

## **Implementing the Balanced Scorecard in the Greek Construction Companies Projects**

Odysseus G. Manoliadis  
*Democritus University of Thrace, Xanthi, Greece*  
*omanolia@civil.duth.gr*

Ioannis Tsolas  
*National Technical University of Athens, Athens, Greece*  
*itsolas@central.ntua.gr*

### **Abstract**

In the last few years, Greek construction companies have been characterized by strong growth of productivity and remarkable progress. This was driven by the Third Community Support Framework, falling interest rates, and merely by the extensive construction works for the 2004 Olympic Games. Recently, a recession was noticed after the Olympic Games, projects' completion. In order to study the status and potential of the construction companies in this paper we develop a tool based on balanced scorecard (BSC) and sustainability principles to effectively monitor and control project activities for the purpose of improving project results. We propose using sustainability balanced scorecard (SBSC) as an extension of traditional BSC as such a tool by adding a sustainability perspective. The implementation of this tool through monitoring metrics can control the strategy implementation process, not just to realise short-term financial outcomes but also to develop sustainability issues.

### **Keywords**

Balanced scorecard, Sustainability, Construction

### **1. Introduction**

In Lisbon the European council established the objective that enables capability of "sustainable economic growth with more and better jobs and greater social cohesion", until 2010. The EU sustainable development strategy is based on the principle that economic, social and environmental effects of the policies must be assessed in a co-ordinated manner and must be taken into consideration in the decision making process. EU strategy is calling for an integrated approach in which economic, social and environmental objectives to be achieved at the same time. ISO 14000 has been developed as a new international standard series for promoting environmental protection and sustainable development. Since the introduction of ISO 14001 in September 1996 it has attracted great attention from organizations in various industries. ISO 14001 specifies the requirements and procedures for establishing an environmental management system. An increasing number of organizations from various industrial sectors have actively participated in implementing this new standard. However, very few construction companies have actively pursued certification to this standard despite having an obligation to implement it, as the services and products they produce directly impact the environment. By reviewing the strategic issues posed by the entire family of ISO 14000 standards, this paper analyses its relevance to construction and the difficulties and problems that may be encountered in their implementation. Besides that

construction companies in particular have financial reasons for avoiding environmental convictions since these are considered when tendering for government contracts

On the other hand it is challenging for the companies profile to adopt environmental issues specially when these companies are entering a new market or new fields.

## **1.1 Background**

Sustainability as a concept is most widely known in relation to sustainable development (SD). The most widely accepted definition of SD is from the Brundtland Commission which in its report, *Our Common Future* (1987), defined SD as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. SD provides a framework for the integration of environmental policies and development strategies. It also recognises that development based on the efficient and environmentally use of society's scarce resources is essential to satisfy human needs and improve the quality of life. Sustainability is important for the construction industry because the site facilities have a huge impact on the environment. These facilities leave man-made footprints in the environment and as a result there is a pressure in order to make these facilities more sustainable, so that they meet the needs of society without compromising the needs of others or jeopardizing the future survival of humanity on earth (Manoliadis and Tsolas, 2003).

SD policies and practices cover economic, environmental and social areas. The term, “triple bottom line” used as a basis for SD (Elkington, 1997) expands the traditional company reporting framework to take into account environmental and social performance in addition to financial performance.

In this paper we focus on project level to address sustainability issues through Sustainability Balanced Scorecard (SBSC) a further developed tool based on the traditional Balanced Scorecard (BSC) developed by Kaplan and Norton (1992).

A construction project may be regarded as successful if it fulfils the following requirements: it is delivered at the right time, at the appropriate price and quality standards, and provides the client with a high level of satisfaction. (Manoliadis and Tsolas, 2003).

The concept of sustainability is beginning to permeate the Greek construction industry as a possible strategy to better meet the needs of clients and owners while ensuring success in an increasingly competitive and constrained operational environment. While a variety of initiatives have been put into place to begin the change toward increased sustainability, some people have begun to realize that these initiatives are not sufficient to bring about the change that is needed. Aiming for a sustainable built environment requires more than disconnected, although widespread, incentives: it requires a fundamental paradigm shift in the way we approach time, cost and quality constraints.

In response to these drivers of change, the present paper focuses on the development of a tool based on balanced scorecard (BSC) and sustainability principles to effectively monitor and control project activities for the purpose of improving project results. We propose using sustainability balanced scorecard (SBSC) as an extension of traditional BSC as such a tool by adding a sustainability perspective.

The paper is organised as follows. In the next section the BSC approach to project management is reviewed and in the followed section the proposed construction project SBSC is presented. The results are presented in the next section. The final section concludes the paper.

## 1.2 Balanced Scorecard Approach to Project Management

The BSC is a performance measurement method developed, tested, and demonstrated mainly within corporate settings. The traditional BSC (Kaplan and Norton, 1992; see also Kaplan and Norton (1996, 2001)) transforms strategy into operational plans and strategic measures that enable the organization to decide whether or not a project is operating on-strategy.

Norrie and Walker (2004) argue that the research papers concerning the application of BSC to project settings are relatively few (see Stewart, 2001; Stewart and Mohamed, 2001).

To address this need to operationally strategy through projects taking also into account the sustainability dimension, we hypothesized that a project-level SBSC will enable project managers and senior executives of large corporations to help project teams improve their understanding of their organization's business strategy.

For the application of the BSC in a project context, one should consider the following important changes (Norrie and Walker, 2004):

- The role of project BSC is to measure the specific outcomes of the project and compare these to the project's intended impact on the organization's execution of its business strategy.
- The intersection of the project strategy and business strategy must be mapped.
- Project BSC must be modified to measure specific project-related deliverables and objectives.

Having applied these discernible differences, the basic steps of the original methodology remain the same and can be applied similarly.

There are three alternatives to integrate sustainability (i.e. environmental and social aspects) in the BSC (Figge *et al.*, 2002):

- i) Sustainability aspects can be integrated in the existing four standard perspectives.
- ii) An additional perspective can be added to take sustainability aspects into account.
- iii) a specific sustainability scorecard can be formulated.

Through the first approach, the top-down derivation those sustainability aspects that are strategically relevant within the framework of the traditional BSC should be identified.

The second approach deals with the introduction of an additional so called non-market perspective, into conventional BSC in order to integrate strategically relevant but not market integrated sustainability aspects.

The third approach (i.e. integration of sustainability aspects into the BSC) lies in the deduction of a sustainability scorecard. Figge *et al.*, (2002) point out that a derived sustainability (i.e. environmental or social) scorecard cannot be developed parallel to the conventional BSC as an independent alternative for integration, but only as an extension of the two alternatives of integration presented above.

## 2. The Proposed Construction Project Sustainability Balanced Scorecard

It is expected that the model will include all three components (economic + social + environment) of sustainable development. Even if many elements of the model can surprise the enterprise's manager, it is remembered that technical and professional issues should not limit the manager's action field and

perspective. The responsibilities regarding environmental and social issues are of the same importance within the enterprise and beyond it.

The model structure is in essence the same for any construction company. The objectives and action directions can be different for various companies or for various construction units. In the proposed integrated financial analysis. Any strategy has a public section which aims to inform the stakeholders about unit's intentions (e.g. vision, mission, fundamental values, strategic objectives, some key performance indicators). Beyond this, the confidential components of the strategy are preserved (e.g. the ways of action, acquisition intentions).

### **3. Methodology**

A methodology is proposed for measuring the performance of construction companies. Though this methodology is built for Greek construction companies it can be utilized in many cases and organizations. Building a strategy is including the following stages:

1. Dimensions of the system that includes
  - a correct diagnosis of the society with all the consequences, which can occur for managers, employees or company's fate.
  - Setting up the company's vision – a short and clear statement of strategic target.
  - Setting up the mission
  - Setting up the components that are conditioning the vision's achievement.
2. Adoption of fundamental values
  - the company's constitution, which is including the ethics to be applied by managers in the process of strategy's implementation.
  - Setting up the strategic objectives and building the policies to be applied in order to achieve sustainability.
3. Process to achieve desired level
  - Setting up the key performance indicators, this will be used in the control of the progress toward strategic objectives
4. Implementation of the strategy
  - action plans,
  - programs,
  - deadlines,
  - resource allocation,
5. Monitoring and assessment
  - setting up reporting and monitoring procedures, eventual changes in organisational structure such as
  - Tools and metrics to measure actions
  - Monitoring, evaluation and control in order to assure the achievement of strategic objectives, or to make corrections imposed by enterprise's evolution or external factors.

Our proposed SBSC for construction projects looks at the five perspectives—the four original perspectives of BSC (financial, customer, internal-business processes, learning and growth) and a non-market perspective, which we added to order to integrate strategically relevant but not market integrated sustainability aspects. In the conventional BSC perspectives we make use of the candidate measures used by Hubbard (2006) for a five perspective BSC in R&D projects.

### **3.1 The Financial Perspective**

The financial perspective examines the bottom-line contribution of the project in monetary terms. Relevant financial performance indicators could be return on sales return on assets return on equity etc.

### **3.2 The Customer/Market Perspective**

The customer perspective of our SBSC for construction projects looks at the project deliverables as well as stakeholder satisfaction with the final outcomes (e.g. responsiveness, timeliness, service and quality). Relevant Customer/Market Performance Indicators could be Market share, Number of customers, returns etc.

### **3.3 The Learning and Growth Perspective**

This perspective looks at the contribution of the project to the core competencies of the organization and to the organization's mission and strategic objectives. Candidate factors in this perspective could be earned value analysis indicators. Relevant learning and growth perspective performance indicators could be new field development, new market, new sales training/sales indices, investment/total assets etc.

### **3.4 The Internal-Business Processes Perspective**

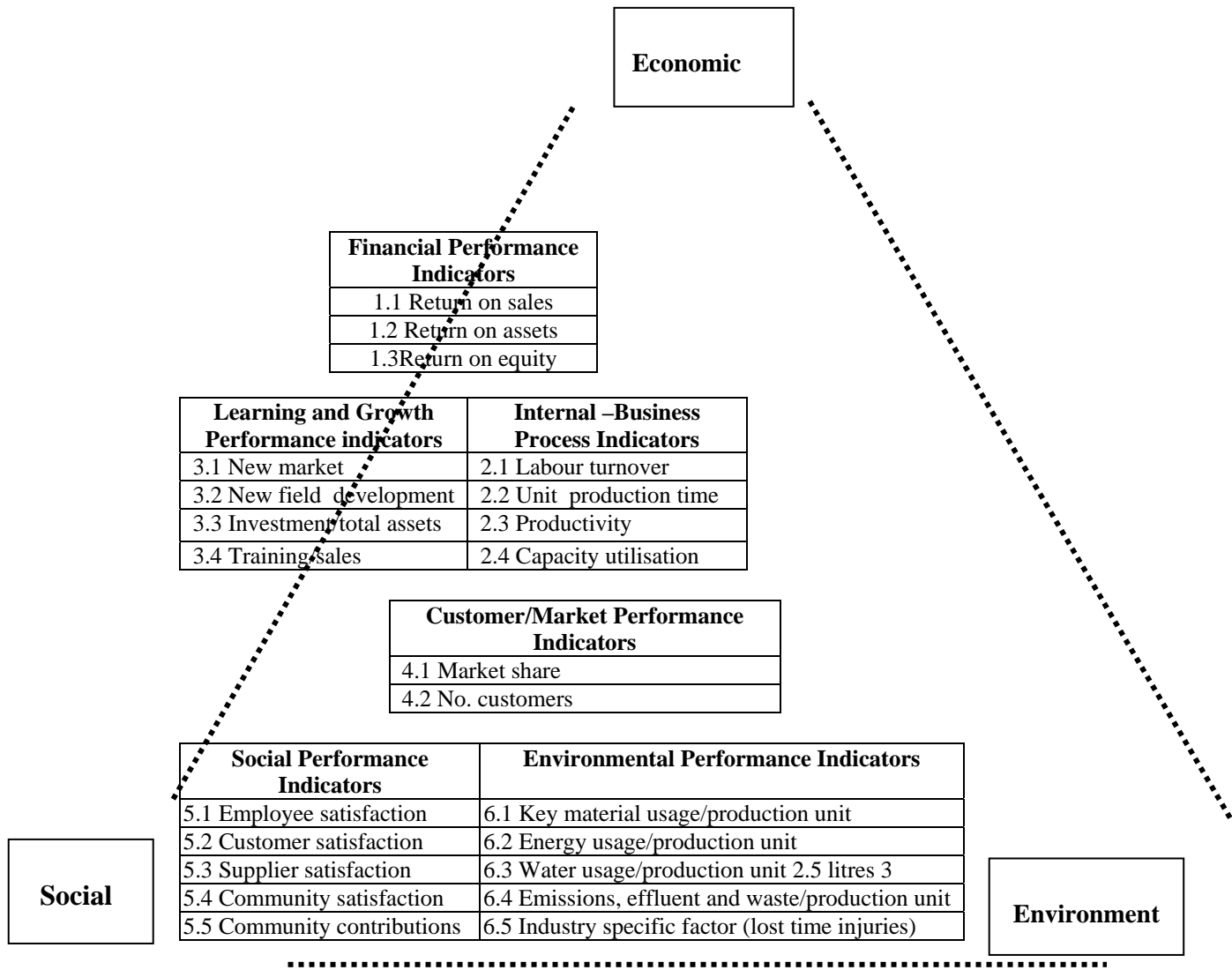
The objective in the learning and growth perspective is to provide the infrastructure to enable the objectives of the other three perspectives of the conventional BSC. The measures it includes (e.g., labour productivity) check whether the project is a platform for growth, and look at the durability of its effects. Relevant internal-business processes perspective indicators could be productivity labour turnover, average unit production time, working capital/sale, capacity utilization.

### **3.5 The Sustainability Perspective**

The sustainability perspective may include candidate social performance indicators such as; employee satisfaction, customer satisfaction, supplier satisfaction, community satisfaction, community contributions/ and environmental impacts measures such key material usage/ production unit energy usage/ production unit water usage/ production unit emissions, effluent and waste/ production unit Industry specific factor (lost time or injuries).

## **4. Example**

A hypothetical Sustainable Balanced Scorecard is presented in Figure 1. Four perspectives and their corresponding indicators namely the financial perspective (return on sales, return on assets, return on equity), the customer/market perspective (relevant customer/market performance indicators could be market share, number of customers, returns), the learning and growth perspective (new field development, new market, new sales training/sales indices, investment/total assets), the internal-business processes perspective (productivity, labour turnover, average unit production time, working capital/sale, capacity utilization) consist of the traditional BSC (Figure 1). The sustainability perspective consisted of the social performance and the relevant indicators (employee satisfaction, customer satisfaction, supplier satisfaction, community satisfaction, community contributions) and environmental perspectives represented by the key material usage/production unit energy usage/production unit, water usage/production unit, emissions, effluent and waste/production unit, industry specific factor (lost time or injuries). Additional weights could be used to get an overall Aggregate Performance Indicator.



**Figure 1: A Hypothetical Sustainable Balanced Scorecard Added to Get to an Aggregate Indicator**

## 5. Conclusions

Construction companies are to their benefits to report on their social and environmental performance, and not simply their economic performance specially when entering new markets. They will be expected to measure their sustainable performance too. Applying stakeholder involvement, this is a very reasonable expectation, but it requires construction companies to conceptualise their strategy differently from under a shareholder value perspective.

There are many frameworks for adapting the BSC in construction companies. Conceptually, reporting will vary from industry to industry. Sustainability BSC, or SBSC, seems a feasible option for most construction companies. Nevertheless, an approach that aggregates measures within each area and then across areas, offers ways to simplify the outcome and make it comprehensible.

A methodology is proposed for measuring the performance of construction companies. Though this methodology is built for Greek construction companies it can be utilized in many cases and organizations. By adopting this methodology it is possible to achieve business success while operating in a socially and environmentally responsible way by achieving balance of financial, social and environmental objectives support of key stakeholders and motivating employees.

A Hypothetical Sustainable Balanced Scorecard that can be used to get to a Single Indicator is presented where the performance measures are indicative. Further work is needed to adapt a procedure for the aggregation of performance measurements based on data from companies.

Our model consisted of six perspectives, inspired by Norton and Kaplan's Balanced Scorecard and the two directions of sustainable development are structuring the strategic map of the enterprise. At the intersection of rows with the columns a minimum number of relevant, strategic objectives are filled

## 6. References

- Elkington, J. (1997). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Capstone. Oxford, UK.
- Figge, F. Hahn, T., Schaltegger, S. and Wagner, M. (2002). "The sustainability balanced scorecard - Linking sustainability management to business strategy", *Business Strategy and the Environment*, Vol. 11, pp. 269-284.
- Hubbard G. (2006). "Sustainable organisation performance: Towards a practical measurement system". *Monash Business Review*, Vol. 2, No. 3, pp. 1-19.
- Kaplan R, and Norton D. (1992). "The balanced scorecard – measures that drive performance". *Harvard Business Review*, Vol. 83, No. 7/8, pp. 172-180.
- Kaplan R, and Norton D. (1996). *The Balanced Scorecard: Translating Strategies into Action*, Harvard Business School Press: Boston, MA.
- Kaplan R, and Norton D. (2001). *The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment*, Harvard Business.
- Manoliadis, O. and Tsolas, I. (2003). "Using sustainability related criteria in construction support systems", *Proceedings of the Second International Conference on Construction in the 21st Century (CITC-II) 'Sustainability and Innovation in Management and Technology'*, December 10-12, 2003, Hong Kong, (ed.) S.M. Ahmed, I. Ahmad, S.L. Tang and S. Azhar, pp. 672-676 (electronic edition, CD-ROM).
- Norrie, J. and Walker, H. (2004). "A balanced scorecard approach to project management leadership", *Project Management Journal*, PMI, Vol. 35, No. 4, pp. 47-56.
- Our Common Future, Report of the World Commission on Environment and Development, World Commission on Environment and Development, 1987.
- Stewart, R. A., and Mohamed, S. (2001). "Utilizing the balanced scorecard for IT/IS performance evaluation in construction". *Journal of Construction Innovation*, Vol. 1, No. 2, pp. 147-163.
- Stewart, W. E. (2001). "Balanced scorecard for projects". *Project Management Journal*, Vol. 32, No. 1, pp. 38-53.