

A Model of Effective IT Governance for Collaborative Networked Organizations

Morooj Safdar¹, Greg Richards² and Bijan Raahemi²

¹Faculty of Engineering, University of Ottawa, Laurier Ave., Ottawa, Canada

²Telfer School of Management, University of Ottawa, Laurier Ave., Ottawa, Canada

Keywords: IT Governance, IT Governance Framework, Collaboration, Collaborative Networks, Collaborative Networked Organizations.

Abstract: Inter-organizational collaboration based on the use of IT systems is now essential for organizations working as Collaborative Networked Organizations (CNOs). However, little research has been done to examine the critical success factors involved in shared IT governance among members of a CNO. Accordingly, this research develops a model of inter-organizational IT governance composed of critical success factors (CSFs) and key performance indicators (KPIs). The study defines fourteen CSFs that are classified under the main four categories of IT governance, which include strategic alignment, resource management, value delivery and risk management, and performance measurement. The main dimensions of the KPIs include consensus, alignment, accountability, trust, involvement and transparency. To validate the research model, we conduct a case study of a healthcare CNO by gathering insights from CNO participants on the importance of the proposed CSFs and performance indicators included. The findings of the research validate the importance of the CSFs but suggest that they could be ranked in order of criticality. In addition, certain CSFs were redefined based on the experience of CNO participants and questions were raised related to the context of the CNO, which influences participant perceptions, as well as to the degree of formalization noted in the CNO.

1 INTRODUCTION

A vast number of organizations are adopting different forms of alliances or corporate structures to manage their processes, gain a competitive advantage, and collaborate efficiently with inter-organizational entities (Prasad, Green, and Heales, 2012). In these alliances, several corporate structures operate in different geographical locations, which increases the number of virtual organizations or collaborative organizational structures “COSs”. These structures adopt and use different IT resources in order to maintain a successful level of collaboration. Moreover, the emergence of dynamic IT technologies, specifically web 2.0 tools, has a significant effect on the formation of alliance structures that depend on the creation of IT governance models (Prasad, Green, and Heales, 2012). Accordingly, the number of IT projects undertaken by organizations has grown exponentially in recent years. Unfortunately, a large number of these projects fail, whether being conducted within or between organizations (Weill

and Woodham, 2002). These failures could be related to incomplete or poorly executed IT projects, the complexity of the nature of IT technologies and tools (Ko and Fink, 2010), or ineffective governance or use of IT systems (Weill and Woodham, 2002). Therefore, collaborative-networked organizations “CNOs” should not only try to exploit the shared IT resources effectively but also maintain and adopt effective governance models to increase their chances of success.

2 BACKGROUND

The mainstream research on IT governance tends to emphasize the single organization as the unit of analysis (Ali and Green, 2009; Huang et al., 2010; Willson and Pollard, 2009). In the area of IT governance and considering CSFs as essential elements for its effective implementation, few CSF studies have been undertaken, although IT governance has become critical to most organizations today (Rusu and Nufuka, 2011).

Although studies on best practices and success factors of IT governance exist, they target a single organization as a unit of analysis (Ferguson et al., 2013; Ko and Fink, 2010; Rusu and Nufuka, 2011; Weill and Ross, 2004; Weill and Woodham, 2002). There are also studies that prove the importance of collaborative network IT governance and the business value of IT to the network (Camarinha-Matos et al., 2009; Rabelo and Gusmeroli, 2006; Prasad, Green, and Heales, 2012; Haes and Grembergen, 2005; Melville, Kraemer, and Gurbaxani, 2004), but these do not define CSFs or KPIs to measure its effectiveness.

The success factors proposed in Rusu and Nufuka (2011) and other studies (Guldentops, 2004; A.T. Kearney, 2008; Weill and Woodham, 2002; Ferguson, Green, Vaswani, and Wu, 2013) of traditional organizations with effective IT governance may not necessarily apply to situations of inter-organizational collaboration. In this context, there is always a conflict of knowing who is responsible for handling the IT governance practices for the CNO and how the CNO will assess and test the effectiveness of adopting such a form of network governance (Provan and Kenis, 2007).

Accordingly, this research focuses on defining a model for effective IT governance for CNOs that includes CSFs and assigned KPIs to help the collaborative achieve success in collaboration and in controlling the shared IT assets.

3 THE PROPOSED MODEL OF EFFECTIVE IT GOVERNANCE FOR CNO

The proposed model targets the strategic level of the collaborative-networked organization. The model consists of critical success factors represented in the squares in Figure 1 and key performance indicators that measure the CSFs represented in shaded circles. The model is designed based on the four main categories of IT governance represented in the rectangles at the edges of Figure 1: strategic alignment, resource management, performance measurement, and value delivery and risk management. Each category of IT governance has critical success factors assigned to it. The key performance indicators are categorized into 6 dimensions, which are alignment, consensus, accountability, trust, transparency and involvement, assess the effectiveness of the CSFs.

3.1 Critical Success Factors for CNO Effective IT Governance

Critical success factors define the most important management-oriented implementation guidelines to achieve control over and within its IT processes (ITGI and OGC, 2005). Focusing on the CSFs will

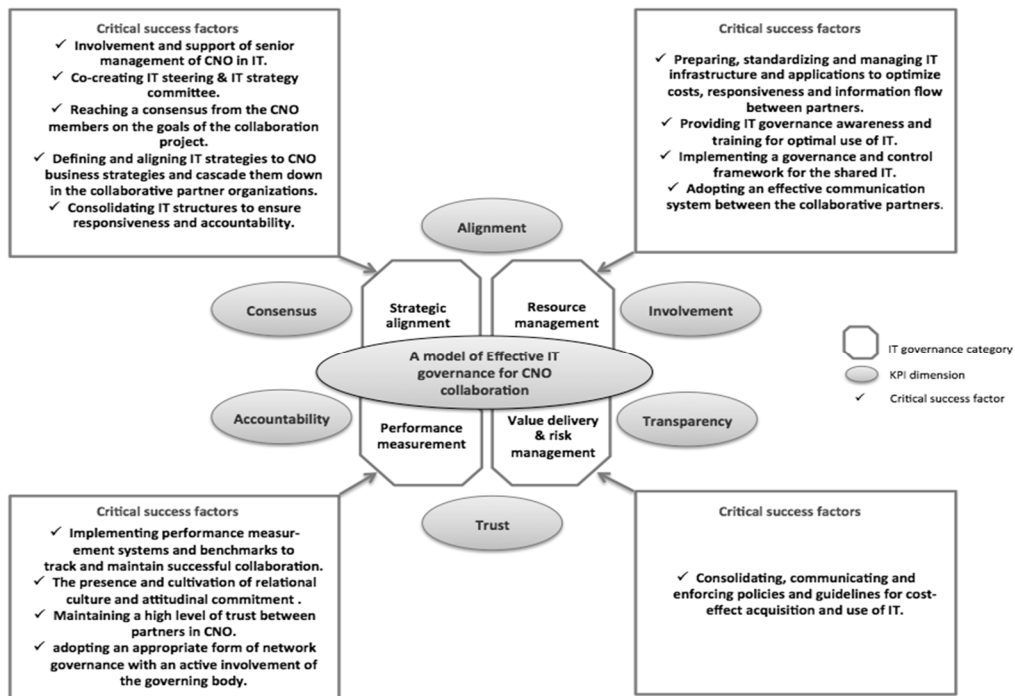


Figure 1: A model of effective IT governance for CNOs.

identify the most vital processes that directly influence the organization's performance (Shivashankarappa, Dharmalingam, Smalov, and Anbazhagan, 2012). The proposed model of effective CNO IT governance is depicted in Figure 1.

The KPI dimensions of CNO effective IT governance and their assigned critical success factors are discussed in more detail in the following section.

3.1.1 Consensus: Reaching a Consensus from the CNO Members on the Goals of the Collaborative Project

Consensus on goals and "domain similarity" allows organizational participants to collaborate better than when there is conflict, although conflict can also be a stimulant for innovation. Van de Ven (1976) argued that when there is general consensus on broad network-level goals, both regarding goal content and process, and in the absence of hierarchy, network members are more likely to be involved and devoted to the network and more likely to work together (cited in Provan and Kenis, (2007)). There may be significant differences across networks and network members regarding agreement on network-level goals and the extent to which organizational goals can be achieved through network involvement. Although high goal consensus is, apparently, an advantage in building network-level commitment, networks can still be somewhat effective with only moderate levels of goal consensus (Provan and Kenis, 2007), since the goal of the shared project is not necessarily the goal of all participants (Tapia et al., 2008).

3.1.2 Alignment: Defining and Aligning IT Strategies to CNO Business Strategies and Cascading Them down in the Collaborative Partner Organizations

Building a strong relationship between senior IT managers and senior business managers to support both their strategies and day-to-day operations is fundamental for organizations to achieve effective IT governance. Managers need to identify key goals across IT to help support business strategies (Richards, 2006). A very influential tactic to build and then strengthen such informal relationships is by collaboratively involving the targeted individuals in formal decision processes related to IT governance (Huang, Zmud, and Price, 2010).

It is the responsibility of each collaborative

organization representative in the IT steering committee to cascade both strategies and IT governance practices to the operational level of their individual organizations. In a network of organizations, IT governance is required at several levels. Organizations with different IT needs in divisions, business units, or geographies require a separate but connected layer of IT governance for each entity. Connecting the governance arrangement matrices for the multiple levels in an organization makes explicit the connections, common mechanisms, and pressure points (Weill, 2004).

3.1.3 Adopting an Appropriate Form of Network Governance with the Active Involvement of the Governing Body

To attain successful collaboration within a network, a CNO must make sure to choose the most suitable governance form or structure (Provan and Kenis, 2007), and more effective collaborative IT governance is associated with the active involvement of a governing body (Chong and Tan, 2012). Chong and Tan (2012) state that it is imperative to assign a governing body to regulate and monitor the committees such as IT strategy and IT steering committees. Network governance forms can be categorized according to two distinctions; whether the form is brokered or not, and whether the brokered network is a participant or is externally governed. Each form has certain basic structural characteristics and is applied in practice for a variety of reasons; accordingly, no one model is inherently superior or effective. Rather, each form has its own specific strengths and weaknesses leading to outcomes that are likely to depend on the form chosen (Provan and Kenis, 2007).

3.1.4 Involvement and Support of CNO Senior Management in IT

Senior management support for IT is considered to be the most important enabler of business and IT alignment (Ferguson, Green, Vaswani, and Wu, 2013), and crucial to effective IT governance (Huang, Zmud, and Price, 2010). This practice refers to an organization's senior executives' personal engagement and support in IT-related decision making such as investments and monitoring processes. This involvement finds participating senior managers and executives interacting with one another to outline and discuss IT-related issues; it occurs through formal and informal pathways. Formally, the senior managers of each partner

organization cooperate and interact through their participation on established IT governance bodies, such as IT steering committees, that shape and direct IT-related strategies, policies and actions. Informally, these senior managers interact while carrying out their day-to-day work responsibilities (Chan, 2002). Huang et al. (2010) found that the performance of IT tends to be better with both the formal (through steering committees) and informal (through personal interactions) involvement of IT and business senior managers in IT-related decision making processes than with informal involvement alone.

3.1.5 Accountability: Co-creating IT Steering and IT Strategy Committees

A governance practice considered fundamental for effective IT governance and the alignment of IT-related decisions and actions with an organization's strategic and operational priorities is the IT steering committee, which is a body comprised of senior executives/managers convened to administer and coordinate IT-related activities. The IT steering committee is a formal body that includes representation from both business and IT executives who regularly meet to address specific IT-related issues, and whose interaction during these deliberations ensure that the various represented interests and perspectives are heard (Huang, Zmud, and Price, 2010; Ferguson, Green, Vaswani, and Wu, 2013). An IT steering committee in the case of a collaborative-networked organization is co-created and involves representatives from each of the CNO constituents. The co-created IT steering committee functions as a 'board of directors', which involves IT/business executives, managers, and professionals holding differing vested interests and perspectives for specific domains of IT-related activities in setting CNO-wide policies and procedures, allocating resources, and monitoring the performance of the shared IT resources.

3.1.6 Consolidating IT Structures to Ensure Responsiveness and Accountability

The IT governance structure deals with the decision-making structures and the responsible committees/functions adopted for IT-related decisions (Brown and Grant, 2005). This practice is vital to ensure responsiveness and accountability, and positively enhances IT governance performance (Rusu and Nufuka, 2011). The three most prevalent governance structures are centralized, decentralized,

and hybrid "federal" structures (Brown and Grant, 2005). With centralized governance structures, IT decisions follow a top-down, enterprise-wide perspective, while with decentralized governance structures, IT decisions reflect a bottom-up, local work unit perspective. Although the centralized and decentralized governance structures by definition are mutually exclusive, an organization's important IT decisions can also be orchestrated through a third sort of governance structure, which is the hybrid structure or the federal mode. Hybrid governance structures may indicate a variety of alternative structures, most typically: collaboratively engaging participants holding enterprise-wide perspectives with participants holding local perspectives, simultaneously using centralized governance structures for some IT decisions and decentralized governance structures for other IT decisions, or applying both of these designs. For each type of governance structure there are distinct advantages and disadvantages.

3.1.7 Implementing a Governance and Control Framework for the Shared IT

Applying a governance framework to control the shared IT assets is considered essential to successful IT governance. One of the most commonly used governance reference frameworks, which is the choice of many regulators and commentaries, is the Control Objectives for Information and related Technology (COBIT). COBIT is well accepted by many enterprises; it is mainly introduced by the audit function as the auditors' framework for judging control over IT, and IT groups have picked it up, often because it provides for performance measurement. COBIT offers the foundation and the tool set to analyze, based on the enterprise value and risk drivers, where the enterprise is relative to IT governance, and where it needs to be (Guldentops, CISA, and CISM, 2004).

3.1.8 Implementing Performance Measurement Systems and Benchmarks to Track and Maintain Successful Collaboration

Measuring the performance of the partners' collaboration is essential to managing collaborative networks in general (Camarinha-Matos et al., 2008) and to achieving effective IT governance (Rusu and Nufuka, 2011). In collaborative environments, inter-organizational Performance Indicators (PIs) must be addressed, as well as intra-organizational ones, in

order to fully cover the performance of the alliance (Kamali, 2013). The use of a performance measurement system incorporating a set of metrics provides management with an accurate view of IT operations performance and assists them with a means to help improve governance and accountability for many stakeholders (Ferguson, Green, Vaswani, and Wu, 2013). The most widespread performance management system, since the mid-1990s, is the balanced scorecard (BSC). It allows organizations to follow-up with and assess their strategies. The use of the BSC as a performance measurement system for IT operations is reinforced by agency theory as a mechanism to reduce agency losses by more efficiently monitoring the IT operations. Advocates of the balanced IT scorecard recommend that the benefits of such a system go beyond the traditional financial assessment methods and extend them to include measures relating to customer satisfaction, internal processes, expertise of IT staff, and the ability to innovate; these measures may be compared with benchmarking figures (Ferguson, Green, Vaswani, and Wu, 2013).

3.1.9 Trust: Maintaining a High Level of Trust between the CNO Members

Trust has been identified as key to IT governance (Richards, 2006). In the general network literature, it has frequently been considered as critical for network performance and sustainability (Provan and Kenis, 2007). Trust in collaborative networks has been defined as “the willingness to accept vulnerability based on positive expectations about another’s intentions or behaviors” (McEvily, Perrone, and Zaheer, 2003, 92). Provan and Kenis (2007) argue that to understand network-level collaboration the dissemination of trust is critical, as is the degree to which trust is reciprocated among network members. In addition, it is not only that trust is considered a network-level concept but also that network governance must be consistent with the general level of trust density that occurs across the network as a whole.

3.1.10 The Presence and Cultivation of Relational Culture and Attitudinal Commitment

Chong and Tan (2012) indicate that more effective collaborative IT governance is associated with a coordinated communication process and the presence of relational culture and attitudinal

commitment. As a collaborative network consists of several organizations, a relational organizational culture is crucial to managing the interactions required for IT governance implementation and to deliver a shared understanding between IT and business people. Organizational culture plays a significant role in influencing collaborative behavior, and a strong organizational culture can enhance the co-ordination processes, support consistent decision-making processes, and increase the level of attitudinal commitment. The extent to which the organizational cultures differ in a collaborative network is known as cultural distance; a wider cultural distance will result in lower levels of integration and cohesion (Shachaf, 2008). Accordingly, it will lead to inefficient flows of information and a constrained communication process within the network, which in turn will affect the collaborative relationships. Hence, it is critical for a collaborative network to promote and cultivate a relational organizational culture that unifies subculture beliefs and practices within the network.

The attitudinal commitment refers to an emotional or affective component that is driven by the feelings and attitudes of the participants to the specific relation. It is more appropriate for the committee members to possess attitudinal commitment, as they would allocate most of their time to controlling and managing their functional roles (Chong and Tan, 2012).

3.1.11 Transparency: Adopting an Effective Communication System between Collaborative Partners

One of the practices of effective IT governance is ensuring that the deliberations of the governance bodies and IT steering committees are well disseminated, communicated, and accessed by all appropriate members (Huang, Zmud, and Price, 2010). Making each IT governance mechanism transparent to all managers is considered a critical success factor of IT governance. The more IT decisions are made secretly and outside of the governance framework, the less confidence people will have in the structure and the less willing they will be to play by the rules, which are designed to increase enterprise wide performance (Weill, 2004). Achieving transparency involves the adoption of a suitable communication system between the partner organizations and the members, facilitating the collaboration process. The communication system is essential for disseminating rules and policies across the CNO. The type and nature of communication

system adopted depends on the size of the organization and its number of partners. In some situations, it could be very simple, for example with the use of emails, or very complex with the establishment of a shared platform. A larger number of communication channels results in a more efficient use of IT and a greater breadth of IT use. Having Intranet as the only organizational communication channel would not necessarily enable better communication of IT governance processes and decisions. Rather, it requires more communication channels to integrate and disseminate information, enabling a wider degree of IT governance transparency, and a shared understanding between business and IT can be established (Weill and Ross, 2004). Coordinated synchronous and asynchronous communication channels would play an important role in facilitating the collaborative network's processes (Chong and Tan, 2012).

3.1.12 Preparing, Standardizing, and Managing IT Infrastructure and Applications to Optimize Costs, Responsiveness, and Information Flow between Partners

Organizations in the collaborative network must be ready and prepared in advance with the needed IT applications to successfully communicate with partners and commence the collaboration project (Rabelo and Gusmeroli, 2006). The IT preparation includes compliance with a common interoperable infrastructure, the adoption of common operating rules, and a common collaboration agreement, among others. Peterson (2004) also suggested that the practice of preparing, standardizing and managing IT infrastructure would help produce reliable and cost-effective infrastructure and IT applications (cited in Rusu and Nufuka, 2011).

3.1.13 Providing IT Governance Awareness and Training for Optimal Use of IT

Ensuring that knowledge about IT and its governance are available to the collaborative organizations is crucial and acts as a stepping-stone to achieving effective IT governance. This practice is important for innovation and to optimize IT capabilities and governance (Rusu and Nufuka, 2011). Education to help managers understand and use IT governance mechanisms is critical. Educated users of governance mechanisms suggest that committee members are more likely to be

accountable for the decisions they make and less likely to second-guess other decisions (Weill, 2004).

3.1.14 Consolidating, Communicating, and Enforcing Policies and Guidelines for the Cost-Effective Acquisition and Use of IT

This practice is fundamental to effective IT governance as it introduces and enforces best practices and clearly informs the organization as a whole about the processes, methods, and framework to which it needs to adhere, hence encouraging desirable behaviours and optimal IT value creation and preservation (Rusu and Nufuka, 2011). Besides, Huang et al. (2010) state that the manner by which IT-related policies, guidelines, and procedures are clearly communicated to employees and disseminated across an organization is considered significant to efficient IT deployment and effective IT governance.

In order to have a common understanding of applicable IT-related actions to frame the interactions of individuals involved in IT-related activities, it is essential that these policies, guidelines, and procedures regarding sanctioned IT behaviors be widely disseminated through an effective communication system (Uzzi, 1996; Walker et al., 1997). Compliance with operating policies, rules, and policies are essential to achieve successful IT governance. For example, the enterprise's security program must be continuously monitored and evaluated, through internal auditing, for compliance. In order to effectively implement security policies to ensure compliance, one must develop applicable change management strategies since people are often resistant to change (Shivashankarappa, Dharmalingam, Smalov, and Anbazhagan, 2012).

3.2 Key Performance Indicators of Effective CNO IT Governance

Key Performance Indicators (KPIs) are the measurements that represent the enterprise's critical success factors for which a balanced scorecard can be used (Shivashankarappa, Dharmalingam, Smalov, and Anbazhagan, 2012). Key performance indicators are lead indicators that define measures of how well the IT process is performing in enabling the goal to be reached (ITGI and OGC, 2005).

The key performance indicators for assessing inter-organizational IT governance are depicted in Table 1.

Table 1: Key Performance Indicators for Assessing Inter-Organizational IT Governance.

Dimension	Code	Indicator	Description	Interpretation
Consensus	CO1	Goal Consensus	The level of the partners' agreement on the CNO stated goals and objectives "collaborative project goals".	It can be high, moderately high, or moderately low (Provan & Kenis, 2007).
Alignment	AL1	Understanding of business by IT	The level of awareness and understanding of the business strategies, policies and goals by the IT staff.	It can be one of the following: 1- IT management not aware 2- Limited IT awareness 3- Senior and mid-management 4- Pushed down through organization 5- Pervasive
	AL2	Understanding of IT by business	The level of awareness and understanding of the IT strategies, policies and goals by the business people.	It can be one of the following: 1- Business management not aware 2- Limited business awareness 3- Emerging business awareness 4- Business aware of potential 5- Pervasive
	AL3	Business perception of IT value	The level of IT value perceived by business people.	It can be one of the following: 1- IT perceived as a cost of business 2- IT emerging as an asset 3- IT is seen as an asset 4- IT is part of the business strategy 5- IT-business co-adaptive
	AL4	Role of IT in strategic business planning	The degree to which IT is involved in business planning.	It can be one of the following: 1- No seat at the business table 2- Business process enabler 3- Business process driver 4- Business strategy enabler/driver 5- IT-business co-adaptive
	AL5	Shared goals, risks, and risks/penalties	The degree to which IT is accountable for shared risks and rewards.	It can be one of the following: 1- IT takes risk with little reward 2- IT takes most of risk with little reward 3- Risk tolerant; IT some reward 4- Risk acceptance and reward shared 5- Risk and rewards shared
	AL6	Business strategic planning	The degree to which business strategic planning is managed and integrated across the CNO.	It can be one of the following: 1- Ad-hoc 2- Basic planning at the functional level 3- Some inter-organizational planning 4- Managed across the CNO 5- Integrated across and outside the CNO
	AL7	IT strategic planning	The degree to which IT strategic planning is managed and integrated across the CNO.	It can be one of the following: 1- Ad-hoc 2- Functional tactical planning 3- Focused planning, some inter-organizational 4- Managed across the CNO 5- Integrated across and outside the CNO (Van Grembergen, 2004)
Trust	TR1	Partners trust	The density level of trust relations among collaborative partners.	The density level of trust relations can be low, high, or moderate (Provan and Kenis, 2007).
Transparency	TN1	ICT usefulness "media channels"	The effectiveness of each of the communication channels in the shared system e.g. ICT tools.	A communication channel can be effective, moderately effective or ineffective.
	TN2	Information accessibility and availability	The degree to which CNO members can find and access certain information using the IT system.	Information can be easily accessible, hardly accessible, or not available.
Involvement	IN1	Senior management involvement	The degree to which the senior managers of a CNO are involved in IT-related decisions (Huang, Zmud, and Price, 2010).	Senior managers can be highly involved, somewhat involved, not involved in decision-making.
Accountability	AC1	Task clarity	The clarity level of role definition and responsibility allocation for CNO members (De Haes and Van Grembergen, 2004).	Task clarity can be highly clear, somewhat clear, or ambiguous.

The KPI dimensions related to effective IT governance for CNOs are:

- **Consensus:** an agreement between the customer-facing organization and its direct partners in a CNO to formulate clear common goals for the collaborative project (Tapia, Daneva, Eck, and Wieringa, 2008).
- **Alignment:** ensuring that IT services support the requirements of the business, whether such services are individually or collaboratively offered (Tapia, Daneva, Eck, and Wieringa, 2008), and ensuring that goals and policies from both IT and business are supported and aligned.
- **Trust:** the willingness to accept vulnerability based on reputation and past interaction experience (Provan and Kenis, 2007).
- **Transparency:** the effective dissemination and accessibility of all information to assigned individuals in CNOs.
- **Involvement:** the engagement of firms' senior executives in decision-making processes regarding IT-related issues (Huang, Zmud, and Price, 2010).
- **Accountability:** having clear functional roles and responsibilities assigned to individuals who are part of the CNO IT steering and IT strategy committees, or IT structures.

4 A CASE STUDY OF INTER-ORGANIZATIONAL IT GOVERNANCE

To validate the proposed model, a case study method was adopted because this research sought to understand a real-world phenomenon within its context (Yin, 2013). Specifically, the study sought to identify what CSFs determine effective IT governance for CNO and how a CNO measures its IT governance effectiveness. A case study method helps to explore and examine the proposed CNO IT governance model to gain an in-depth description of how a CNO operates at the strategic level and how it governs shared IT resources. The research strategy undertaken is confirmatory which is based on theory testing since the model was already developed by the researcher and then the case study is conducted to test the usability of the proposed model (Gerring, 2004).

The rationale of selecting a single case study in this research is that it serves as a revelatory case since there is lack of empirical studies that define CSFs or a model for CNO effective IT governance.

The data were collected through conducting two key informant interviews, distributing questionnaires, observation of a steering committee meeting and gathering related documents. Since this study targets the strategic level of a CNO, the case study focuses on two main groups as a unit of analysis; the steering committee as it consists of senior managers and chief executives of partner organizations and the project management office as it deals with the IT-related activities/decisions and the service-level management group. Those members have the most knowledge about the collaboration project including its processes, decisions and challenges. To have an in-depth knowledge of how this CNO operates and is managed, two interviews were conducted, one each with the service provider vice president and the project management office director. The questionnaires include both closed and open questions. They were distributed to sixteen members from both the steering committee and the project management office and nine responses were received. Quantitative and statistical analysis was done on the questionnaires responses to evaluate the importance and usefulness of the proposed CSFs and KPIs. Responses were categorized to understand the core tendencies emerging from the questionnaire.

4.1 Case Organization Background

The case CNO is the first MEDITECH "patient care and technology" collaboration in the province of Ontario, in Canada. It is a voluntary-based partnership between six hospitals, which work together and share information services to improve the delivery of patient care and services to clients in the region. These hospitals have implemented an electronic patient record system project together. MEDITECH is the information system that integrates and connects the six hospitals in order to provide health services. The objective of the case CNO is to provide end-to-end care delivery.

4.2 Discussion

Based on the data collected from participants in the CNO through both interviews and questionnaires, it appears that all the critical success factors proposed in this research are perceived to be important for the collaboration to succeed. Some, however, were deemed to be more important than others. Based on the views of the vice presidents and CEOs of the case CNO partner hospitals, some factors were rated as more critical than others. The importance of the CSFs may depend on the nature of the partnership and its goals and objectives.

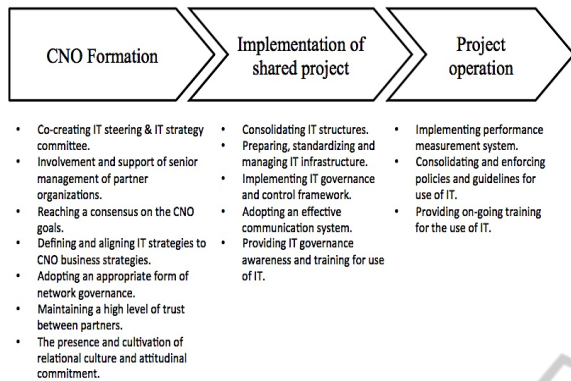


Figure 2: CNO phases and assigned CSFs of IT governance.

Some IT governance practices have been observed to be vital at specific stages of the implementation of the shared project. The case CNO is still at the implementation phase of the shared information system, and the collaborative considers some of the factors to be important but only at a later time, once the system is fully implemented and operational. Based on the insights of the case CNO steering committee members into IT governance, the proposed CSFs could be classified according to three main phases of execution for a shared project; these phases are the formation of the CNO, the implementation of the shared project, and the project operation, as seen in Figure 2. Accordingly, some factors such as providing ongoing training and awareness for use of IT, implementing a performance measurement system, and enforcing policies and guidelines for use of IT would only be deliberated once the shared system is fully implemented.

The case CNO does not have any performance measurement systems or metrics to assess the performance of partners, although these types of measures will be considered by the collaborative once the shared project is totally implemented. Based on the questionnaires distributed to the members of the steering committee and the project management office, the proposed KPIs were evaluated and it is agreed upon that the KPIs are useful as measurement tools for the various dimensions of effective IT governance. They believe that selecting KPIs for the collaborative highly depends on the nature of the CNO and its goals and objectives. Accordingly, some indicators may be helpful but not essential for the CNO. The value for the business perception of IT was considered somewhat efficient for assessing business-IT alignment and was ranked as the least useful KPI.

There needs to be both a direct and an indirect value of IT, some aspects of which can be quantified and others not.

4.2.1 Communication and Culture: Most Critical Success Factors

The most noticed challenges and the most important factors in a CNO are related to communication and cultural differences. Those two factors are continuous challenges, even when a new member joins the CNO. Due to the high intensity of interactions among CNO members, miscommunication always occurs, whether between the collaborative’s various members and groups, or internally at individual organization sites. In the case CNO steering committee, there are usually two vice presidents representing large institutions: one in nursing and the other in operations. These two VPs alternate to attend the monthly meetings of the steering committee and communication issues arise when there is no debrief between these two members as of what was discussed during the meeting. Besides, there are serious communication issues at the partners’ individual organizations, where the responsible individual fails to take the feedback and information back to their organization, as they do not communicate properly. Thus, inadequate internal processes at each individual hospital sometimes get in the way of effective communication and therefore affect the overall performance of the collaborative.

For cultural differences, because the CNO consists of independent organizations with different needs and different expectations and capabilities, members continuously have to be flexible and responsive in order to effectively manage these complex differences. It is not only important to unify subculture beliefs and practices within a network, but rather to be flexible in decision making and responsive to the unique needs of the individual organizations.

4.2.2 Trust

According to Morgan and Hunt (1994, p. 23), trust is defined in the context of relationship marketing as “when one party has confidence in the exchange partner’s reliability and integrity”. In addition, Moorman et al. (1993, p. 82) defined trust as “a willingness to rely on an exchange partner in whom one has confidence”. Both definitions of trust in the literature highly value confidence according to their field of study. The definitions demonstrate that confidence is dependent on the reliability and

integrity of partners. Thus, a partner is trustworthy when he possesses qualities such as being honest, reliable, and consistent.

Furthermore, in the literature, trust depends on a partner's reputation and history. According to Provan and Kenis (2007), trust is defined as the willingness to accept vulnerability based on reputation and past interaction experiences. In addition to viewing trust in that context, Meyerson et al. (1996) described trust in terms of long-term relationships as being history-dependent. According to both definitions, trust builds incrementally, accumulates over time, and is affected by the history of partners.

In the context of trust in collaboration, Vangen et al. (2003) state that in order to sustain sufficient levels of trust between partners, a continuous effort is required due to the dynamic nature of collaboration. Vangen et al.'s description of trust comes close to the notion of dynamism. While the literature points to trust as something that needs to be "managed", in the CNO, it is more of an emergent construct that varies continuously based on the actions of the partners. In this context, it does not need to be managed per se but rather emerges as a consequence of what the partners do relative to what they said they would do.

Although trust appears to be, at least in the literature, a complex concept, it is much simpler in a CNO since it is based directly on the actions of partners. According to the interviews conducted for this study, trust is based on the present interaction experience and the actual behavior of the partners. Within a CNO, especially in a health care context, the foundation of trust is continually being re-forged based on the immediate actions of the partners. A partner who does the things he or she promised to do is considered trustworthy. If a partner commits to doing something and does it, trust increases. However, if the commitment is not delivered, then trust goes down.

Therefore, trust in a CNO is developed through the **constant evaluation of a partner's behavior versus his/her commitment**. In the current literature, trust in collaboration is conceptualized as one party having confidence in the exchange partner's reliability and integrity. While, as the literature suggests, a reputation for being trustworthy based on past experience can help create initial trust, the point emerging from this study is that trust is continually updated as partners demonstrate through their actions their willingness to do the things they said they would do to help the collaborative.

4.2.3 The Health Care Aspect

There are likely contextual elements to this notion of trust as an emergent feature of CNOs. The health care context calls for high reliability, as errors can have serious consequences. Health care facilities therefore have to conduct relatively error free operations and make consistently good decisions resulting in high quality and reliability (Roberts, Madsen, Van Stralen, and Desai, 2005). Health care organizations are exposed to a higher level of risk since they deal with people's lives. Thus, they need to ensure they provide optimal services to patients, with the least amount of errors.

In addition, the high complexity and often times diminishing resource base of a typical health care institution means that one of the ways for the hospital to maintain high quality and reliability of services is to collaborate with other health care facilities. Therefore, the motivation to collaborate might be more pronounced in this environment than in a private sector context.

Since the case CNO brings a specific value to its partners, which is to deliver end-to-end patient care, organizations are encouraged to participate in order to improve their operations. Essentially, the case CNO provides an electronic infrastructure "MEDITECH" that allows organizations to develop innovative and collaborative solutions that improve the quality of the services provided, reduce operational costs, and gain a competitive advantage. Moreover, since hospitals operations and patient care are time sensitive, collaboration facilitates the provision of services in a timely manner. All the mentioned benefits of collaboration are considered strong motivators of participation and they help increase the reliability of the services provided by the health care facility. Consequently, senior managers of that facility would have more interest in being part of the shared project. This situation suggests that a partner who does not deliver on a stated commitment could create serious issues for the collaborative and for partner institutions. Accordingly, it follows that little margin for error exists and therefore a partner's behaviors relative to their stated commitments are continually evaluated.

5 CONCLUSIONS

Based on the findings of this research and of the case study, we arrived at three main conclusions. First, very few formalized CNOs seem to exist. The healthcare environment case study used for this

research suggests that certain conditions likely encourage formalization of the CNO. For example, organizations operating in high risk, complex environments where resources are limited tend to focus more on formalizing their IT processes and communication, since they require low error rates, safety, and a high reliability of processes and services.

Second, the sector's characteristics might influence the perception of the CSFs. For example, the concept of trust between partners in CNOs is simpler and more dynamic than what the current literature suggests: it is continually formed and adjusted according to the behaviors of the partners versus their commitment. In addition, the distinctive characteristics of the CNO in the healthcare context influence the demonstration of values and the behavior of senior managers. When partner organizations tend to voluntarily participate in the shared project, they would naturally be very supportive, committed, and more trusting. Thus, performance measurement systems and benchmarks are not considered to be very important to the success of the collaboration.

Third, the goals and objectives of a single CNO can influence the IT-related success factors and their assigned KPIs. For example, policies and guidelines related to IT, IT structures, and standardizing IT infrastructures don't have to be consolidated in situations where the CNO organizations need to maintain their autonomy. There may not need to be a consolidation. In fact, perhaps the infrastructure should be owned by a third party. To illustrate, the case study CNO adopts a central hybrid model/structure to manage and control the IT tools. One partner plays the role of the leading organization and the service provider that directly manages any of the collaborative IT infrastructures, while the other partners make use of IT in a collaborative way. This form of IT governance structures, in which IT is centrally controlled, was preferred among other structures to avoid accidents that could possibly affect multiple hospitals.

REFERENCES

- Ali, S. and Green, P. (2007). IT governance mechanisms in public sector organisations: An Australian context. *Journal of Global Information Management*, 15(3), 41–63.
- Brown, A., and Grant, G. (2005). Framing the frameworks: A review of IT governance research. *Communications of the Association for Information Systems*, 15, 696–712.
- Camarinha-Matos, L., Afsarmanesh, H., Galeano, N., and Molina, A. (2009). Collaborative networked organizations – Concepts and practice in manufacturing enterprises. *Computers and Industrial Engineering*, 57(1), 46–60.
- Camarinha-Matos, L. M., and Afsarmanesh, H. (2008). On reference models for collaborative networked organizations. *International Journal of Production Research*, 46(9), 2453–2469.
- Chong, J., and Tan, F. (2012). IT governance in collaborative networks: A socio-technical perspective. *Pacific Asia Journal of the Association for Information Systems*, 4(2), 31–48.
- Ferguson, C., Green, P., Vaswani, R., and Wu, G. (2013). Determinants of effective information technology governance. *International Journal of Auditing*, 17, 75–99.
- Guldentops, E., CISA, and CISM. (2004). Key success factors for implementing IT governance. *Information Systems Control Journal*, 2.
- Huang, R., Zmud, R., and Price, R. (2010). Influencing the effectiveness of IT governance practices through steering committees and communication policies. *European Journal of Information Systems*, 288–302.
- Ko, D., and Fink, D. (2010). Information technology governance: An evaluation of the theory-practice gap. *Corporate Governance*, 10, 662–674.
- McEvily, B., and Zaheer, A. (2004). Architects of trust: The role of network facilitators in geographical clusters. *Trust and distrust in organizations*, ed. R. Kramer and K. Cook, 189–213. New York: Russell Sage Foundation.
- Melville, N., Kraemer, K., and Gurbaxani, V. (2004). Information Technology and Organizational Performance: An Integrative Model of IT. *Business Value*, 28(2), 283–322.
- Morgan, R. M., and Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *The Journal of Marketing*, 20–38.
- Prasad, A., Green, P., and Heales, J. (2012). On IT governance structures and their effectiveness in collaborative organizational structures. *International Journal of Accounting Information Systems*, 13(3), 199–220.
- Provan, K., and Kenis, P. (2007). Modes of network governance: Structure, management, and effectiveness. *Journal of Public Administration Research and Theory*, 18(2), 229–252.
- Rabelo, R., and Gusmeroli, S. (2006). A service-oriented platform for collaborative networked organizations. *IFAC*.
- Richards, J. (January, 2006). *Trust and strong business culture identified as key to IT governance*. Retrieved April 13, 2014, from <http://www.computerweekly.com/feature/Trust-and-strong-business-culture-identified-as-key-to-IT-governance>.
- Roberts, K., Madsen, P., Van Stralen, D., and Desai, V. (2005). A case of the birth and death of a high reliability healthcare organisation. *Quality and Safety in Health Care*, 14(3), 216–220.

- Rusu, L., and Nufuka, E. (2011). The effect of critical success factors on IT governance performance. *Industrial Management and Data Systems*, 111(9), 1418–1448.
- Sambamurthy V, Zmud RW. (1999) Arrangements for information technology governance: A theory of multiple contingencies. *MIS Quarterly*, 23(2), 261–90.
- Tapia, R., Daneva, M., Eck, P., and Wieringa, R. (2008). *Towards a Business-IT Alignment Maturity Model for Collaborative Networked Organizations*. University of Twente, Department of Computer Science.
- Weill, P. (2004). Don't just lead, govern: How top-performing firms govern IT. *MIS Quarterly Executive*, 3(1), 1–17.
- Weill, P., and Woodham, R. (2002). *Don't just lead, govern: Implementing effective IT governance*. Massachusetts Institute of Technology, Sloan School of Management. Cambridge, MA: Center for Information Systems Research.
- Yin, R. K. (2013). *Case Study Research: Design and Methods* (5th edition). SAGE Publications.

