Sustainable Development in Construction: A Tool to Bridge the Gap between Strategic and Tactical Planning

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Abstract

The adoption of the principles of sustainable development (SD) is increasingly seen as an important way to align the strategic plan of organizations with the specific objectives and procedures used for project execution. However, more research is still needed to identify how SD contributes to align the strategic plan of clients of the building sector with their short-term needs of construction projects (their tactic plans). This article presents the preliminary results of an ongoing research project that hypothesises that SD contributes to bridge the gap between the strategic plan of construction clients and their project-based tactical planning. It presents a case study of an institutional construction client in Canada that has incorporated principles of SD in both project procedures and strategic management. The client currently conducts a project aiming a LEED certification. The key study findings are: (i) important changes have been noticed in the tendering process, and (ii) top-down environmental management plans and environmental management systems have been implemented under the pressure of various bottom-up initiatives of environmental responsibility. The principles of SD now transcend both short-term needs and long term responsibility, potentially facilitating the alignment of the strategic and tactical plans.

Keywords: sustainable management, temporary multi-organization, strategic management, sustainable construction, project management.
1. Introduction

International corporations are increasingly using the principles of sustainable development (SD) to align corporate vision, mission and objectives with day-to-day decision making conducted at the level of individual projects (Fister, 2009). These organizations (including Saatchi & Saatchi, L’Oreal and Yahoo! Inc.) increasingly perceive that the principles that represent sustainable practices (see second column in table 1) contribute to coordinate two hitherto fragmented scales of decision making: strategic and project management. “A good sustainability manager and a strong project manager working together can make that connection, bringing the business priorities down to the project level and making sure those metrics are measured” say Christina Page, of Yahoo! Inc (Sunnyvale, California) (Fister, 2009). However, insufficient knowledge still exists on what is the scope of this influence in the building sector.

The concept of alignment has gained wide acceptance in management. The term permits to explicitly examine the relations between strategies, structure, and planning methodologies within organizations (Reich & Benbasat, 2000). The concept has been largely used in strategic management to describe, for instance, the relationship between business goals and products of information technology. Nogeste (2008) uses the concept of alignment to describe the link between intangible project outcomes and tangible project outputs. Similarly, Pulaski (2005) uses it to describe the relations between the objectives of sustainability and those of the construction process.

The purpose of this article is to report the preliminary results of an ongoing research project that explores the influence of SD in the alignment of strategic planning and tactical project management in organizations that commission construction projects. The article begins with a review of strategic planning and tactic management concepts, highlighting the gaps that exist between the two approaches. It then presents the principles of sustainable development as a possible link between strategic and project management in design and construction projects. This is followed by the explanation of the case study approach and other qualitative methods used. It then presents the patterns found in the case study, the preliminary results of the study and an overview of further steps still required in this research.

2. Strategic and tactic management in construction

Strategic planning is based on the explicit description of the organization’s mission, vision and strategy (Byars, 1984). The organization’s strategy is often seen as a “top management’s unique plan to develop and sustain competitive advantage and superior performance so that the organization’s mission is fulfilled” (Parnell, 2008, p. 37). According to Mintzberg (1987), it reflects the results of organizational learning by incorporating patterns of behaviour that have worked best. Thus, it enables the organization to fully concentrate its resources and exploit its skills and knowledge. While the mission is the reason behind the very existence (and pertinence) of the organization, and its vision is the ideal state of the organization in the future, the strategy defines the way to achieve that ideal state (Naaranaja, Haapalainen, & Lonka, 2007). Strategies therefore identify the high objectives of the organization and dictate the long-term direction of the most important activities (Byars, 1984).
Strategic management thus refers to a process that includes top management’s analysis of the organisation’s internal and external environments prior to formulating a strategy, as well as long-term plans for implementation and control (Parnell, 2008).

However, urgent problems and some of the needs of organizations must often be solved by responding to precise objectives in the short term; that is to say, at a tactical level. Projects efficiently respond to tactic needs, they are indeed dedicated to the attainment of a specific and measurable goal in conformance with predetermined performance specifications (Gaddis, 1959; PMI, 2008). Even though, project management permits to organize and coordinate the activities that respond to a tactic plan, it is often considered as a linear sequence of procedures and methods that is not adequate to manage the complex situations that modern organisations must now confront (Thiry & Deguire, 2007). A number of authors therefore claim that an important transformation of the discipline of project management is needed to respond to the dynamic and integrative needs of current projects (Forgues & Koskela, 2009; Koskela & Howell, 2002).

The dichotomy between strategic and tactical approaches have led some authors to identify two main theoretical traditions: "The first tradition with intellectual roots in the engineering science and applied mathematics, primarily interested in the planning techniques and methods of project management. The other tradition with its intellectual roots in the social sciences, such as sociology, organization theory and psychology, especially interested in the organizational aspects of project organizations" (Söderlund, 2004, p. 185).

Some authors have thus identified a gap between the strategic and tactical levels of management (Katsanis, 1998). According to Thiry (2007), "the actual strategy process, in contrast to project processes, is often not planned, linear and rational, but rather ongoing, emergent and enacted" (Thiry & Deguire, 2007, p. 649). However, project management practices influence organisational strategies and vice versa (Thiry & Deguire, 2007). However, insufficient knowledge exist on how the project planning and management influences strategic organisation levels (Thiry & Deguire, 2007).

The existing gap between strategic and tactical planning in the building sector is not surprising. Adapting the principles of long-term strategic planning in a project-based industry (like the building industry) is not an easy task. At least four main difficulties arise. First, fragmentation: The organizational fragmentation that characterises the building sector (Cherns & Bryant, 1984; Molsini & Davidson, 1991) reduces the capacity of organizations of design and implement concerted long-term plans (Bryde, 2008). Second, project complexity: Construction projects are becoming increasingly complex requiring more participants, involving additional stakeholders and rising the level of specialization of project actors (Langford & Male, 2001; Ngowi, Pienaar, Talukhaba, & Mbachu, 2005). The linear approaches to construction management are insufficient to fully integrate project actors (Forgues & Koskela, 2009), let alone to align their objectives and strategies (Maqsood, Finegan, & Walker, 2003). Third, environmental complexity: Strategic management is based on a comprehensive knowledge of the environment, but in project-based businesses, project environments are highly dynamic and thus the establishment of a vision is difficult (Naaranoja, et al., 2007). Fourth, the size of companies: The fragility of the project temporary teams (due to their fragmented nature) increases the vulnerability of companies (particularly small and medium-sized enterprises -
SMEs, which account for 90% of the industry) to fluctuating commercial and financial environments (Davidson, 1988). SMEs cannot easily implement research and development departments or knowledge management procedures, making it difficult for companies to manage uncertainty, share knowledge and, thus, create strategic approaches (Leslie & McKay, 1995).

### 3. Sustainability in strategic and project management

The Agenda 21 defined sustainable construction as: "a holistic process in which the principles of sustainable development are applied to the comprehensive construction cycle, from the extraction and beneficiation of raw materials, through the planning, design, and construction of buildings and infrastructure, until their possible final deconstruction, and management of the resultant waste" (Du Plessis, 2002, p. 6). Even though there are many interpretations of sustainable development, a common consensus exists towards its adoption in the building sector. This, despite of the fact that the construction industry has been accused of causing various environmental problems “ranging from excessive consumption of global resources both in terms of construction and building operation to the pollution of the surrounding environment” (Ding, 2008).

*Table 1: Sustainability as bridge link between strategic and tactical planning.*

<table>
<thead>
<tr>
<th></th>
<th>Strategic planning</th>
<th>Sustainable development</th>
<th>Tactical planning</th>
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<tbody>
<tr>
<td><strong>Based on</strong></td>
<td>Vision</td>
<td>Social, economic and environmental responsibility</td>
<td>Respect of quality, time and cost (PMI, 2008)</td>
</tr>
<tr>
<td></td>
<td>Mission</td>
<td>(Brundtland, 1987)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Objectives (Byars, 1984)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Scope</strong></td>
<td>Long-term (Langford &amp; Male, 2001)</td>
<td>Short term decisions and long term effects (Gladwin, Kennelly, &amp; Krause, 1995)</td>
<td>Short term (PMI, 2008)</td>
</tr>
<tr>
<td><strong>Main decision makers</strong></td>
<td>Top management (Betts, 1999)</td>
<td>All levels (López-Fernández &amp; Serrano-Bedia, 2007)</td>
<td>Team managers, project leaders (Raiden, Dainty, &amp; Neale, 2004)</td>
</tr>
<tr>
<td><strong>Approaches to implementation</strong></td>
<td>Strategic management (Byars, 1984)</td>
<td>Sustainable strategic management (Stead &amp; Stead, 2008)</td>
<td>Project management (PMI, 2008)</td>
</tr>
<tr>
<td><strong>Means to reach objectives</strong></td>
<td>Motivation, review of procedures, negotiation (Mintzberg, 1993)</td>
<td>Integrative actions, consultation and negotiation between stakeholders (Hacking &amp; Guthrie, 2006)</td>
<td>Programming and control (PMI, 2008)</td>
</tr>
</tbody>
</table>

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In the construction industry, where each project is unique, one of the main challenges is monitoring environmental performance over time (Christini, Fetsko, & Hendrickson, 2004). During the phases of planning and designing, most architects and consultants now search for new materials and innovation to improve environmental efficiency. However, it is in the management of the project itself where strong innovations are now needed to bridge the gap between sustainable objectives and tactical plans (Forgues & Koskela, 2009; Naaranoja, et al., 2007). New approaches have recently emerged to reduce the gap between long-term management objectives and short-term management goals. Shrivastava (1993), Parnell (2008) and Stead & Stead (2008) have developed conceptual frameworks that merge strategic management, sustainable development and project management. Stead & Stead (2008) call this approach Sustainable Strategic Management (SSM), which proposes “a more comprehensive global view of the term [strategic management], referring not only to the survival and renewal of the firm itself, but also to the survival and renewal of the greater economic system, social system, and ecosystem in which the firm is embedded” (Stead & Stead, 2008, p. 73).

Table 1 shows the characteristics of strategic planning, tactical planning and sustainable development as they have been discussed in the literature. The table illustrates the important differences between strategic and tactical levels and shows how the principles of sustainable development respond to some of the characteristics of the two approaches.

### 4. Research design

The objective of this research is to identify how SD contributes to align the strategic plan of clients of the building sector with their short-term needs of construction projects (the tactic plans). We adopted a qualitative research approach, and more specifically the study case method proposed by Yin (2003). Case studies are often “based on interviews, which are used to investigate technical aspects of a contemporary phenomenon with its real life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used” (Yin, 2003 p.3). The research includes the detailed analysis of three study cases. In this article, we
present the preliminary results obtained from the analysis of the first case, which was used as a pilot study of the research.

It was important for the study to examine the case of construction clients that simultaneously establish strategic plans and tactical plans. It was also important to identify organizations that have adopted principles of SD. We therefore decided to examine construction clients that have the following characteristics:

1. Experienced clients, as defined by Gameson & Masterman (1994), namely organizations that have gained experience after commissioning more than one construction project. This is important because one-off clients do not have the same opportunity as experienced clients to learn from tactical management decisions to improve strategic management procedures.

2. Secondary clients: that is, organizations who require buildings to enable them to house and undertake their own main activities. We therefore omitted primary clients (whose main activity consists in constructing buildings for sale, lease, investment, etc.) (Nahapiet & Nahapiet, 1985). This is important because, contrary to primary clients such as residential and commercial developers, secondary clients establish strategic plans that are not directly focused on improving construction practices.

3. Institutional clients in Canada, where the term “institutional clients” describes large and complex organizations that may operate with mixed capital (private and public). We therefore aimed at medium-size or large-size organizations, deliberately avoiding small enterprises that probably have not established formal strategic management procedures.

These criteria led us to identify institutions that operate in the following sectors: education, financial services, public health, etc. In order to facilitate access to information, we opted for studying three universities that are currently conducting large construction projects.

The first part of the study involved the review of the literature on organizational theory, sustainable development, knowledge management, project management and strategic planning. A particular attention was given to articles and documents that discussed the relations between strategic and planning management. The second part of the study included a review of documents and printed material related with the case study. This included: official documents about building policies, contractual documents, project reports, meeting reports, feasibility studies, etc. This second step of the study also included conducting an interview with the project manager in charge of the department of building procurement in the organization. The interview has been complemented by several informal discussions in order to clarify information and experiences gained from the project.

We then adopted the methods of triangulation of information for case study research proposed by Proverbs & Gameson (2008). This permitted us to compare written information with data obtained from the interviews. In case of discrepancies between the two sources, validity was given to printed material.
The third part of the study included analysing the data obtained. This included identifying the project stakeholders and representing their relations in a graphic manner (see figure 1). It also included organizing the information according to the principles and categories previously identified in the literature (following the structure used in table 1).

5. Results of the case study

**Client’s strategic plan:** The mission of the University of Quebec (UQ) is the advancement of learning and scientific research, a mission adopted in 1967 (Université de Montréal, 1967). The current document of strategic planning - called the White Book - was adopted in 2007 and it comprises the actions to be taken between 2007 and 2010. It was the result of extensive consultation with the academic community, including units, departments, employees’ unions, student associations, etc. The rector of the university must present every year a report of activities responding to the objectives of the White Book. This report is presented annually to the community by the Rector in an open lecture.

**Client structure:** The top management structure of the university includes: the board, the executive committee; the university assembly and the committee of studies (Université de Montréal, 1967). The second level of hierarchy includes the rector and vice-rectors, who have are in charge of strategic decisions but who also influence tactical decision-making. The third level of hierarchy includes faculties and departments along with the Building Management Office (BMO), a unit in charge of planning and procuring construction projects in campus. This unit is accountable to the rector and is mandated to respond to the needs of the academic community and their space requirements, adapting time scales, specifications and size of each project according to the needs of faculties or departments.

**Campus Master Plan:** The university undertook in 2007 a consultative process to prioritize space needs, which resulted in a Campus Master Plan adopted in 2008. The Campus Master Plan is a document that proposes strategic principles, priorities, timelines and a budget for developing the campus over a twenty year period (Université de Montréal, 2007).

**Environmental Policy:** The university adopted in 2003 a very basic environmental policy, concentrated on three main objectives: 1) the adoption of rational methods to manage resources; including reuse and recycling of resources, reduce of consumption of resources and the preservation of natural resources, 2) ensure the protection of employees to environmental risks and 3) reduce the environmental impact of activities conducted by the academic community (Université de Montréal, 2003).

**The path towards the alignment of SD, strategic management and tactical management:** Like other institutions of higher education, the university first developed environmental initiatives and projects of SD launched by students, faculty and groups of employees. These initiatives appeared before SD was adopted at the strategic level (in the White Book, the Campus Master Plan and the Environmental Policy). In fact, administrative units started to implement in the early 90s internal processes for environmental management without having a strategic plan for the whole organization.
The BMO, for instance, adopted a program for training its staff in environmental issues. It also started hiring new employees who had knowledge or experience in environmental management in buildings (Université de Montréal, 2005). The organization adopted a formal environmental policy and an environmental management system on campus following the pressure from: (i) Internal pressure groups, such as the unions, the student associations and research groups; (ii) Policies enforced by the Ministry of the environment, the Ministry of culture and other provincial legislation; (iii) The regulations imposed by the Municipality and the Borough where the main campus is located.

Once SD was adopted at the level of strategic management, the BMO did not have to modify its organizational structure, yet it included new requirements of sustainability for consultants and contractors. This has enabled the BMO to adopt a new environmental policy without increasing its staff. The experience and the transfer of knowledge in the processes have been crucial in formalizing tendering procedures within the TMO. For example, standard contracts used by the BMO are often reviewed and adapted following the experiences of previous projects. Table 2 illustrates the way in which the principles of sustainability have been interpreted and implemented at the levels of strategic and tactical planning.

**Example of a sustainable project:** Now that the university has adopted the principles of SD at both the strategic and tactical levels, the organisation faces the challenge of implementing the values and principles included in the strategic plan in an ongoing and ambitious project of urban development. Based on the Campus Master Plan, the university constantly commissions renovations and new buildings. However, demand for space recently increased, forcing the university to plan the development of a secondary campus. Thus, in 2006, the university purchased an ancient railway yard, with the intention of building an extension to its original campus. The university justified its choice of an extension to the campus based on arguments previously exposed in the Campus Master Plan (Université de Montréal, 2008). An invitation for tenders was then organized, and an architectural firm was hired to conduct the general urban design as well as to manage the process of zoning changing and other modifications to local regulations (see figure 1). The call for tenders put a strong emphasis on the sustainability of the new project and the contract was awarded to a firm that is well recognized for its experience in SD, particularly in projects certified LEED.

“The University proposes to develop the urban area based on the structure of Global Environmental Assessment LEED-ND (a LEED certification for neighbourhood development). This new tool integrates the principles of smart development (smart growth) and green building, promoting higher densities, proximity to public transportation, multipurpose buildings and alternative means of transportation. LEED-ND is a recognized standard that identifies and stimulate demand for environmentally responsible buildings and neighbourhoods” (Groupe Cardinal Hardy, 2006).
Despite of the good intentions stated in the initial project documents, one of the most important challenges of the project was to explain to local residents and other pressure groups the feasibility and pertinence of the new campus on the site. In fact, the location of the project in a traditional residential neighbourhood generated fierce environmental debates. It was therefore necessary to organize a participatory process which was led by the Office of Public Consultation (OCPM., 2007). This process forced the university to adopt two important decisions: (i) to develop special communication strategies, including a website, flyers, conferences, special meetings, etc., and (ii) to hire a company specialized on communications and stakeholder management to facilitate the relations between the university, the pressure groups and the control agencies (see fig 1). Stakeholders particularly active in the consultation process included local neighbours, teachers, employees, unions, student associations, academic staff, the city of Montreal, local merchants, etc. (Convercité, 2006).

During the consultation process a group of participants requested that the intentions and principles stated by the university in strategic management documents were considered regulatory obligations (OCPM., 2007). Figure 1 shows the participants that were involved in the main decisions at the strategic level. It also shows the actors that have worked in the project at a tactical level. All of them, however, are already committed to sustainable actions.

Table 2: Synthesis of the principles of SD presented in official documents of strategic and tactical planning (free translation)

<table>
<thead>
<tr>
<th>Level</th>
<th>Documents</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable development</td>
<td>Environmental Policy Statement of the University (Université de Montréal, 2004)</td>
<td>“The University wishes to confirm its commitment to the paradigm of sustainable development; by encouraging the academic community to endorse the protection of the environment, maintaining its integrity and preserving natural resources.” (p. 2)</td>
</tr>
<tr>
<td>principles</td>
<td>Report presented by the university to the consultation process on regional sustainability organized</td>
<td>The university can contribute to regional sustainable development by “promoting the sustainability of infrastructure and buildings”</td>
</tr>
</tbody>
</table>
6. Discussion and further research

The objective of this research was to understand the relations between strategic planning, tactical management and sustainable development. The overall research is based on case study methods; however, this article reports only the results of a first case study that has been used as a pilot case for the research. The case shows that:

- Principles of SD were first implemented at the level of units and departments and not at a strategic level (the principles followed initially a bottom-up approach).

- Pressure from units and departments and the provincial and municipal legislations ultimately led the institution to adopt the principles of SD at the level of strategic management.

- Following the adoption of SD in the documents produced by the head of the organization, a top-down approach was implemented.

- The principles of SD align long-term objectives included in the strategic plan and short term objectives required at the tactical plan.

- Principles of SD have translated into requirements for call for tenders and performance specifications in bidding documents.
• The principles of SD include social responsibility, which forces the institution to adopt participatory and integrative methods of project management, aligning in this way the strategic plan of social responsibility and the tactical objective of social acceptability of the project.

The findings suggest that more research is still needed to identify the effects of SD in the alignment of the long-term objectives of organizations and the short-term needs of individual projects. The following phases in this ongoing research project must address:

1. Validating among other case studies the preliminary results presented in this article;
2. Creating a model based on the patterns found in the sequence of alignment of strategic and tactical planning;
3. Testing the model with additional empirical research (including discussing the model in focus groups with specialists in project management and strategic management in the building sector).

This preliminary study has led us to propose the following research questions, which must be addressed in further phases of the study:

1. How are the lessons learned at the tactical level (in project management decision-making) transferred at the strategic level of the organization?
2. What are the differences between (i) the values and principles presented in the strategic plan of institutions and (ii) the real interventions and decisions implemented at the tactical level?
3. What are the principles of SD that institutions do easily implement and what are the principles that they struggle to adopt?

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