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# **IT Governance in Collaborative Organizational Structures**

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## **ABSTRACT**

Organizations today engage in various forms of alliances to manage their existing business processes or to diversify into new processes to sustain their competitive positions. Many of today's alliances use the IT resources as their backbone. The results of these alliances are collaborative organizational structures with little or no ownership stakes between the parties. The emergence of Web 2.0 tools is having a profound effect on the nature and form of these alliance structures. These alliances heavily depend on and make radical use of the IT resources in a collaborative environment. This situation requires a deeper understanding of the governance of these IT resources to ensure the sustainability of the collaborative organizational structures. This study reports on the first stage of this initiative. It suggests the types of IT governance structures required for collaborative organizational structures. Semi-structured interviews with senior executives who operate in such alliances reveal that co-created IT governance structures are necessary. Such structures include co-created IT-steering committees, co-created operational committees, and inter-organizational performance management and communication systems. The findings pave the way for the development of a model for understanding approaches to governing IT and evaluating the effectiveness for such governance mechanisms in today's IT dependent alliances.

## **Keywords**

Collaborative organizational structures, IT governance, dynamic capabilities, co-created resources, Web 2.0 tools

## **INTRODUCTION**

Organizations engage in various strategic alliances to develop new business models for competitive advantage (Mayer and Teece, 2008). Conventional strategies include hierarchical relations, joint venture equity investments, cooperatives, cartels, and franchising. Today organizations have IT, a dynamic tool, to expand their strategic alliances. New forms of corporate structures are now emerging. Doing business today is about bringing disparate collaborative resources together. The result is emergence of new forms of corporate alliances, and extended alliances with geographically dispersed parties. These new forms of alliances are termed collaborative organizational structures. Collaborative organizational structures are alliances developed with IT resources as their backbone.

The relentless march of computing power and internet connection speeds are bringing profound changes to the business environment. These resources are a major catalyst for the new trends of strategic alliances. A new group of technology, the Web 2.0 tools, has emerged. Web 2.0 tools are a new generation of Internet-based collaborative tools that allow users to interact and collaborate with each other in a social environment (Kane and Fichman, 2009). The Web 2.0 communities are creators and consumers of user-generated content in a virtual community. Initially consumed by individuals, the Web 2.0 technologies today are transforming conventional enterprises into enterprise 2.0 (McAfee, 2009). IT-driven communication and collaboration form the backbone of the alliances in this environment. Demand driven supply chain networks, collaborating on corporate data on social networks, digital supply chains, virtual teams, mass customization, vendor-managed inventories, and vendor-managed assembly lines are prevalent forms of business organizations in the IT intensive alliances of today. Corporate structures are transforming into virtual expanded organizations, which leverage the resources to reduce operational costs. The result is complex digital alliances with increased dependence on shared IT resources.

These new forms of businesses present new risks and challenges (Kane and Fichman, 2009). Organizations make radical use of the IT resources within these business models. The dependency on IT also increases in these new forms of business collaborations. This situation requires new forms of IT governance requirements and guidelines to manage these risks and challenges. The new structures will have new forms of IT resource integration, requiring new methods of governance to ensure information flows satisfy the established control objectives. While there is much conferred about the new forms of Web 2.0-related business structures, the governance mechanism of their IT-backbone has not received any resolute attention. It is undeniable that the success and growth of these new forms of collaboration will be contingent upon appropriate IT governance structures and mechanisms. Of course, extant literature suggests various IT governance structures to manage the IT resources in organizations (for example, Bowen, Chung and Rohde, 2007; Prasad, Heales and Green, 2010; Sambamurthy and Zmud, 1999; Weill and Ross, 2004). But, these IT governance structures have been suggested for the use of IT within organizations. The radical use of IT in collaborative organizational structures requires a rethink on the viable forms of IT governance structures.

The aim of this study is to suggest the effective IT governance structures required to manage the emerging technology-driven corporate structures, and ways to evaluate the effectiveness of these structures. This paper specifically focuses on identifying the IT governance structures required to manage IT resources within collaborative alliances. An interpretive research design, using semi-structured interviews with contacts from collaborative alliance, revealed five forms of IT governance structures for the collaborative alliances. These structures include co-created lateral IT steering committees, co-created operational committees, and inter-organizational performance management and communication systems. Identification of these IT governance structures helped in the development of a conceptual model for effective IT governance for collaborative alliances. This paper progresses as follows. The next section presents an overview of IT governance. Then, we discuss the theoretical framework of this study. This follows discussion of the overall research design, and the research design for the current stage of the study reported in this paper. We then present the results of this study. The final sections discuss the results, contributions in detail and implications, and it provides a model of IT governance for collaborative organizational structures. This model will be the focus of the continuing research on this issue.

## **AN OVERVIEW OF IT GOVERNANCE**

IT governance, focusing on information and IT assets, specifies the decision rights and accountability framework to encourage desirable behaviour in the use of IT (Weill and Ross, 2004). This behaviour relates to the form of the leadership, and organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives (IT Governance Institute, 2007). IT governance essentially places structure around how organizations IT strategy aligns with business strategy. This alignment will ensure that organizations continue to achieve their strategies and goals, and implementing ways to evaluate its performance. One special aspect of IT governance is that it considers interests of all stakeholders and ensures that processes provide measurable results. This is possible with lateral IT governance structures, with involvement from all levels of management (Prasad et al., 2010).

Organizations can follow a few supporting mechanisms to guide their implementation of IT governance in organizations. The Control Objectives for Information and related Technology (COBIT) is an approach to standardize good information technology security and control practices. COBIT provides tools to assess and measure the performance of 34 IT processes of an organization (IT Governance Institute, 2007). The ISO/IEC 38500:2008, corporate governance of information technology, provides a framework for effective governance of IT to assist those at the highest level of organizations (International Organisation for Standardization, 2008). The standard assists top management to understand and fulfill their legal, regulatory, and ethical obligations in respect of their organizations' use of IT. The COSO framework, developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) provides guidance to organizations on critical aspects of organizational governance, business ethics, internal control, enterprise risk management, fraud, and financial reporting (COSO, 2009).

Current IT resources enable formation of innovative organizational alliances – the collaborative organizational structures. Such alliances function on a cooperative IT platform. Cooperative IT platforms will require different IT governance structures to monitor and manage the IT assets. Such governance structures require some aspect of dynamism to capitalise on emerging opportunities to sustain the alliances' competitive position. This means that IT governance becomes a shared responsibility within the collaborative organizational structures. This dynamism is possible with some form of between-organization collaboration. The dynamic capabilities theoretical framework is one possible basis for suggesting and explaining such across-organisational collaboration to govern the IT resources.

## **THEORETICAL FRAMEWORK**

An organization is made up of a bundle of resources (Barney, 1991). Some of these resources would be unique to the organization, allowing then to achieve distinctive outcomes compared to other organizations (Mata, Fuerst and Barney, 1995). Such distinctive outcomes, however, may be of little value in a collaborative atmosphere, because valuable outcomes in a collaborative environment are those that benefit all parties. The product of combination of organizations' unique outcomes can help them manage the shared resources (Grant, 2008). That is, the resources would combine to form higher-level resources, which in the case of IT governance would be co-created governance structures. A higher-level resource is the product of unique combinations (co-creation) of organizations distinctive resources, which in their own may not be of much value. The dynamic capabilities theoretical framework explains this level of resource organization and forms the key basis for suggesting IT governance structures for collaborative alliances.

The higher-level resources are also dynamic resources with difficult-to-imitate combinations of organizational, functional and technological skills (Teece, 2007). Dynamic resources are those that adapt to the changing environments (Thomas, 1996). These resources form the foundation upon which distinctive and difficult to imitate advantages can be built, maintained and enhanced (Teece, Pisano and Shuen, 1997). Organizations that collaborate can renew their collaborative competencies through innovative responses by appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competencies (Teece et al., 1997). Dynamic IT governance structures are essential to achieve this outcome. Organizations past choices influence domains of competence, and at any given time, organizations must follow a certain trajectory of competence development (Teece et al., 1997).

Organizations can organize better certain types of economic activities internally (Coase, 1937). Competencies and capabilities, like governance structures, resulting from organizing and getting things done internally are the key component in sustaining advantages (Coase, 1937). This is because internal organization takes place in a more multilateral fashion, with patterns of behaviour and learning orchestrated in a much more decentralized fashion (Teece et al., 1997). Processes, paths, and positions are factors that can help determine a firm's distinctive competence and dynamic capabilities. These competencies and capabilities embed in organizational processes of one kind or another. The shared innovative changes between these processes explain the essence of the organizations dynamic capabilities and competitive advantage (Teece et al., 1997). Within collaborative organizations, the processes have a high level of coherence within them. The coherence provides the capabilities, and a cohesive set of inter-organizational linkages is difficult to mimic. Shared IT resources across organizations would require such cohered governance structures for their effective management. Partner organizations possess a hierarchy of capabilities, and general and broadly defined capabilities form from an integration of more specialized capabilities (Grant, 2008).

Governance of IT resources within collaborative organizational structures would require a form of inter-organizational linkages. The recursive IT governance related learning is an important catalyst for continued success of collaborative structures. Organizations, thus, need to collaborate in various fronts within their collaborative structures to embrace both the sharing and management of resources. This theoretical lens forms the basis for exploring various forms of inter-organizational IT governance structures required to manage IT resources within collaborative organizational structures. This effort must commence with a deeper understanding of the nature of the collaborative organizational structures.

## **RESEARCH DESIGN**

The changed conditions of the IT-driven collaborative organizational structures requires new structures of IT governance. The dynamic capabilities theoretical framework suggests a collective effort in governing the IT resources. The eventual objective of this study is to propose a model of IT governance and its evaluation within collaborative organizational structures. To the best of our knowledge, extant literature inadequately informs us the nature and composition of the IT governance mechanisms for the collaborative organizational structures. Thus, a deeper understanding of the reality of the collaborative organizational structures is required before we could develop testable propositions. This paper reports on this stage of the research.

A common approach to unpacking the diversity of issues involved in governance of IT resources within collaborative organisational structures is to undertake an interpretive case study (Yin, 1994). The interpretive approach affords an in-depth look at the dynamic relationship that exists between partner organizations in governing the IT resources. This approach considers the shared meanings and experiences of the people involved (Walsham, 1995). These are interpreted from the perspectives of the individuals themselves, given that multiple realities exist in the organisation, which has been shaped by their experiences and actions. This effort becomes instrumental in making generalized assertions on the mechanics of governance of IT resources in a collaborative environment.

A large number of organisations today engage in some form of IT-related alliances. Acquiring a deeper understanding of the possible IT governance structures within collaborative alliances would mean extracting reality from the organizations that are at the forefront of using such alliances. Successful operation of the IT-dependent alliances implies existence of appropriate IT governance structures. We approached twelve organisations that are heavily involved in inter-organization IT-dependent collaboration to manage their business processes. These organizations collaborate to manage their digital supply chain, manage e-channels and logistics, manage tourism and leisure services, and engage in collaborative commerce. The organizations were explained about the purpose of the study, the personnel of interest, and the nature of discussion that they will be engaged in. Five organisations agreed to participate in the study. These five organizations engage in various forms of IT-related collaboration to manage their processes. These organizations formed the sampling frame for this part of the study.

### Data Collection and Analysis

We conducted sixteen semi-structured interviews, each lasting about thirty minutes. Table 1 presents the demographics of the interviewees. The collection of data from different management levels permits the elicitation of multiple viewpoints from individuals within the same division to be contrasted across divisions. The intent of this approach is to identify common conceptions that represent key structures for effective IT governance in collaborative organizational structures. The interviews were mildly semi-structured. The opening question was very general, seeking opinion on governance structures for collaborative organizational structures. The interviews then progressed with some focus around the co-created IT governance structures, but with enough flexibility to capture perceptions on various perspectives of IT governance. The transcribed interview data were analyzed for its thematic content, which involved identification of a number of conceptions relating to possible IT governance structures in collaborative organizational structures. The conceptions related to co-created governance structures and provided a narrative of the mechanics of such structures. This approach helped to substantiate the co-created governance investigative framework. The conceptions emerged using the following steps (Dey, 1993). The first was the establishment of the unit of analysis, which were concepts from the interviewees' expressions ranging from a few words to complete sentences. The second was code attachment. Labels on the unit of analysis are attached and they represent the conceptions prevalent in that section of text. The third was conception categorization into broader conceptions. This above steps required numerous read and analysis of the interview transcripts. We also provided copies of the transcribed notes and thematic analysis to the interviewees for verification and additional comments to ensure validity of our analysis.

Interviewee	Position	Age	Industry	Experience (Years)
1	IT Manager	36	Retailing	8
2	Chief Information Officer (CIO)	41	Manufacturing	12
3	Manager Logistics	32	Transportation	13
4	Managing Director	55	Retailing	15
5	IT Manager	33	Communication	6
6	CIO	38	Banking	20
7	Department Manager	28	Distribution	6
8	Department Manager	29	Distribution	8
9	CIO	35	Banking	21
10	IT Manager	42	Retailing	8
11	Director Operations	49	Banking	12
12	CIO	48	Manufacturing	3
13	IT Manager	33	Communication	5
14	Operations Manager	39	Manufacturing	16
15	IT Manager	34	Distribution	13
16	Division Manager	45	Communication	12

**Table 1. Interviewee Demographics**

## RESULTS AND DISCUSSION

Four broad conceptions emerged from the analysis of data. Table 2 summarizes the formations of four broad conceptions. The following sections discuss these four broad conceptions.

Broad Conceptions	Key Themes
Co-Created IT Steering Committee	Shared IT Governance, Shared Resource Ownership, Lateral Decision Making, Broader Adaptation of the IT Resource
Inter-Organizational Lateral Communication System	Extensive Partner Communication, Alliance-Based Communication, Leveraging the Web 2.0 Communication and Collaboration Tools,
Inter-Organizational Performance Management System	Broader Metrics for Evaluating Performance, Shared Alliance Responsibilities, IT-Based Alliance Evaluation
Co-Created Operational Systems Committee	Operational Coordination, Operational Alignment, Operational Consistency

**Table 2. Broad Conceptions and Themes for IT Governance in Collaborative Organizational Structures**

### Co-Created IT Steering Committee

Co-created IT steering committee relates to the concept of sharing the management of IT resources within collaborative organizational structures. The interviewees suggested that the partners have some level ownership of the IT resources on which the collaborative organizational structures are built. A sense of shared ownership of the resources was evident in the interviewees' views, even if they do not physically own such resources. One interviewee suggested:

*"I think that in a collaborative environment, partners need to come to consensus on the benefit of the acquired IT resources. It is important that all parties are part of the decision-making, and see the value of IT in their organizations. This is only possible if all parties sit together and sort the issues out. When IT tries to benefit all parties in an alliance, individual partner decisions may be of little use."* T3

Another interviewee shared the following:

*"I know this may not be easily done but an IT resource in a collaborative organizational structure must be valuable to all. If it is not suitable to one party, then the effort may not be adequate. The only way I see this happening is when all parties discuss the IT adoption strategy together and come to consensus. The way I see it is at all partners have a stake in the success of a IT project, so all need to come together to make sure that a share of their success is justified. Even if it means changing the business rules."* T2

The comments also indicate that organizations will need to establish new forms of cultures and structures to manage the IT resources that facilitate the collaborative organizational structures. Organizations need to adopt a liberal approach to IT governance where benefit beyond the organization needs consideration. A lateral across-organization decision making structure is critical to ensure that IT resources provide adequate business value to all parties in IT-related alliances. The interviewees also shared the following views in relation to this situation.

*"Look, we have come to a stage in business where our success may only come in an embrative business environment. IT has broken a lot of barriers and we have weaker boundaries between organizations. If we are to survive we are to work together – not only in sharing resources, but also in making decisions regarding those resources."* T10

*"We need to work together to get the full benefits of IT in today's environment. We may not get much if we are too self-centered or become too complacent about what it can do for us. We must build alliances and in various dimensions and work for the good of all parties."* T8

### Inter-Organizational Lateral Communication System

Inter-organizational lateral communication systems relate to the concept of expanding communication and collaboration within the organizations in the collaborative alliance. Organizations need to adopt a flexible approach with their relationship

management and should be willing to share their knowledge beyond their organization. The interviewees shared that an open communication approach with the will to share views and thoughts on the implications of current and prospective IT resources to the alliance is essential. This will accrue the alliance knowledge base on how best to leverage a shared IT infrastructure. Many interviewees shared that this aspect of IT governance should be embedded in their process-related interactions. This aspect requires extensive use of web 2.0 tools, perhaps in conjunction with other stakeholders. Much of this communication and collaboration may be informal. This fact implies that the IT resources would be best governed if their value is considered recurrently in an interactive environment. Below are some of the views that the interviewees shared on this aspect.

*“I think we need to pay special attention to how we share our views here. While we may meet formally to discuss our IT backbone, we need to have a much more open communication channels to share our views in a much more regular basis. Of course, this is not going to be easy, as each organization would like to maintain its competitive position. But, greater benefit in today’s IT-intensive environment will come from how we share our IT-related knowledge with the alliance.” T11*

*“I think the Web 2.0 tools itself is a key instrument for IT governance in today’s business environment. We need to think about our IT 24/7 as this will determine how we can strengthen our alliance. We need to engage much more in a virtual context, and be available and thinking all the time about our IT. This too, must not be within us, but much more with others. In fact I strongly feel that we need to make the ‘them’ into ‘us.’” T14*

*“Two things must go hand-in-hand in today’s IT dependent environment. One is doing business with others and the other is continually talking about business with others. These two aspects are very important and we must make sure that there is a vibrant informational communication going on all the time. There is no excuse for lack of this with the availability of rich virtual communication tools. We can only manage IT when we know all we need to know about IT.” T3*

### **Inter-Organizational Performance Systems**

Inter-organisational performance systems relate to the concept of evaluating the performance of an organization in a collaborative alliance within broader collaborative-based performance matrices. The interviewees considered an important IT governance structure for collaborative organizational structures by the interviewees. This requirement is a difficult feat to achieve as the alliances in collaborative organizational structures are less formal with no or thin ownership stakes. However, performance management systems that align the objectives of collaborative organizational structures with future alliance agreements or reward structures would ensure the longevity of the collaborative arrangements. Misaligned performances would result in suboptimal use of the IT resources between the organizations. The result of this action would affect the entire alliance, despite full commitment by some. Presence of some form of opportunity cost for suboptimal performance is necessary for the effective use of the IT resources within the alliances. The interviewees shared the following thoughts on this concept of IT governance for collaborative organizational structures.

*“There has to be some way to share the responsibilities. If we do not share responsibilities, we may get into the concept of free riders. This will not be good for the alliance. One of the ways this could be achieved is to evaluate performance of the structure rather than individuals. This could also be done in a hierarchical manner, where the performance of the organizations is cumulated into the overall alliance performance. While I think it is important that IT-related decisions are made with the interest of the organizations, the broader benefit of the alliance must also always come in consideration.” T15*

*“I think there is a need to review what an organization is doing for others. This is especially important, as in today’s environment, the benefit of IT will only emerge if it is shared across organizations. Motivation for such initiative can only come with parallel performance systems.” T8*

*“One important issue that I see for governance of IT resources with shared benefits is shared performance evaluation. There will be issues if performance is disintegrated from the structure of the collaborative use of IT*

*resources. Performance also needs to be considered as one. I think there needs to be a broader metrics for performance evaluations in today's interconnected business environments." T11*

### **Co-Created Operational Systems Committee**

Co-created operational systems committee relates to the concept of inter-organizational cohesion by operational managers at the process level. Most of the IT resources are consumed at the process levels. This was an interesting shift from strategic and performance issues to operational issues. They felt that the operational level management is an important element within the collaborative organizational structures. While the IT-related alliances are formed for various purposes, they all relate to managing various forms of business operations. This means that due consideration to the processes is essential. The interviewees suggested some form of formal assembly of operational level management to ensure operational alignment between the parties in an alliance. Some of their views are as follows.

*"I think there needs to be regular meetings at the operational level. This is a must for good IT governance for IT-related joint organisational structures. We may discuss a lot at the top level, but we may not be too successful if we do not coordinate our activities at the lower levels. There is much happening at the lower level that needs adequate attention." T7*

*One aspect that I think is an important way to govern IT resources is to focus on aligning the operations of the parties in an IT-related alliance. This is only possible with regular and open between-organization communication and collaboration at the operations level. We need to ensure that we not only makes decisions to get the right IT tools for the group, but also to use it in the right way for the benefit of all in the group." T6*

*"One group of people that need to blend well in today's business arrangements is the low level management. Much of the IT is used to manage and coordinate the processes. We need to have formal structure at this level. Perhaps we need to establish a committee that meets at regular interval and manage the coordination of processes between the parties in this group. This is very important for operational good of the group. One of the reasons we make alliances outside an organisation is because we can do better with them compared to doing things ourselves. But if we do not communicate and share our position with our operations, we may achieve very little." T15*

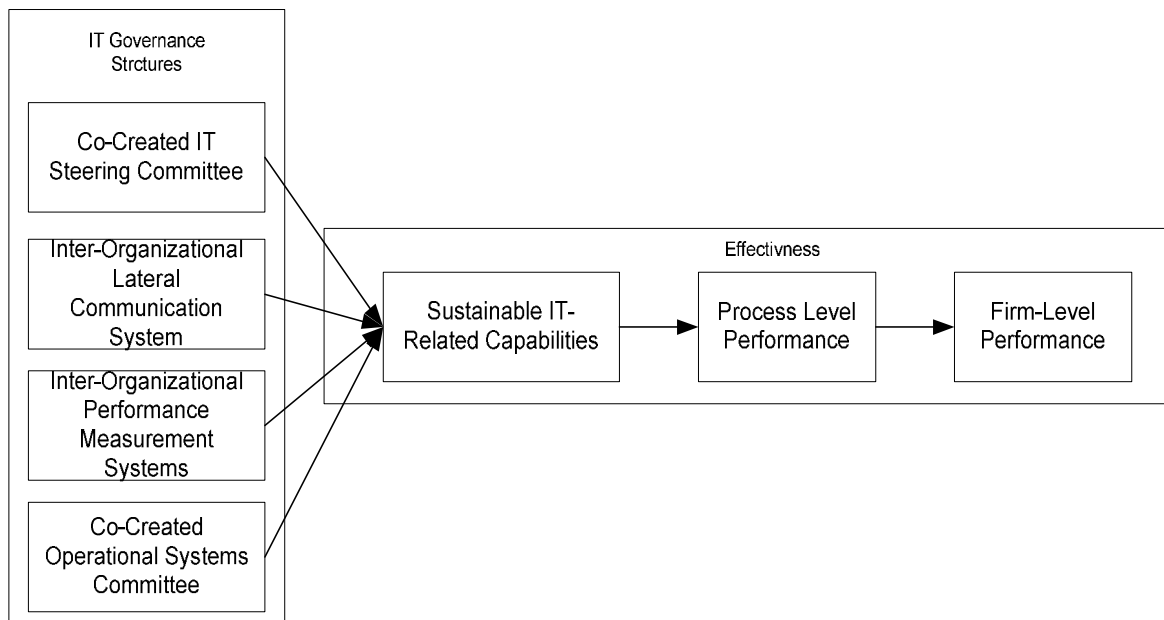
### **SUMMARY**

Collaborative organizational structures present challenges in managing the IT resources. A rethink of IT governance structures for such dynamic and fragile alliances is required. The proliferation of Web 2.0 resources mean that organizations' engagement into alliances will grow exponentially. Similarly, our thinking of effective ways to govern the IT resources in this environment must incorporate this environment. A deeper understanding to manage the IT resources in this environment is important to develop a model for effective IT governance for collaborative organizational structures. The current stage of this study presents important industry views on the IT governance structures required to manage the IT resources. The interviewees provide important insights based on their experiences with operating in collaborative alliances.

The four structures discussed above embrace various IT-related governance aspects of the collaborative organizational structures. Such structures include those for governing IT at the strategic and operational levels by the partners. Such lateral IT governance design is important to ensure consideration on IT at decision-making and at the IT-usage levels. The result of this approach would be a comprehensive consideration on IT by the alliance as whole. This approach will also ensure a fit between the IT adoption decisions and the IT usage decisions. A salient issue is that these considerations need to be made in a collective environment – in a co-created environment. Individual governance initiatives may prove futile as the success of the collaborative organizational structures is best evaluated in totality. An open communication system for managing the IT resources is also important within today's collaborative organizational structures. This is because much of the strength of today's alliance structures rests with the level of understanding of the mechanics of the collaboration. Absence of ownership-based alliance, that the collaborative organizational structures are, means that trust and integrity will play an important role in the sustainability of these structures. Open across-organization communication regarding the adoption and use of IT is essential in this context, perhaps, the most important IT governance structure with today's alliances. Fostering this form of communication will require much sacrifice in terms of sharing corporate strengths relating to IT. This situation means that an important complementary IT governance structure would be a congruent alliance performance measurement system. Such a system may be a difficult venture within collaborative organizational structures, but is an important IT governance mechanism to ensure continued trust in the alliance.



The interpretive study informs us about the IT governance structures for collaborative alliances. Understanding on the IT governance structures only, however, is not enough to promote a representation of IT governance for COS. A mechanism to evaluate the effectiveness of the IT governance structures is also required. Prasad et. al., (2010) suggest a capabilities-based approach for assessing the effectiveness of IT governance structures. This study adopts a similar approach in evaluating the effectiveness of IT governance structures for collaborative organizational structures. We argue that organizations IT governance structures should help organizations sustain their IT-related capabilities. Sustainable IT-related capabilities will ensure that organizations continue to leverage the potential of available IT resources. This means that organizations level sustainable IT-related capabilities are the ideal measure of the effectiveness of their IT governance structures. Organizations ability to leverage their IT resources with their sustainable IT-related capabilities should relate to their ability to improve their process-level performance. Improvement business processes should then lead to firm-level performance. Figure 1 presents the preliminary model for effective IT governance for collaborative organizational structures.



**Figure 1. Preliminary Research Model**

## CONCLUSION

Organizations are leveraging the IT resources to form new alliances to manage their process in today's volatile business environment. Much of the effectiveness of these alliances depends on the parties understanding of the backbone IT resources. The governance of these IT resources requires a collaborative effort. This study presents the IT governance structures that the collaborative organizational structures require to leverage their IT resources. This is an important effort in developing a broader model for understanding approaches to governing and evaluating the effectiveness for such governance mechanisms. We will share the progress of this study in AMCIS 2011, which will include development of testable propositions and progress on instrument validation, data collection, and preliminary findings.

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