healthcare Corporation or persons in charge of the network). The objective of the interview was to obtain an overview of the roles of the four structures in the network. A total of four interviews (with eight persons) were conducted from July 2015 to February 2016 (see Appendix). The average length of each interview was 2 hours. All interviews were recorded and transcribed. We also analyzed qualitative and quantitative documents related to the "Ni-Yon Net."

## 5. Case Study

An analysis of the interview results reveals that the four structures (economic, institutional, social, and technical) affected the construction of the “Ni-Yon Net.” In this section, we first introduce the management control systems of Aijinkai Healthcare Corporation, of which Chibune General Hospital, a main player in the creation of “Ni-Yon Net,” is a member. In addition, we describe the effect of the management control systems on the behavior of Chibune General Hospital. Second, we discuss a previous version of an inter-organizational ICT system at Nishiyodogawa-ku, “a. i. net”. Finally, we describe the creation process for the “Ni-Yon Net,” which is based on a. i. net. More specifically, we explore the decision-making process for the Ni-Yon Net-related investment, pressure from the Osaka-fu medical association on the Nishiyodogawa-ku medical association, and mutual trust between Chibune General Hospital and Nishiyodogawa-ku medical association. Notably, there are no acute care hospitals in Nishiyodogawa-ku, except Chibune General Hospital.

### 5.1 Management control systems in Aijinkai Healthcare Corporation<sup>4</sup>

Aijinkai has a rigid budgeting system. Monthly director meetings (Riji-kai) are held to review the profitability of departments and wards. One of the directors highlighted the importance of having a profit target since Aijinkai is a private hospital and the significance of achieving this target is understood throughout the hospital. For instance, a staff member mentioned that even if one department does not meet this profit target, all other departments and the medical corporation as a whole would not receive new medical equipment.

Aijinkai also has an investment decision-making system (capital budgeting system), where all investment alternatives must be subject to two reviews: first, six managing directors (Jyomu-kai) discuss the profitability, cash flow, and qualitative importance of alternatives. Once the alternatives are approved, a meeting is held with more than 40 directors (Riji-kai). Following this two-step review, each hospital can invest in the alternatives. Even if hospitals have enough money, they need permission from members in the two meetings if the investment requires more than 3 million yen.

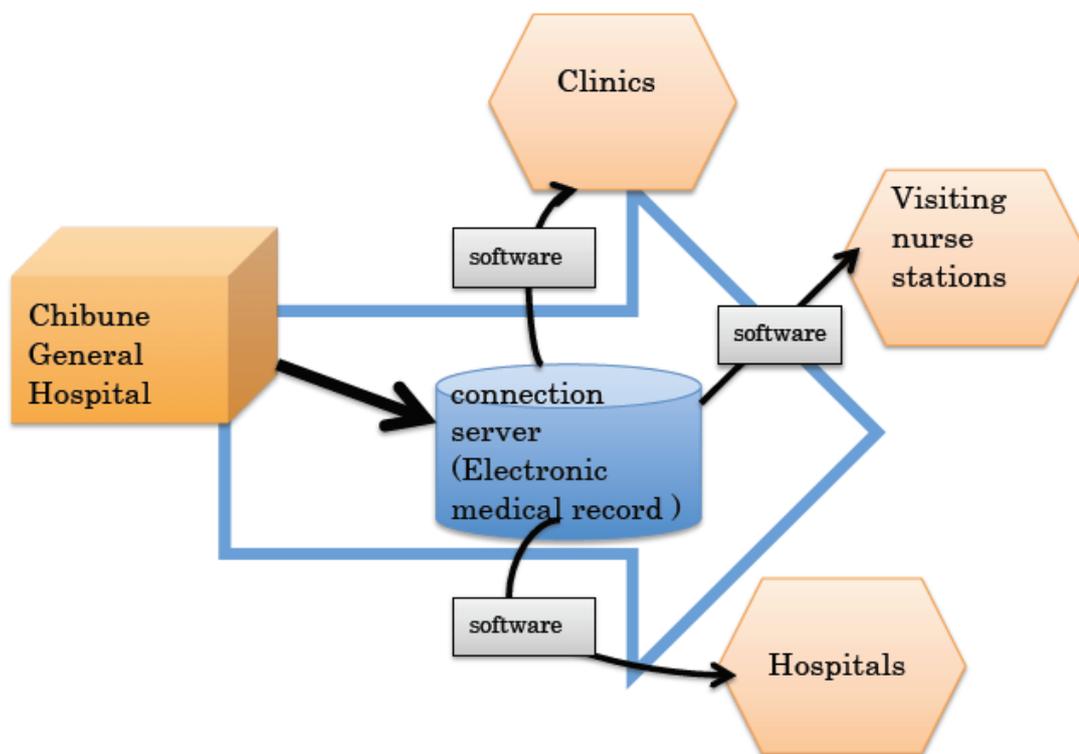
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<sup>4</sup> In addition, Aijinkai has a unique performance management system whose management is based on objectives and quality control activities. However, the system is not related to the creation of “Ni-Yon Net,” and thus, we do not describe it in detail.

5. 2. “a. i. net:” home medical care coordination using an ICT system

Chibune General Hospital has provided open access to their electronic medical records for clinics, visiting nurse stations, and other hospitals located in Nishiyodogawa-ku and surrounding regions (Figure 2). They initiated this program for two reasons. First, the Hospital wanted to increase patient referrals from other medical institutions. By providing access to their electronic medical records, other institutions were able to keep track of the medical care their patients received after being referred to Chibune General Hospital. This information sharing was expected to facilitate coordination between Chibune General Hospital and other medical institutions and widen the preference for the Hospital among physicians of clinics and other medical practitioners.

**Figure 2. Illustration of Coordination in “a. i. net”**



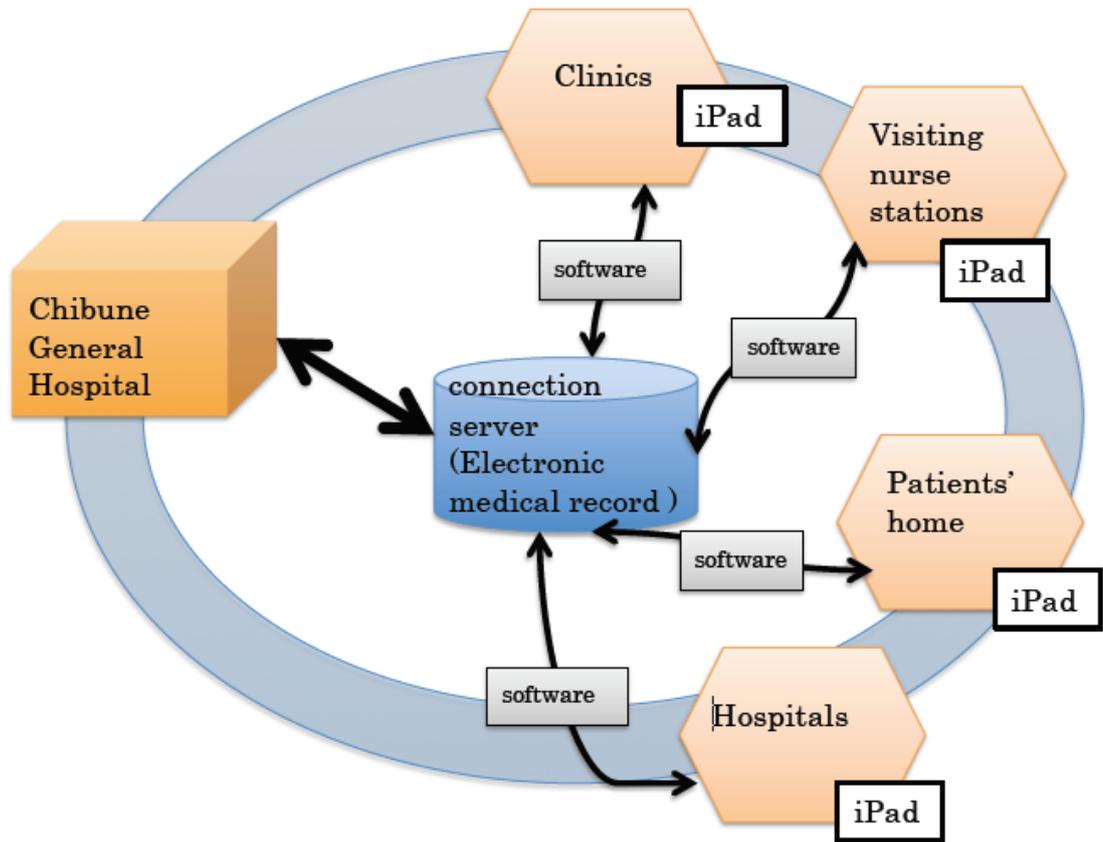
Second, Chibune General Hospital wanted to be certified as a hospital that supports community healthcare cooperation (Chiiki-iryō Shien Byōin). The Japanese medical insurance system reimburses all types of medical care and this amount increases if a hospital satisfies certain conditions, for example, a high referral rate, and is certified.

Following the establishment of “a. i. net” in 2011, Chibune General Hospital’s referral rate increased from 30% to 50%. However, it was observed that “a. i. net” had not sufficiently penetrated adjacent medical institutions. This is because “a. i. net” was a one-to-many network (i.e., Chibune General Hospital to other medical institutions) and its information flow is one way; for example, a medical institution cannot electronically share its medical records of patients with Chibune General Hospital and other medical institutions. Because of this one-way information sharing, the coordination between Chibune General Hospital and other institutions remained limited. In sum, the merit of “a. i. net” was not sufficiently large for certain medical institutions and thus, it was unable to penetrate as many adjacent medical institutions as expected.

### 5. 3. “Ni-Yon Net:” reciprocal information sharing and coordination

“Ni-Yon Net” is based on “a. i. net,” but it has additional functions (Figure 3). “Ni-Yon Net” is a many-to-many network and has reciprocal information flow. Under this system, Chibune General Hospital lends Apple iPads to clinics and home nursing stations; physicians and nurses can then access the Hospital’s electronic health records from anywhere (including a patient’s home) using the iPad application. In addition, they can use the application to record the medical services they provide to patients and their health conditions as well as upload pictures and medical documents of the patients.

**Figure 3. Illustration of Coordination in “Ni-Yon Net”**



According to the director of Chibune General Hospital, physicians in hospitals and clinics and nurses in home nursing stations can also use the “Ni-Yon Net” to coordinate their home visits, which can be rather challenging without an inter-organizational ICT system. In addition, a private clinician mentioned that the exchange of patient information using “Ni-Yon Net” contributes to improved care quality.

#### 5. 4. Construction process of the “Ni-Yon Net”

Chibune General Hospital set up “Ni-Yon Net” for several reasons. One of the key objectives of “a. i. net,” and thus, “Ni-Yon Net,” is to increase the number of patients and referral rates. To reinforce this goal, the director improved the functioning of the ICT network. In fact, a

private clinician mentioned that, because of “Ni-Yon Net,” he preferred referring patients to the Chibune General Hospital.

The Japanese Ministry of Health, Labour and Welfare promotes home healthcare and subsidized projects that encourage cooperation within home healthcare institutions in each prefecture. As a result, the Osaka-fu medical association stipulated the implementation of home healthcare-related projects in every district medical association. However, the Nishiyodogawa-ku medical association was lagging behind in terms of home healthcare projects and thus, faced pressure from the Osaka-fu medical association<sup>5</sup>. Given this pressure, the former chairman of Nishiyodogawa-ku medical association suggested the utilization of the subsidy from the Osaka Prefecture to improve “a. i. net” and encourage cooperation within the local healthcare sector, which triggered the launch of “Ni-Yon Net.”

However, Osaka Prefecture’s subsidy, which was set up for the development of an ICT system to support home healthcare cooperation, amounted to 20 million yen, whereas the investment for “Ni-Yon Net” amounted to 40 million yen. This meant that the Chibune General Hospital had to invest 20 million yen. Thus, the department director of the Chibune General Hospital, who is also the vice deputy chairman of the Nishiyodogawa-ku medical association and director of Aijinkai Healthcare Corporation, became involved in the decision-making process regarding the investment in “Ni-Yon Net.” Since the investment amount was more than 3 million yen, the director was required to convince the managing directors and other directors of this investment.

In the meeting of managing directors (Jyomu-kai), the decision to invest in the project was approved without objection. In addition to increasing the referral rate, the project was considered socially significant as it involved local medical institutions and the medical association. This, and the approval by Osaka Prefecture through the grant of the subsidy, consolidated Chibune General Hospital’s position in Nishiyodogawa-ku and enhanced its reputation.

In June 2015, “Ni-Yon Net” was successfully initiated and seven months later, 21 medical institutions in Nishiyodogawa-ku joined the network (one hospital, 18 clinics, and two home nursing stations). During this phase, the system reported 20 physicians and 42 nurses as users who provided information on a total of 62 patients with their consent.

“Ni-Yon Net” has been successful in Nishiyodogawa-ku thus far. According to the director, other districts are considering the introduction of an inter-organizational ICT network; however, many of them are yet to introduce similar systems owing to severe competition within districts and

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<sup>5</sup> The Nishiyodogawa-ku medical association initiated two other programs related to home healthcare: one promotes inter-professional collaboration and the other examines the distribution of social resources in the district.

difficulties in achieving cooperation from medical associations. Moreover, the competition would lead to other hospitals proposing countermeasures in response to an inter-organizational ICT network. These factors render it increasingly difficult for hospitals to construct inter-organizational networks and local medical associations to cooperate with certain hospitals.

On the other hand, there are no acute care hospitals in Nishiyodogawa-ku, except the Chibune General Hospital. Thus, when Chibune General Hospital initiated “Ni-Yon Net,” other hospitals did not propose countermeasures. In addition, the Hospital’s physicians have served as directors of the Nishiyodogawa-ku medical association for many years and thus, both entities were able to establish a cooperative relationship based on mutual trust.

## 6. Discussion

According to Meer-Kooistra and Scapens (2008), a governance approach for lateral relationships is based on minimal structures that are composed of economic, institutional, social, and technical structures. On the one hand, the minimal structure regulates lateral relationships and on the other hand, it leaves room for maneuverability, thus allowing organizations to respond to new situations. In the case of “Ni-Yon Net,” minimal structures affect new lateral relationships within healthcare institutions in Nishiyodogawa-ku.

More specifically, economic structures affected Aijinkai’s decision-making process for investments in the ICT network. Given the high priority given to attaining a profit target, “Ni-Yon Net” (formerly “a. i. net”) was expected to increase the number of patients and referrals, which in turn would expand revenue. A high referral rate also allows hospitals to obtain a certification for supporting community healthcare cooperation.

Next, effects of the social structure on the investment process were observed. During a meeting of managing directors (Jyomu-kai), the directors highlighted the social significance of the investment and promoting cooperation in home healthcare services. As a result, the decision to invest in this system was made with no objection. Further, the social structure partly contributed to the success of constructing “Ni-Yon Net.” The trust relationship between the Chibune General Hospital and the Nishiyodogawa-ku medical association helped establish a cooperative relationship between each other.

Institutional constraints motivated Chibune General Hospital to set up “Ni-Yon Net.” The medical association in Osaka Prefecture put pressure on the Nishiyodogawa-ku medical association to initiate home healthcare projects. Osaka Prefecture also introduced a subsidy to develop an ICT system that facilitated home healthcare cooperation. The vice deputy chairman of Nishiyodogawa-

ku medical association, who was also the department director of Chibune General Hospital, decided to utilize this subsidy to enhance the functions of “a. i. net.” Finally, technical structures, that is, electronic medical records, a connection server, iPads, and the application software facilitated inter-organizational information flow and coordination.

These structures as a whole contributed to the establishments of “Ni-Yon Net.” Previous research (Meer-Kooistra & Scapens, 2015) on the Phenom (electron microscope) project shows that the four structures played a role during the product development process: institutional structures provided the context for cooperation, economic and technical structures were established at the start of the project, and social structures (mutual reliance among project team members) were developed during the development stages. By contrast, in our research, the four structures existed before the launch of project and provided the context for coordination. In addition, this research demonstrates the effect of economic and social structures on investment-related decision-making in a non-profit organization. That is, a decision-making process in a network of for-profit organizations (Miller & O’Leary, 2005) is mainly driven by the economic structure, whereas in non-profit organizations, investments are economically and socially motivated.

## 7. Conclusions

This study analyzed the structures that promote inter-organizational coordination using a minimal structures framework. In particular, we explored “Ni-Yon Net,” an inter-organizational home healthcare network based on economic, institutional, social, and technical structures. This research, to the best of our knowledge, is the first to address lateral coordination, thus contributing to the inter-organizational management accounting literature. We showed that minimal structures provide the context for lateral coordination and play various roles in those presented in previous research (e.g., Meer-Kooistra & Scapens, 2015). In addition, studies on decision making in for-profit inter-organizational networks highlight that economic structures are the main driving force of investment. By contrast, this research shows that in non-profit organizations, both economic and social structures affect the decision-making process.

Despite its contributions, this study is subject to certain limitations. First, the results and discussion presented here are based on Aijinkai’s staff members and private clinician and do not include the viewpoints of nurses in home nursing stations. Future research should, therefore, interview nurses from home nursing stations to provide holistic insights.

Inter-organizational ICT networks in the healthcare sector are likely spread throughout Japan and other countries, particularly in the public sector (Barretta & Busco, 2011). In other words, there

is considerable potential for research on lateral relationships in home healthcare and the roles of minimal structures in these networks. The current study serves as a starting point for such efforts.

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## Appendix

**Table A1. Summary of Interviews**

Role	Organization	Date	Time (hours)
Board of director Department chief	Front Office in Aijinkai Healthcare Corporation	July 17, 2015	1.0
Board of director Department chief	Front Office in Aijinkai Healthcare Corporation	August 26, 2015	2.5
Vice deputy chairman and department director of internal medicine Department chief	Medical Association in Nishiyodogawa-ku and Chibune General Hospital  Aiwakai Social Welfare Corporation	January 6, 2016	2.5
Director	Tai Internal Medicine Clinic	February 16, 2016	2.0
Total			8.0