ORGANIZATIONAL GOVERNANCE TO INTEGRATE SUSTAINABILITY PROJECTS: A CASE STUDY

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Abstract. Sustainable development represents a major challenge of the 21st century. Organizations use projects to implement strategic corporate objectives, exploring sustainable development from a project management perspective is imperative. While current project management techniques are well defined in terms of content and process to manage the budget-scope-time constraint, availability of organization resources and ability to adopt project governance strategies in a changing business environment, like incorporating sustainability in business process is ambiguous, literature has not explored how to cope with a normative situation like sustainability. We consider Small-to-Mid-Size-Construction-Organizations (SMSCOs), which makes up the largest portion of the project-based industry and are most impacted by new government regulations, as our population of interest. This paper addresses two primary objectives in relation to organizational resources available for SMSCOs: to identify an organization's shortcomings in undertaking a sustainable project, and to identify means for improving organizational readiness to cope with governance of sustainable projects. A case study with a SMSCO to understand activities, resource availability, and how to improve organization readiness to undertake projects related to sustainability is discussed. A conceptual framework is presented for the adoptive project governance process to ensure resource constrained organizations like SMSCO's can align better to govern such projects.

Keywords: sustainable development, project management, project governance.

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Introduction

In recent years, enterprises have embraced environmental, social, and economical values within their constituencies to advance the cause of sustainability within their organization (Liobikienė, Mandravickaitė 2011) and policy makers (Singh *et al.* 2009). Organizations engaging in sustainability efforts have gained legitimacy and increased their market value (Dao *et al.* 2011). Despite the explosion of interest and concern regarding sustainable practices, their effective implementation faces serious obstacles (Petrini, Pozzebon 2009). Since sustainable development has mutually coherent characteristics: sometimes the concept of sustainability is not well defined (Berns *et al.* 2009); often the concept of sustainability depends on social practices (Smith *et al.* 2005). Projects and project management are often quoted as important means of implementing a corporate strategy (Morris, Jamieson 2005) and therefore the project based industry should be ready to undertake sustainability related projects. Sustainable development represents a major governance challenge of the 21st century (Bachus 2005). In order to implement sustainable projects, major changes to existing processes and practices will be required (Meadowcroft *et al.* 2005), and will require the involvement of societal actors and stakeholders in the undertaking (Luksa, Siebenhünerb 2007).

One of the most important determinates in a project's success is the stakeholder environment (Turner, Muller 2005). Sustainability being a new concept, the business environment of the organization is continuously changing (Artto *et al.* 2008).

The literature has not explored whether organizations have enough resources – assets, competencies and practices (Aral, Weill 2007) to undertake sustainability projects. A global phenomenon of implementing sustainability related projects has influenced project-based sectors, which use a multi-partner project execution model. Many existing studies report inherent challenges and complexities related to multi-partner collaboration where interaction is required in multiple-level of the project organization (Williams 2002; Ghosh, Skibniewski 2010). We believe that having a good understanding of the resources required to undertake sustainability projects would enable an organization to gain an advantageous position in the industry. To address these issues, we set the project-based sector as our population of interest and seek to understand how an organization's resource availability is interrelated with its ability to undertake such projects, and ultimately be better prepared to tackle one of the most challenging projects of the century.

Small to Medium Size Construction Organizations (SMSCO) as a group represent the largest portion of construction industry. Their role varies according to their specific trade, such as various engineering and architecture consultants, general contractors, trade sub-contractors, regulatory local governmental agencies, developers, and bonding agencies. Within the context of this paper the issues confronted by SMSCO can be very similar to issues that are faced by other small to medium size organizations that are involved in the field of sustainability.

This paper has four main sections; first the background of sustainability projects and importance of this research is explained, followed by a consideration of the main research questions that are addressed. Thereafter, a case study is presented, which investigates organization readiness by identifying activities completed by the organization, in order to identify

the maturity of the organization undertaking such projects. Lastly, based on the results of this case study, a possible project governance structure is proposed and discussed.

1. Challenges with sustainable projects and impact on SMSCO

Given the scale of the sustainability challenges that an organization with deep level of understanding of impact of sustainability on project seeks to confront, we need processes, resources and skills to be in place, accommodating divergences of emphasis (Smith, Stirling 2008). Some key characteristics of sustainability related projects are:

a) Normative: The normative principle in concept is that of inter- and intra-generational equity. Although this principle as such is broadly agreed upon, its interpretation varies due to the localized nature of industry and location specific best practices, i.e. often consensus is lacking when standards specific to certain business areas, industries, or countries are derived from this general principle. The concept of sustainable projects for SMSCOs is in its formative stage, and not enough guidelines for their management are available. For government entities, sustainability requirements are being legislated and those tasked with abiding by these requirements are not always well educated on the legislative requirements and are even less educated on the steps that should be taken for meeting these requirements. This creates confusion regarding project requirements (Zavrl *et al.* 2009);

b) Subjective in nature, since the same results can be achieved using multiple business processes and since optimization is not possible, the interpretation of business needs depends on personal views or preferences. Business users are bound to differ in their opinion as to what the important needs are and when these needs are sufficiently fulfilled. The problem is that the sustainable construction conception can vary according to the country's size, level of economic development as well as socio-cultural factors (Šaparauskas, Turskis 2006);

c) Complex in nature, indicating that 'everything is connected to everything' (the solution is a holistic concept and can only be successful if all the pieces of the solution work together), and requires the contribution of different actors within the ecosystem. Due to this complexity, there will always be the issue of diversity in scientific knowledge, and the fundamental issue of uncertainty as evidenced by the multiple statutory authorities driving sustainability criteria (Burinskiene, Rudzkiene 2009; Roggeria *et al.* 2010);

d) Ambiguous in nature, as it does not contain a clear statement on the relative priority or weight of the ecological, economic, and behavioral aspects of deployment. Currently the concept of sustainable projects is being defined in a number of different ways among SMSCO members. This lack of clear understanding has created an ambiguity, further complicating the understanding of the concept (Zavadskas, Turskis 2008).

While there are a variety of rating systems to quantify the level of sustainability a project has reached, there is no one size fits all approach. Unfortunately, the majority of sustainability quantification is still a result of perceptions based on limited information. In a highly fragmented project-based setting where multiple stakeholders take different

ownership and perspectives during a sustainability implementation project (Somers, Nelson 2004), there is a lack of understanding of sustainability among the stakeholders. In particular, challenges faced by SMSCOs when dealing with the issue of governance for sustainable projects include: limited resources, uniqueness of individual projects, lack of knowledge and understanding of the concept as whole, lack of clear and definable vision, and unproven benefits. One strategy to enhance the fit between project ecosystems and governance is adaptive inclusive and network governance (Galaz *et al.* 2006), and is discussed in further detail here. For a detailed discussion on adaptive co-governance, readers are referred to Kofinas (2009).

Achieving goals of sustainable development requires new models and indicators of gathering, sharing, and analyzing information; coordinating work; and educating and training professionals, policymakers, and the public (Sakalauskas 2010). Due to the complexity and the enormous amount of relevant information, the decision makers need to ensure the existence of an effective framework to support sustainability related projects.

The majority of SMSCO members lack systematic knowledge of activities (Migdadi 2010) that are required to adapt to this new phenomenon and, are simply not familiar with it. In order to overcome this obstacle, SMSCOs need to understand the limits and nature of the impact of sustainability practices on their project governance spanning the entire construction life cycle. In addition, they must develop and maintain the ability to integrate newer technologies into their business processes. As more and more organizations attempt to integrate sustainability issues embedded in the construction process, the existing knowledge gap becomes wider and more apparent.

1.1. Research objectives and approach

Project management is recognized as an organizational capability (Crawford, Cooke-Davis 2010) and project strategy is directly translated from the organization's strategy. However sustainability and projects related to sustainability is an evolving discipline. Organizations are still trying to build capabilities to deliver such projects. So far, very limited empirical research has been done to investigate and relate the normative, subjective, ambiguous and complex nature of sustainability projects with organizational preparedness and organizations' ability to deliver such projects. Given the large body of knowledge on project success and governance, we think that this is a significant void in the existing literature. The key issues that remain to be discussed and explored in the academic and users community are adaptation of the concept of sustainability and institutionalization of a delivery and execution model of sustainability projects.

Therefore, we focus on organizational resource readiness for sustainability implementation projects and set SMCOs is the targeted population of this study, and seek to understand how project governance practices are supported by organizational readiness by considering an SMCO organization.

This research intends to improve the organizational readiness of SMSCO members to cope with the impact of sustainability issues on their projects by developing a governance framework that they can utilize. In this research, we propose that project governance practices

and the organizational capacity to manage the multi-party associations in complex sustainable projects can be integrated through a sustainable governance process.

1.2. Research questions

In this research we will attempt to answer the following questions:
1. What are the activities completed by SMCOs in order to implement a sustainability related project?
2. What are the shortcomings and challenges faced by SMSCOs when attempting to manage a sustainable project?
3. Can organizational readiness manage sustainable projects to be improved by utilizing a governance framework?

1.3. Managerial relevance statement

In order for sustainability issues to take hold and become accepted through-out the construction industry, to the level that could significantly impact the results, there must exist a substantial understanding of sustainability issues by members of SMSCO. Since as a group their involvement in sustainability projects happens at the very early stages its impact will be significant in nature. If a clear understanding of sustainability issues and processes have not been defined and accounted for in the early stages of the project development, the ultimate success of the project would be jeopardized. This study provides a framework to make better decisions when planning for sustainability related projects. Given the large body of literature on the sustainability (from green enterprise perspective) along political and environmental directions to implement sustainability, we think that this is a significant void in existing literature to ensure organizations are prepared to undertake sustainability related project. The discussion related to shortcomings and challenges when SMSCOs undertake sustainability in project management and the case study will address the process part of the integration challenge identified earlier while the response to resolve those identified challenge will provide us with an integrated methodology.

Practitioners would benefit from this study by gaining valuable insight regarding the resources and processes required, which will enable them to appreciate and improve their organizational readiness. The paper presented practical implications for SMSCO's strategic management – it necessitates the need to rethink governance in terms of the new dimensions, evaluate existing governance and management approaches, understand projects as existing in an eco-system and rebuild organizational resources based on these new principles utilizing the new found relationships and dependencies.

2. Background and literature review

Sustainability, while now embedded within the legislation and development policy in some countries, is often implemented within the design and construction process only. However the tools developed have rarely considered sustainability in its entirety, instead,

they have concentrated on the more quantifiable aspects of the environment, ecology, and building material use (Willetts *et al.* 2010a, b). Due to different contextual elements being present in the decision making process, the majority of projects related to sustainability currently undertaken by SMSCOs suffer from being underprepared (Smith *et al.* 2005). In particular, the impact of the following items on environmental and economic sustainability are evaluated in more detail: Leadership in Energy and Environmental Design (LEED) required documentation, sustainable design guidelines, building systems, and cost. LEED is not the only sustainability certificate or way to assess sustainability but used reference for the current study. The ability to govern and integrate the above mentioned items with other tasks associated with the entire construction lifecycle is key to successful management of sustainable projects. Negahban *et al.* (2012) states that SMSCOs represent a large segment of construction industry, and an increase in the efficiency of their operations will have an impact on the overall efficiency of the entire construction industry.

Governance consists of resources, organization, management, polices, and framework (Patel, Robinson 2010). A multi-level governance system often emerges to deal with non-cohesive stakeholders and can help develop a partnership between all stakeholders by separating responsibilities at different levels where appropriate. It combines the dynamic learning characteristic of adaptive management with the linkage characteristic of collaborative management (Folke *et al.* 2005). The distinction in complexity, uncertainty, and ambiguity of the stakeholder environment can serve as a guide for selecting the right models of inclusive governance (Renn 2008).

2.1. Characteristics of sustainability related projects

2.1.1. Triple bottom line – applied to existing SMSCO

The World Commission for Environment and Development (WCED) first popularized the idea of sustainable development in 1987, and defined it to be the development that met the needs of the present generation without compromising the ability of future generations to meet their needs. Elkington (1997) developed the concept of Triple Bottom Line which indicated that "companies and or organizations create value along multiple dimensions". The concept of Triple Bottom Line (TBL) deals with sustainable development/framework that attempts to find a balance among the need for social equity, economic growth, and environmental protection. A sustainable business that aspires to meet the TBL and business model that is generated to account for sustainability, must consider economic profitability, environmental soundness, and social responsibility (Elliot 2011). The Boston Consulting Group's recent survey (Berns *et al.* 2009) of over 1500 business executives in collaboration with MIT Sloan Management Review concludes that "research indicates that companies need to develop a better understanding of the implications of sustainability for their business and that the companies already doing so are seeing significant benefits".

2.1.2. Integration and change management

As indicated by von Rosing *et al.* (2010), the efficient execution of sustainability processes is largely dependent on available systems. They also conclude that the sustainability framework should integrate various aspects of the organization, resources, and processes. As indicated previously, most SMSCO members lack the governance pertaining to the implementation and integration of IT systems within their organization (Negahban *et al.* 2012).

2.2. The resource based theory of an organization

The resource based theory argues that durable competitive advantage emerges from the unique combination of resources and resource availability as well as the ability to deploy such resources, which would improve performance (Grant 1996). Adopting the resource based theory perspective and applying it to information technology also makes it clear that the organization should possess assets, competencies, and practices to ensure that the organization is uniquely positioned to undertake new challenges. Asset resources are classified into four sub-categories: infrastructure, transactional, informational and strategic (Weill, Ross 2004). Competencies are classified as skills and management quality; practices are classified as culture, communication and complementarily with other existing process.

3. Research approach and methodology

Hall and Day (1977) consider three uses of models: understanding, assessing, and optimizing. In this paper, an understanding model is developed and assessed using information gathered by reviewing and analyzing project documents. The framework for this is built around extending the notion of *organizational readiness and ability of organizations to undertake a sustainability project*. The article focuses on the macro aspect of the project and organizational ecosystem within which the project resides, and not on the micro aspect of project management principles. To understand organizational readiness, we consider two dimensions of sensitiveness – knowledge sensitivity and time sensitivity (Skibniewski, Ghosh 2009).

　　In analyzing organizational readiness, we intend to analyze the knowledge and time dimensions of information specificity to understand how organizational resources, skills, and processes are available. Acquisition and use of information are the two key elements of the information processing system. In Table 1, we present the relationship between the time and knowledge specificity of information, and the specificity of acquisition and use of information to understand the level of preparedness of the organization.

Table 1. The specificity of information

	Time Specificity	Knowledge Specificity
Specificity of Acquisition	Integration must be initiated immediately or shortly after the request originates. Since time is of essence here, automation is preferred. However, information can be resourced manually, provided, a system exists to understand whom the requester should go to.	Knowledge specific information could be of three types: information collected in a planned way, information mining to address a potential situation, and proactively understand changing ecosystem dynamics. Integration of knowledge specificity is related to creating a knowledge memory model.
Specificity of Use	Since these requests are for immediate use, requests can originate during the sales cycle or the execution cycle, which might have an impact on an immediate deliverable. Support of sales cycle and implementation cycles would necessitate separate knowledge requirements.	Information is used to build more explicit knowledge to support and build a knowledge memory foundation.

3.1. Research methodology

Case study is a methodology when a holistic, in-depth investigation is needed (Feagin *et al.* 1991). Hall and Day (1977) consider three uses of models: understanding, assessing, and optimizing. In this paper, an understanding model is developed which is assessed using information gathered from reviewing project documents and based on the analysis performed on those. This conceptual framework of this is built around by extending the notion of project ecology (Grabher 2004; Ghosh, Skibniewski 2010).

The case study was conducted based on semi-structured interviews with relevant stakeholders – project manager, business owners, and solution integrators of an SMSCO firm based out of Maryland, USA. We reviewed internal documents related to research for the case study, conducted thorough interviews with the sustainability coordinator in conjunction with review of the Sustainability Integration Plan. The Sustainability Integration plan formed the basis of the firm's initial strategy for responding to the sustainable needs of its current clients as well as expanding their client or service base. The Sustainability Coordinator created the Sustainability Integration Plan after detailed discussion with all levels of the organization. The interviews and reviewed documents address a wide range of topics including evaluation of the organization's structure (organizational and relationship), strategy (long term and short term), maturity (skills, process and leadership), and resource (both human and infrastructure) situation that may impact success of the project. The interviews also provide details regarding implementation readiness, organizational governance practices, and institutional leadership and relationship between different stakeholder entities. Results were validated using triangulation method.

4. Case Study

4.1. Background

The case study is based on a multi-disciplined consulting firm providing transportation, structures, construction, environmental, facilities engineering, and technology services. The firm is

headquartered in Maryland, with offices throughout in the eastern United States. The company has experienced significant growth in its forty year history, moving up in the Engineers New Record (ENR) rank by 350 positions in 15 years between 1996 and 2011(ENR.com 2011). Like most SMSCOs, this firm has experienced challenges with the integration of sustainability concepts, but has managed to overcome these obstacles with the governance of a Sustainability Coordinator, Sustainability Integration Plan, and Sustainability Committee.

This firm represents SMSCO because of its size (both physical and financial) and the role that it plays within its sector. The case study is relevant because it represents a full cycle of dealing with governance and sustainability within the organization. It documents the process from its very early stages to its current semi developed form. It also identifies some of the issues that were faced by the organization, and how they had to deal with it.

4.2. Organizational readiness to govern sustainability projects

The company created and implemented a governance framework consisting of the Sustainability Committee in conjunction with the Board of Directors acting as the governance board and the Sustainability Coordinator acting as the program management office (Fig. 1).

The Sustainability Committee is a multi-disciplined group of senior staff. The group consists of the Chief Marketing Officer, Chief Information Officer, a Vice President (VP) of Facilities, the VP of Natural Environment, the Sustainability Coordinator, and additional senior staff. The group functions outside of their traditional technical roles to view the entire range of sustainability issues and its impact on the firm. The Committee meets monthly to act as a clearing house for sustainability integration and a platform for information sharing. Discussions include the expansion of knowledge through seminars, strategic teaming arrangements, and research assignments.

The Sustainability Coordinator handles the day to day responsibilities relating to sustainability, bringing any major issues to the Sustainability Committee for discussion. The coordinator works as a liaison between the Sustainability Committee and the general office, interacting as necessary with the technical divisions, regional offices, and support divisions of the firm. The coordinator's role is a part time portion of the technical staff member's responsibilities.

Currently, knowledge and time sensitive and project specific issues are handled first by the Sustainability Coordinator and then elevated up to the Sustainability Committee should it become necessary for approval. Current sustainability responsibilities as assigned within the governance frame work related to sustainability are listed in Table 2.

Table 2. Sustainability responsibilities

Responsibility	Description
1) New Work	Responding to requests for proposal (RFPs) focused on sustainability. Example: Proposals for Climate Change work require input from disciplines but would be led by sustainability coordinator.
2) Acquisitions	Researching areas for acquisition to strengthen sustainable service offerings including individual hires or company acquisitions. Example: Researching competing firms for staff qualifications in energy, green roofs, and complete streets in order to require these credentials for strategic hires.

| Responsibility	Description
3) Research	Researching new sustainable design techniques or rating concepts, e.g. managing LEED version changes and credentialing maintenance requirements.
4) Trouble-shooting	Assisting internal staff and clients with resolutions to sustainability related problems, e.g. Coordinating with the USGBC to apply LEED for campuses before the rating system has been released for official use.
5) Design/ Technical Work	Design of sustainable projects or sustainable components of projects, e.g. conducting greenhouse gas calculations, analysis, and reduction planning.
6) Training/ Hiring	Training of existing staff through internal workshops, one-on-one discussions, and review of requests for external training in sustainability. Example: Providing question and answer sessions of the Sustainability Integration Plan to all regional offices.
7) BIM Coordination	Coordination between BIM systems and sustainability design practices. Example: Working with the CAD manager to assess preassembled BIM LEED System platforms for purchase.
8) Integration into Project Delivery System	Incorporation of sustainability tracking into their Ad Tracker, Proposal Center, and Project Center platforms. Example: Meeting with marketing staff to provide examples of sustainable projects to allow projects to be sorted when they enter the project life cycle system.
9) Sustainable Internal Operations	Modifications to internal company operations to increase sustainability. Example: Coordinating highway and stream cleanups with staff volunteers.
10) Economic Impacts	Tracking and evaluation of revenue attributed to sustainable projects. Example: Determining the portion of a LEED design project that is dedicated sustainability revenue versus traditional discipline design revenue.
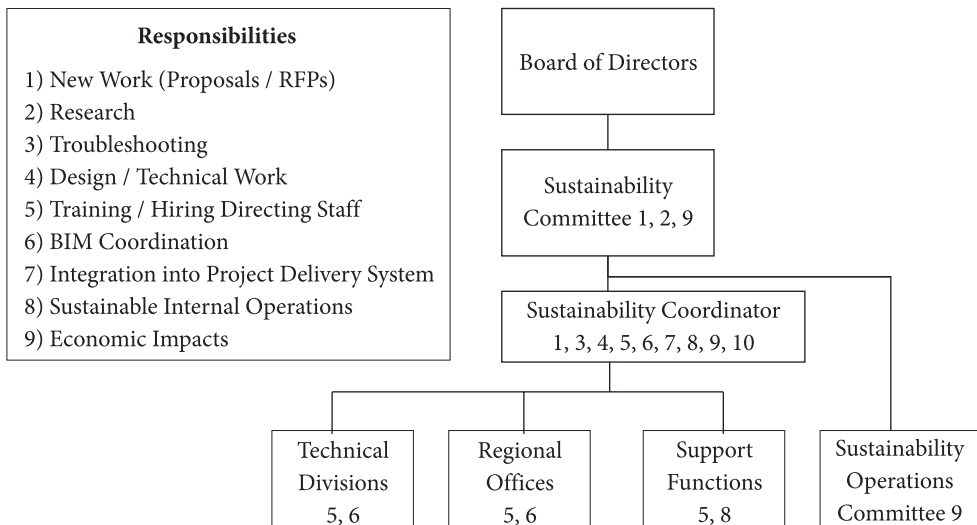
Fig. 1. Project governance structure

The Sustainability Operations Committee consists of a group of volunteer employees with an interest in implementing sustainable practices and operations. The group compiled a list of internal operations changes, ranked these changes in terms of importance, and has been working through the list to implement the suggestions. For example, they adopted a highway for cleanup and organized employee cleanup efforts during lunch breaks several times a year.

The Water/Wastewater (W/WW) department is an example of a technical division. As they pursue or work on a project focused on their technical specialty, they conduct the bulk of the technical work, but work closely with the Sustainability Coordinator if there is a request to incorporate sustainability into the project.

4.3. Sustainability organization readiness timeline

The sustainability governance development timeline, shown in Figure 2, provides a view of the integration process. The timeline is longer than the firm originally expected, but this particular integration was for an existing mid-sized company across multiple divisions and in multiple states. It is notable that sustainable activities were occurring before this timeline and during the beginning of this timeline, but without formal coordination or labeling.

The process began from the bottom up, which caused some of the time delay. Approximately halfway through the 4 year timeline, the process gained strong support from the top level of the organization, thus allowing the governance component, the Sustainability Committee, and the Sustainability Integration Plan to develop at a faster rate.

The Resource Dedication listed in the timeline is the percentage of the Sustainability Coordinator's time which is devoted solely to sustainability. The remainder of the coordinator's time is devoted to the technical responsibilities the staff member is also assigned.

The first attempt for the Sustainability Committee led to lengthy discussions on the definition of Sustainability and the coordination of the Triple Bottom Line (Environmental, Social, and Economic). The debate focused on the strength of the Environmental leg and the
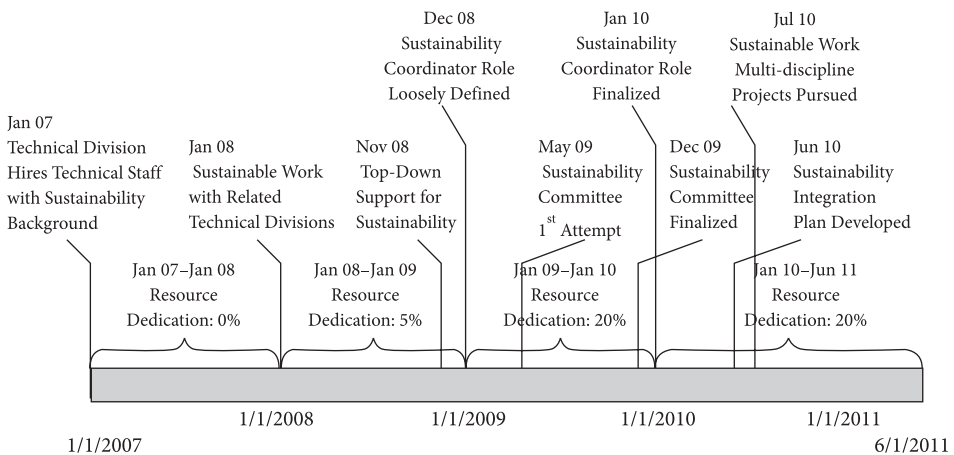
Fig. 2. Sustainable governance development timeline

Economic leg; the balance between these 3 factors is a continued focus of the Sustainability Committee. Creating the right balance amongst committee members delayed the committee finalization.

4.4. Specificity of information acquisition

4.4.1. Time specificity

Activities that require immediate understanding are handled by the Sustainability Coordinator. The role of the Sustainability Coordinator began with a part time response to these immediate, time sensitive needs. The Coordinator assists the various divisions within the firm to determine the issue, solution, or integration as necessary. This role requires a broad understanding of sustainability, the SMSCO's capabilities, and the project or client of impact.

For an SMSCO, the Sustainability Coordinator role will begin as a small portion of a staff member's responsibilities, preferably a staff member with additional technical skills in order to justify the position for a small company. For this company, it was four years before the sustainability position reached 50% of a full time staff member's time. The position grew with the company, as the company almost doubled in size during this time.

As the Sustainability Coordinator role grows, the ability to respond to time specific integration demands will increase. Currently, the majority of time specific issues are addressed. The dual function of a staff member allows a SMSCO to provide time specific sustainability integration.

4.4.2. Knowledge specificity

The company developed a Sustainability Integration Plan (SIP), which provides an overview of the current status of the company and recommendations for the future integration of sustainability within the company, as well as expansion opportunities for the company with respect to sustainability projects. The document was developed from the LEED Policy Plan, created to assist the SMSCO with its growing costs associated with LEED accreditation, certification, and membership. The first step of the SIP was a mapping of all areas of sustainability against the current experience of the company, which required discussions with the market and discipline leaders within the firm. This mapping has been used to monitor sustainability experience and although it is still maintained manually, the company is working to track this information through the existing marketing database with ties into the proposal and project SharePoint based electronic workspaces.

An enterprise management system (EMS), which is a SharePoint based project site, was developed for sustainability projects and is accessible to all employees. The site contains the SIP, the LEED Policy Plan, and additional relevant references. Currently, the site is acting as a repository for reference information which is mainly utilized by the Sustainability Coordinator. The Sustainability Committee was developed as a cross company initiative to maintain the SIP and assist with knowledge dissemination.

4.5. Specificity of information usage

4.5.1. Time specificity

For time specific information, staff will contact the Sustainability Coordinator. The same issues that arise in specificity of acquisition also apply to the specificity of use. Although the EMS is being strengthened through coordination of the project lifecycle with links to the sustainability information, it is anticipated that time sensitive information will still be drawn from the Sustainability Coordinator.

4.5.2. Knowledge specificity

Once the SIP was developed, two members of the Sustainability Committee conducted a regional office tour educating those interested, with a condensed version of the plan. The SIP was also presented to the board and the managers of each office. In the future, a sustainability liaison will be assigned from each branch office to coordinate with the Sustainability Committee to allow for a flow of information in both directions.

Additional in house training has been discussed, but no formal training has been developed or provided yet. As the needs grow, there will be opportunities to provide specific training.

5. Analysis

The company's maturity in supporting sustainability projects and current gaps in the capabilities in supporting sustainable projects are discussed as follows (Table 3).

Table 3. Sustainability responsibilities – maturity and benefits

Type of Asset	Current maturity	Potential resources	Expected benefits
Infrastructure	Medium	Knowledge is acquired through seminars, conferences, and independent research.	Provides a foundation for the knowledge base, which would enable the organization to undertake new projects.
Transactional	Medium	Review is provided by the Sustainability Coordinator and sometimes final review by the Sustainability Committee. New projects are entered into the EMS system for approval.	Automation and systemic would make the organization efficient and able to respond quickly. Some processes are automated; the company is working to automate more.
Informational	Low	An Intranet site providing informational resources is available to all employees.	Provides an ability to understand ecosystem changes and therefore can set strategic direction.
Strategic	Medium	A report is presented to the Board of Directors by the Sustainability Coordinator.	Supports new market strategies, ensures resources are up to date with ecosystem changes.

5.1. Assets

Infrastructure assets are expected to provide a foundation for all activities related to the support of sustainability projects. The infrastructure support is expected to provide a framework to execute coordination and assimilation of new knowledge on a SharePoint based site.

Collaterals are stored in the SharePoint system allowing for simple retrieval. The collaterals only provided explicit knowledge and there were no attempts made to document tacit knowledge, to the extent possible, in an effort to make it explicit. Although there are subject matter experts within other technical roles, there is currently limited backup sustainability generalist support available. Identification of the appropriate subject matter experts could be improved through improvements to the automation systems.

From a transactional point of view of the company's business processes, there are limited automated processes to support sustainability projects. Advertisements for new work are flagged as sustainable steps and reviewed and approved by the Sustainability Committee through the EMS. The firm has not fully invested in any operations system and manual support is provided to all sustainability related issues.

The company is utilizing a governance board (as discussed in Figure 1) to align strategic objectives with project objectives. There was no internal change management initiative to ensure that the business process was changed to use new opportunities. The company often does strategic teaming with other parties to acquire strategic advantages. Although very rarely, consultants are used, however there are very limited resources who can consult on sustainability related issues. Senior management commitment was restricted to assign part-time sustainability coordinator and casual sustainability board without any full time resources allocated. Governance framework was expected provide responsibility assignments and definition of roles and responsibilities within the organization.

To coordinate information gathering and dissemination, the firm used the train the trainer approach, where typically the Sustainability Coordinator was the only one attending outside training. There was no data-mining, research, or planning exercise conducted. Additional staff requests to attend sustainability related training are reviewed by the Sustainability Committee. These requests are advocated if they align with the company's goals and then approved through the company's traditional educational approval process.

5.2. Competencies

There are two independent aspects of skills: training and impact awareness, and champions.

The company has provided extensive availability of collaterals on the corporate website with minimal onsite, instructor-led training courses available for associates. Therefore, staff must show initiative to seek training opportunities that will benefit and improve upon their technical role. The workforce has been developed in conjunction with the work requests received. The company's organizational maturity to undertake sustainability related projects was driven by a few champion associates.

The level of skilled management assigned to the governance of sustainability projects was limited. This key initiative was managed by a mid-level associate without any directs assigned

to this initiative. While executive management was steering the initiative, this task remained as an additional responsibility, losing strategic focus and lacking in tactical direction, which impeded timely and efficient execution. The company has delayed in assigning resources to this strategic initiative from other non-headquarters location until there is a true need for this role.

5.3. Organizational practices and structure

The company is resource constrained, with roles and responsibilities having a many-to-many relationship as are obvious from Figure 1. This leads to multiple resources doing the same work, and this, coupled with non-standard business practices, leads to non-streamlined resource allocation.

The company is an organization with mature business practices and well defined process flows. These practices and processes have been utilized by organizational resources for an extended period of time. Sustainability project execution requires changes in the existing business processes. Additional environmental scanning is necessary to understand changes in the ecosystem, requiring an adaptive governance process, which does not exist in the company. This has delayed the adoption of new processes and thereby extended the execution cycle. No finalized return on investment analysis was conducted. The company began tracking all sustainable opportunities once the Sustainability Committee was finalized. All missed opportunities are tracked through the EMS with an associated fee amount and a reason for the missed opportunity listed.

Integration remained a challenging task due to a lack of cross-functional teams and a non-inclusive business process. Current team structures are focused on discipline departments. Some divisions within the company have required stronger cross functionality in the past and these areas have more readily adjusted to sustainability cross-discipline work. There was no framework available to govern sustainability within this industry when this company created the governance structure presented here.

6. Discussion

We hypothesized that to undertake a sustainable project; collectively binding decisions cannot always be imposed hierarchically. These projects systematically involve project actors in policy formulation and implementation. From a tactical perspective, it appears that the same responsibility was assigned to multiple groups of resources, and the same groups of resources were assigned multiple responsibilities. This resource misalignment contributed to the under preparedness of the company and to the lack of proper utilization of resources, resulting in increased need of communication of streamlined business processes within the organization. Also, a single resource driven control (e.g. Sustainability Coordinator) leaves corporate governance in the hands of one individual. While the Sustainability Coordinator is the champion, there is no second layer of sustainability generalist subject matter expertise developed in the organization, creating a single point of failure. The company has recognized the potential of sustainability projects and has worked within its means to create a governance

structure to host such projects. The case study showed that the company's organizational strategy to undertake sustainability projects has not fully developed to the recommended levels of corporate project governance strategy and ecosystem.

The current organization structure lacks the following:

1. Presence of governance at different levels of organizations with some responsibility assigned at different levels.
2. Resource assignment to address contextual business process changes (e.g. changes in the legislation or rating systems) and ability to meet such requirements, so that the organizational readiness is scalable to adapt to the changing ecosystem.
3. Dedicated and exclusive resource, meaning that *all* the actors from the entire ecosystem have equal responsibility to ensure that the solution is sustainable (the ownership within the organization was based on additional responsibilities and no resources assigned exclusively to sustainability related work, which resulted in no individual staff member owning the full life cycle of the solution).

We propose that an inclusive multi-level framework (Fig. 3) aligned with these challenges and governance of new areas should be inclusive of the corporate strategy framework for two distinct reasons. First, it can generate conciseness about the surroundings, and have the ability to adopt existing corporate strengths and resources in strategy. Second, the proposed framework or 'new institutionalism' can generate awareness about the project. A product or service produced in collective action is likely to have better chances to ensure sustainability since it introduces a pre-emptive dimension in the approach (Ghosh *et al.* 2011; Kooper *et al.* 2011). Thirdly, this framework includes strategic adaptation activities that focuses on inter-relationship between social, economic and ecological layers.

6.1. Proposed framework – possible approaches to resolve the challenge

Our conceptual framework identifies an organizational structure that has the ultimate decision authority and must approve major strategic decisions and significant changes related to the project. It must also make fundamental up-front decisions about how the program will be structured. The proposed framework is organization wide, functions are bundled, and the levels of governance are multiple, but limited.

The Institutionalized Project Governance Board (IPG) is the highest level body in the organization responsible for strategic direction setting. The IPG is responsible for strategic direction setting of the organization based on the scale diversity in projects to be executed and aligning it with organizational capacity and objectives. The IPG will also recognize diversity and dynamics within the scope of the project before making a decision. The IPG consists of senior executives from each of line of business, including executives from financial, information technology, and operations management.

The Program management office (PMO) consists of the following members: technical, business, and operational leadership, as well as the sustainability co-coordinator and the designated project manager for the specific project. The PMO should focus on overlooking at the sales and execution cycles of projects, and act as a liaison between all projects, including providing knowledge movement support between projects. The PMO will also perform

organizational resource allocation, cost benefit analysis of the project, and will be ultimately responsible to ensure that the triple constraints of projects is satisfied, which ensures project management opulence. The PMO will also be responsible for knowledge management and ensure that knowledge flow across multiple entities within the organization is taking place.

Strategic Layer   **Tactical Layer**

Institutionalized Project Governance board
(Provide corporate guidance)

Adaptation
Integration
Strategic

Negotiations
Escalations

Program Management Office
(Advices during projects sales and execution)

Compliance
New requirements
Infrastructure

SWAT team

Knowledge sensitive (KS) integration team

Integrated team
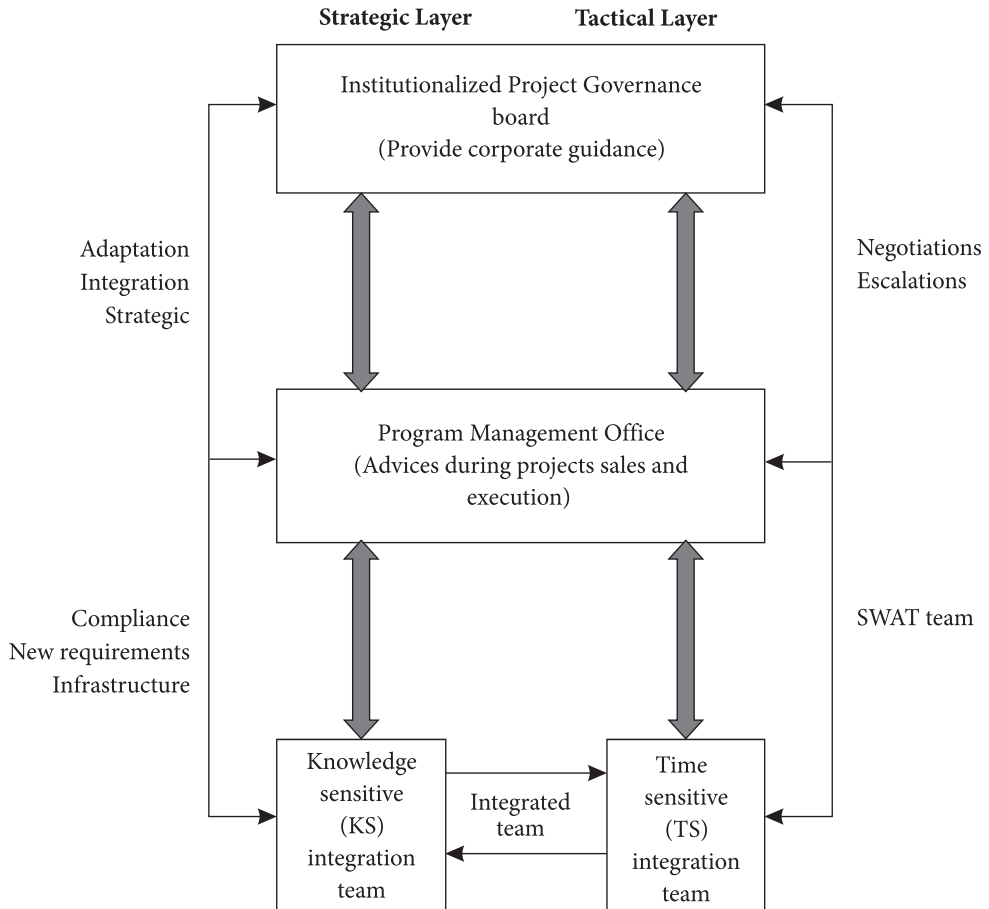
Time sensitive (TS) integration team

Fig. 3. Multi-layer proposed governance structure

Table 4 aligns the current responsibilities within the company with the proposed governance framework. It identifies which group of individuals can be responsible for what tasks. Due to the multi-level governance structure, all levels of governance can be managed by part-time resources, and each of the levels of governance can be staffed by key resources from all impacted business units. Therefore, horizontal communication within a layer of governance will be focused on certain responsibilities and easy to manage. This being a multi-layer scalable model, with increasing business, the company can augment additional staff at each of the layers to ensure that the business volume is satisfied in a timely manner.

Table 4. Assignment of responsibilities within new governance structure

Respon-sibility	Description	Current level	Assignment in the new structure
1) New Work	Responding to requests for proposal (RFPs) focused on sustainability	Sustainability committee Sustainability coordinator	PMO – to respond to RFP IPG – to approve RFP before going out
2) Acquisitions	Researching areas for acquisition to strengthen sustainable service offerings including individual hires or company acquisitions	Sustainability committee	KS – this is a continuous knowledge management activity
3) Research	Researching new sustainable design techniques or rating concepts.	Sustainability coordinator	KS – this stream will formulate knowledge management approaches for the organization
4) Trouble-shooting	Assisting internal staff and clients with resolutions to sustainability related problems	Sustainability coordinator Technical Division Regional Office Support Functions	KS and TS – this is a joint activity between business and technical members of the staff
5) Design/ Technical Work	Design of sustainable projects or sustainable components of projects	Sustainability coordinator Regional office	KS – this will be led by the subject matter experts (SME)
6) Training/ Hiring	Training of existing staff through internal workshops, one-on-one discussions and review of requests for external sustainability training	Sustainability coordinator	KS – this will be led by training experts with support from the SMEs
7) BIM Coordination	Coordination between BIM systems and sustainability design practices	Support function	TS – while integration of design with feeder systems will be led by the KS team, real time coordination will be managed by the TS team
8) Integration into Project Delivery System	Incorporation of sustainability tracking into Ad Tracker, Proposal Center, and Project Center platforms	Sustainability committee Sustainability coordinator Sustainability Operations committee	PMO – this is the tactical relationship between independent project groups
9) Sustainable Internal Operations	Modifications to internal company operations to increase sustainability	Sustainability coordinator	PMO – will be responsible for overseeing and ensuring all documents, operations, and transactions are codified as per corporate, industry and legislative standards as applicable

Respon-sibility	Description	Current level	Assignment in the new structure
10) Economic Impacts	Tracking and evaluation of revenue attributed to sustainable projects		IPG – will ensure that the volume of projects and the expected margin from the projects meet corporate objectives; also ensures that additional resource allocation takes place to support and meet business objectives

Abbreviations used: PMO – Project management office, K(T)S – Knowledge(Time) sensitive information response team, IPG – Institutionalized project governance board.

6.2. Research synthesis

We have provided an organizational governance framework to undertake sustainability projects since project governance by itself is inadequate to overcome all the challenges faced by the project organization for resource constrained entities like SMSCOs.

The study highlights the following interacting aspects in formulating an organizational governance framework to ensure proper usage of resources:

a) Our framework allows members of SMSCOs, who often cannot afford to have setup project governance for each project, to have an institutionalized organizational governance framework to govern all the projects undertaken;

b) Sustainability projects being normative, ambiguous, and complex in nature, organizations should be prepared to address different types of situations at different levels of communication. Simple existence of any project specific management structure or a corporate knowledge management framework would not overcome this challenge;

c) Responsibilities are well defined and the number of layers within the framework is minimal, reducing the time required to ensure communication. In addition, the proposed framework would ensure that only two parties own the communication;

d) The article has established the need to feed project based tacit knowledge into an inclusive framework to ensure that in a resource constrained environment, shared multi-tasking responsibilities can be provided and risk can be reduced;

e) The framework allows for the ability to support a flexible, but well defined structure that is scalable from resource, competencies, and process perspectives while working under triple constraints.

6.3. Benefits

The major distinction in the proposed framework is that provides a structured approach motivated by project governance principals to integrate organizational resources that is relevant to undertake such projects. The framework distinguishes itself from neither a governance nor management process by inclusion of organizational readiness as formal part of the framework.

This is the first time a framework is presented that integrates with principals of organizational resources, integration with available tools and techniques and therefore organizations can strategically establish itself to meet the needs to the latest trends in political, corporate and environmental demands.

The second major premise concerns the inclusiveness of the governance process, which is seen as a necessary, although not sufficient, prerequisite for tackling critical success factors in both a sustainable and acceptable manner and, consequently, imposes an obligation to ensure the early and meaningful involvement of all stakeholders (Renn 2005). The proposed framework provides an inclusive framework.

A third major premise involving simplifying the framework and institutionalize resource governance as part of the project governance framework instead of part of project management process at the project level.

6.4. Limitations

Although this research provides exposure to the current state of readiness for SMSCOs from a resource based perspective, it has some limitations. First, these findings are based on a case study, and therefore, is limited to findings from one specific organization. Second, our information gathering was done using semi-structured interviews using qualitative responses. No quantitative study was conducted. Third, the findings are biased by the interviewee's response is to the situation. And finally, a key employee of the case study firm is also an author of this article.

This work is considered to be in the early stages of development. The sustainability field is very young, impacts are still being developed and not fully and clearly understood and therefore cannot be measured. Therefore at this time it is hard to have a discussion about new work until economic impact is completely understood. However we do expect that this paper does contribute to the body of knowledge understanding how firms (and probably the most critical segment of the industry) are prepared to undertake the most critical efforts of the century. We except to stir enough research interests that can be pursued by other researchers or by us during subsequent studies to understand the economic impact.

7. Future research

Understanding and acceptance of new tools, techniques and business process is one of the most mature streams of organizational resource research, but under-researched in project governance area. There have been several theoretical models, primarily developed from theories in psychology and sociology, employed to explain technology acceptance and use. Current project governance literature is dominated by understanding single project paradigm without considering various environmental factors. As a result, organizational, social and historical influences on project success are often under emphasized from explaining project management process and techniques. This is the first attempt to align organizational resource availabilities to undertake sustainability related projects from a governance perspective in order to improve project governance process and framework. The effectiveness and value of

governance depends on the active participation of each stakeholder in a structured format. We propose a framework with an equal emphasis on resources and process, which helps provide the answers to this challenge and helps management identify the facilitating and inhibiting factors that influence project success.

Conclusion

This research was an attempt to provide evidence that sustainability, which will dominate business in the next generation, requires further analysis to improve our understanding of how organizations can execute sustainability projects with greater success and fully harness the capabilities of the organizational ecosystem.

For future research, the study should be validated using a quantitative study. In addition, the proposed framework should be implemented in a number of other SMSCOs and their results analyzed.

Although no explicit statement is being made, the study assumes that good organizational readiness and governance would ensure good project performance. In the cases of addressing organizational level performance, researchers would benefit from employing hierarchical or longitudinal analysis that would allow them to capture the influence of organizational resources on higher level project outcomes over time.

The current article aims to apply the empirical findings related to project governance to organizational readiness for undertaking sustainability related projects. The theoretical starting point of this research is a multidisciplinary perspective using recent insights of organizational resource theory, project governance, and multi-level governance theory. This article highlights the governance and steering of institutional readiness as well as the governance and steering of organizational resources to undertake one of the most challenging projects of the century.

The article also extends the institutional analysis of resources to an organizational governance framework. Finally, a multi-level governance framework was presented. In the article, there is a specific emphasis on the dynamics of the project ecosystem, and the resources, skills, and practices required to support sustainability related projects.

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