How to Evaluate Capital Projects that Offer Environmental/Carbon Reduction Benefits

Frank Lefley, Royal Holloway, University of London, London, UK
Joseph Sarkis, School of Business, Worcester Polytechnic Institute, Worcester, MA, USA

ABSTRACT

In many cases, projects that have strong environmental / carbon reduction benefits may be neglected due to biases associated with traditional project appraisal approaches. To reduce the level of rejections for such projects, the authors apply an innovative methodology, the financial appraisal profile (FAP) model. FAP is a normative model that seeks to address some of the issues and limitations posed by standard appraisal and evaluation approaches. By making the right decision in the first place and involving senior managers in the appraisal process, the organisation is better placed to achieve project success. The adoption of a management team approach to investment appraisals will not only enhance the information base but will also result in greater managerial commitment to a project. By adopting the FAP model with the inclusion of an environmental assessment in the form the ‘environmental score index’, will help focus top management on an increasingly important corporate strategy issue. An illustrative case study is used to outline the important aspects of this new approach. The paper concludes that this approach fills a gap in the environmental / carbon reduction investment literature, where there is a paucity of comprehensive, structured, and transparent methodologies that can prove acceptable to management decision-makers from a variety of functions and viewpoints.

Keywords: Carbon Reduction, Environmental Score Index, Environmental Sustainability, Financial Appraisal Profile (FAP) Model, Investment Appraisal

INTRODUCTION

Environmentally influential capital investments have started to gain significant attention in the literature, due to the increase of pressures by various stakeholders on organisations and industry to be more proactive with regard to environmental sustainability in their processes, products and practices (Zhu and Sarkis, 2007). The importance of environmental sustainability has been raised in the literature. Sarmento et al., (2005) found that 92% of Portuguese companies made “environmental investment because of the negative impacts of probable ecological accidents”. They also found that a large part of this investment was in tangible capital assets. If, for example, we look at the water industry, agricultural emissions in parts...
of France have increased in recent times to become a serious threat to water quality (Ekins, 2003). However, traditional appraisal models are inappropriate in such a uniquely regulated industry (Tebbutt et al., 2003).

It has also been recognised that the myriad of subtle ways environmental issues impact companies cost and revenue streams is often a first step in developing a proactive environmental management program (White, 1996). The limitations existing with various investment appraisal approaches when it comes to environmental issues, including the need to incorporate strategic considerations into corporate decision-making, planning and control processes, has long been recognised by environmental accounting researchers (Burritt, 2004; Burritt and Saka, 2006). The mainstream academic literature on investment appraisal appears to focus on traditional financial evaluation techniques and tools with little recognition of environmental issues as a factor in the decision process of organisations (Ross and Wood, 2008).

It has been empirically found that environmental benefits accrue over a much longer time-horizon than typical investments in organisational projects (Regnier and Tovey, 2007), making their inclusion into investment appraisal and justification even more difficult. In addition to long time planning horizons, there are issues with the various costs and benefits that are associated with green decisions and factors. The United States’ Environmental Protection Agency’s (USEPA) well known cost categorisations (USEPA, 1995) include conventional, hidden, contingent, relationship/image, and societal costs, which range, respectively, from easier to measure to most difficult to measure categories. Thus, there will also be a mixture of relatively tangible traditional costs to less tangible and non-traditional cost categories. It is difficult to integrate these characteristics of environmental costs into traditional capital investment appraisal tools.

There is therefore a need for tools that can effectively help organisations make decisions concerning capital projects that include environmentally sustainability dimensions. Organisations need to make a ‘business case’ for such projects, irrespective of whether they are initiated through regulatory or competitive pressures. One solution is the adoption of the financial appraisal profile approach.

Introducing an Environmental Aspect to the Financial Appraisal Profile Model

The FAP model (Lefley and Ryan 2005, Lefley and Sarkis 2007, Lefley, 2008a) was designed as a three-dimensional (financial, project specific risk, and strategic) model for the appraisal of capital investments. In this paper, we add a fourth dimension, focusing specifically on environmental sustainability issues (Lefley and Sarkis 2011). Introducing this fourth environmentally oriented dimension will enhance the evaluation, and therefore make for better decision-making of those projects that have significant environmental implications. Such environmental factors being, in the main, ignored by conventional financial appraisal models because of the difficulty (some would argue impossibility) in valuing them in financial terms. We then present a case study that offers some insights into the application of the FAP model. Finally, we summarise the paper, identifying various issues that may arise with the technique with managerial implications clearly defined.

EVALUATING CAPITAL PROJECTS

Numerous methods/model have been recommended for the evaluation of capital projects. However, the strategic evaluation and justification of many projects go beyond standard return on investment and other short-term financial evaluations. The more complete evaluation of some projects requires the incorporation and consideration of risk, strategic, operational, economic, and environmental factors. In particular, a normative investment appraisal model has been developed which has been called the Financial Appraisal Profile (FAP) model. This model looks at a capital investment project...
Evaluation of the SCM Performances in Using of Global Logistics Information Technologies: A Research Study in Hong Kong
www.igi-global.com/chapter/evaluation-scm-performances-using-global/19240?camid=4v1a