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## Enhancing environmental awareness in future business leaders

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**Abstract:** In this paper the limitations of the current business education paradigm are discussed along with the consequential adverse impact on business decision making and society. The leadership role undertaken by some corporations in internalising sustainability measures into their strategies are then briefly discussed. Some of the commonly taught topics in management strategy and accounting courses which typically ignore social concerns are then outlined. A framework is presented for inclusion of sustainability issues in the commonly taught tools of managerial decision making. The paper concludes by exploring the ramifications of incorporating these concepts into business education.

**Keywords:** sustainability; business; education.

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## 1 Introduction

Education has an impact on how individuals perceive the world. What is taught to students creates a lens through which their views and perspectives are developed. The educational materials they read and internalise are generally deemed to be of importance and 'true'. Their perception is greatly impacted by the manner in which the materials are presented, whether as undisputed facts or as competing theories (i.e., value propositions). Educational psychologists have long recognised a hierarchy of intellectual behaviours important in learning (Bloom, 1956). In order of increasing complexity these include: knowledge, comprehension, application, analysis, synthesis and evaluation. While some liberal arts disciplines, such as philosophy and sociology, strive to achieve the higher levels of cognition (i.e., synthesis and evaluation), management education often operates primarily on the lower levels of this hierarchy of knowledge (i.e., comprehension and application).

Many have criticised management education for its lack of effectiveness in addressing higher order knowledge and thereby inadequately preparing students to face challenges in the business world (Donaldson, 2002; Pfeffer and Fong 2002). Such shortcomings in education often can lead to socially destructive value systems (Ghoshal, 2005). Students who self-select business, accounting or other technical disciplines often prefer structure over ambiguity and elaborate rules to help guide optimal decision-making. Hence, when educating such individuals, caution has to be taken to present competing views and comprehensive 'value systems'. That is, management education should be extended to the higher levels of cognition. Failure to do so will make students less open to alternative views later in their career.

Management education can have a significant impact on corporate decisions. As Ghoshal (2005) notes, business executives routinely try to operationalise management and economic theories. More importantly, business school education tends to legitimise certain actions while de-legitimising others in the corporate world. Consequently, to enable companies to develop a culture wherein environmental and societal factors are assimilated into the decision making process, the reach of management education needs to be extended to higher levels of cognition. This may in turn enable managers of the future to act in an environmentally and socially responsible manner. Towards that goal, this paper suggests the broadening of commonly taught topics in management to include consideration of sustainability. It should be noted that the suggestions in this paper are only some of the many steps required to alter the prevalent profit-centric business paradigm.

Incorporating social and environmental effects into business decision making is relatively new and has not been thoroughly explored, with the result that the opportunity cost of consuming environmental resources is often overlooked. Yet there are tremendous opportunities for companies to change their environmental impact. For example, a company can alter the way it produces its goods, alter its sourcing of raw materials or change the design of its products in order to change its impact on green house gas (GHG) emissions or to reduce the downstream consequences of the usage of its products. Organisations need to adopt a framework that includes consideration of environmental and social factors in addition to financial ones in order to reach more robust decisions.

In this paper we develop this idea further. We begin by discussing the limitations of the current business education paradigm and the consequential adverse impact of business decision making on society. We briefly discuss the leadership role undertaken by some corporations in internalising sustainability measures into their strategies. Next, we outline some of the commonly taught topics in management strategy and accounting courses which typically ignore social concerns. We then present a framework for inclusion of sustainability issues in the commonly taught tools of managerial decision making. We conclude by exploring the ramifications of incorporating these concepts into business education.

## **2 Criticisms of the focus in current business education**

In light of recent corporate scandals in the USA (e.g., Enron, Worldcom, Global Crossing, among others) and elsewhere (e.g., Parmalat), business school faculty have been compelled to introspect and find ways to prevent these occurrences in the future (Donaldson, 2002; Pfeffer and Fong, 2002). One radical view suggests that not much needs to be done; instead management education has to stop doing what it currently does (Ghoshal, 2005). While the statement is sensational, it has some validity. What is taught in business school classrooms has a significant impact on how business leaders perceive their role in decision making. Ghoshal (2005) argues that the impact of business education is not isolated to just MBAs but also extends to business executives who have never even attended business schools. This is because the management theories taught and promoted by business schools significantly affect the business environment, legitimising some actions while de-legitimising others.

The impact of management theories and education is pervasive and significantly affects behaviour. In fact, unlike theories in physical sciences, theories in social sciences tend to be self-fulfilling (Gergen, 1973). This is because social science theories are sometimes taught as being normative (even though they may not be); hence deviations from the prescriptions of the theory are judged to be irrational. Thus, those trained in management theories may alter their behaviour to conform to the prescriptions of the theory. So while theories in natural sciences, such as global warming, if flawed will not affect reality, a flawed theory in management, if it gains sufficient currency, may change behaviour as managers start acting in accordance with the prescriptions of the theory (Ghoshal, 2005).

It is in this manner that when the environmental ramifications of decisions are ignored or under-emphasised in management courses, the ensuing effect will be that the students of today – and the business leaders of tomorrow – will be inured to such

ramifications and be oblivious as to how their decision affect those factors. More significantly, they may consider sustainability factors extraneous to their decisions. Hence, to impart the importance of such topics in decision making these factors must be incorporated in management theories and tools.

There are two ways in which these changes in the curriculum can be brought forth. The more straightforward way would be to introduce new courses or electives that deal with environmental issues and their impact on business decision making. Alternatively, and more effectively, schools can incorporate these factors and their ramifications throughout the curriculum. The former method requires commitment by only a few instructors willing to teach the course while the latter approach requires the commitment of a broader segment of the faculty. However, the 'stand-alone' approach is of limited usefulness as it leaves the synthesis of the information up to the students, whereas in the 'holistic' approach sustainability concepts become an integral part of a given management tool or theory. Additionally, from an implementation standpoint the former approach would require introduction and approval of new courses whereas the latter would not. Depending on the bureaucracy in a given academic institution the 'stand-alone' approach may require more time to implement as it typically requires an extensive approval process, whereas the 'holistic' approach only requires knowledge and motivation on the part of the course instructors. We recommend the latter approach of incorporating sustainability factors into the management curriculum. Towards that end, in the following sections we present some of the most commonly taught management concepts and tools and illustrate how these could be broadened to incorporate sustainability considerations.

### **3 Corporate leadership in sustainability**

Despite the lack of adequate guidance or prescription from management 'gurus' or academics, some corporations have taken a leadership role in implementing sustainability initiatives in their company. In this section, we present examples of several of these companies from the real-world. We conclude that management academics are lagging practice with regard to the adoptions of sustainability concepts in strategic decision making. A prime example of such a company is Dell Computers, which includes sustainability factors among the core values underlying its strategy. In its 2007 annual report, it states that it has 'built environmental consideration into every stage of the Dell product life cycle – from development and design to manufacturing and operations, to customer use and product recovery' (United States Securities and Exchange Commission, 2007). Similarly, International Paper reports publicly on its efforts to sustain performance through strategic choices to align its economic and environmental goals. These and many other examples from the annual reports of US businesses illustrate that sustainability has become an integral part of the business strategies for many companies.

The statement cited above from Dell demonstrates that environmental calculations are made at each stage in its process for manufacturing and distributing computers. In order to appreciate sustainability efforts, students need to be taught to see a business in the context of the entire chain of activities of which it is only a subset. This chain extends from the production of basic raw material components to consumption by the end-use consumer. Product design at Dell will have environmental and cost consequences upstream in its impact on suppliers as well as downstream on its customers. Through

design, Dell adds customer value by specifying environmentally preferable materials in its products and by reducing the energy consumption of its products and enhancing recoverability at the end of a products' life.

International Paper Company is another example of a corporation that proactively pursued its vision of sustainability. It singled out its mill performance as the basis for continued reduction in emissions to the environment. In one such instance, the company was able to simultaneously produce substantial financial savings, better regulatory performance and a reduction in greenhouse gas emissions. Faced with a regulatory requirement, the company found itself using increased amounts of natural gas to burn off low concentrations of low risk gases. Ironically, this reduced the emissions of the gases at the cost of additional greenhouse gas emissions. The company reengineered its internal process so that the gases were captured and destroyed using natural biological processes already being used to clean its waste water, eliminating the need to burn additional natural gas ([http://www.internationalpaper.com/PDF/PDFs\\_for\\_Our\\_Company/Sustainability%20Reports/IPsustainability2006.pdf](http://www.internationalpaper.com/PDF/PDFs_for_Our_Company/Sustainability%20Reports/IPsustainability2006.pdf)).

Kaplan and Norton (1996) cite a conversation in the mid 1990s with the CEO of a large chemical company in which the CEO impressed upon them the need to internalise the environmental and social effects of corporate decision-making. The CEO's argument was not entirely motivated by social and environmental concerns but, more importantly, he viewed such action as a good corporate strategy to enhance future profitability. In other words, he was taking actions to create competitive leverage by benefiting from increased societal concerns regarding the environment. An excerpt of the conversation between the authors and CEO is cited in Kaplan and Norton (1996). The CEO stated,

"Our strategy is to go well beyond what current laws and regulations require so that we can be seen in every community as not only a law-abiding corporate citizen but as the outstanding corporate citizen. If regulations are tightened, some of our competitors may lose their franchise, but we expect to have earned the right to continue operations."

In fact, the CEO insisted that outstanding environmental and community performance was a central part of that company's strategy and had to be an integral part of its performance measurement framework [Kaplan and Norton, (1996), p.35]. This is a stellar example of business professionals (i.e., practice) educating academics (theoreticians) on the 'correct' answer to problems that exist in the real-world.

Examples such as these are heartening because they demonstrate that, despite the current limitations of business education, some corporate leaders have sufficient foresight and wisdom to deviate from academic prescriptions when necessary and to formulate their own solutions to complex business problems. Unfortunately, despite the use of sustainability concepts by some of those in practice, business academia is severely lagging in the adoption of these concepts in teaching, as discussed in the following section.

#### **4 Current state of management education**

Current management and accounting pedagogy is dominated by a perspective that defines cost too narrowly, focusing only on those costs that are internal to the organisation. This perspective that has been labelled as 'value-added'; it measures success simply as the

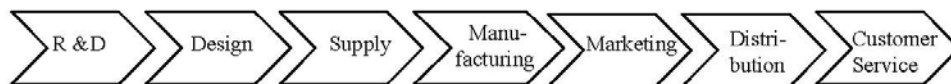
difference between sales price and a firm's cost of raw materials. This measurement framework ignores opportunity costs. Entire management and accounting courses are based on this simplified definition of 'cost'; hence the elaborate theories, concepts and tools built on it are limited in their ability to measure and acknowledge the costs of externalities, such as over-consuming non-replenishable resources or the adverse effects of pollution.

In a similar way, the profit (or net income) computations of accounting continue to measure profits in terms of resources generated over tangible resources consumed, continuing to ignore the costs of 'free' resources. The theories and tools commonly taught in business schools and used in practice continue to emphasise the growth and sustainability of earnings as measured in this limited sense; Providing students with this myopic framework in which to analyse business decisions results in a lost opportunity to enhance students' ability to consider the wider impact of business decision-making.

Two popular business concepts that can be easily adapted to include sustainability concepts are value chain analysis (Porter, 1985) and the balanced scorecard (Kaplan and Norton, 1996). Both of these concepts are widely used in practice and adaptations to these frameworks have already been implemented. In the following paragraphs we provide a brief primer to these theories.

Value chain analysis facilitates the detailed analysis of the processes required to produce a product or service. These processes can be pictorially represented as a series of steps – a value chain – which for a company typically begins with research and development, continues through product design and engineering, resource sourcing, manufacturing, marketing and distribution, and ends with customer service supporting the ultimate consumer (Figure 1). For some products, this chain may also include post-sale service and the cost of disposal of a product by the final customer. Performing a value chain analysis is useful when examining many decisions regarding the development, production or distribution of a product. Value chain analysis can also be extended to include the entire sequence of processes beginning with the sourcing of the initial raw materials and ending with the disposition of products by the final customers.

**Figure 1** Internal value chain



Unlike the value chain, the balanced scorecard is primarily a mechanism for strategy implementation rather than formulation (Kaplan and Norton, 1996). It is intended to translate strategy into objectives and measures. The scorecard consists of a set of integrated measures that assist a firm in the pursuit of its strategy and in evaluating its efforts. It is based on the idea that the financial measures typically used by companies to gauge their success are largely a reflection of past performance and often fail to indicate future performance. A 'balanced' set of performance metrics, including both financial and non-financial measures, and both leading and lagging indicators of performance, are recommended. The prototypical scorecard as developed by Kaplan and Norton (1996) contains four sets of interrelated measures or perspectives. These are financial, customer, internal processes and learning and growth. The balanced scorecard can be a powerful

tool in the pursuit of sustainability as it expands the focus of decision-makers beyond the narrowly defined financial measures of performance.

## **5 The failure of current tools to incorporate sustainability measures**

Despite the existence of decision-making tools and techniques that could incorporate a broad range of considerations such as financial, environmental and social, they are rarely used in that manner. Current measures of value generation, both for individual companies and for broader entities as well, adopt a self-centric, narrow point of view. These measures systematically ignore the 'externalities' or 'hidden costs' which the direct parties to a transaction do not incur. For example, when a paper mill dumps dioxin-laden wastes into a river, the paper-making process increases the mill's profit and also its region's gross domestic product (GDP). The calculation of neither of these quantities, however, includes a deduction for the costs associated with the water pollution. Moreover, if the mill undertook pollution control measures, this action would decrease the company's profits and would be categorised as a 'non-value-added' activity under current management models. Likewise, there is no addition to profit or GDP for the cleaning of air and water that results from preserving wetlands and old-growth forests.

In a similar way, a firm might purchase electricity from a power company employing 'cleaner' technology (such as wind power or hydro-power) rather than produced by burning fossil fuels, which are both non-replenishable and emit GHG gases. However, due to failure to measure these environmental effects, the fossil-fuel generated power may appear to be cheaper than that generated through cleaner technology. Consequently, the cost of a firm purchasing 'green' energy will be elevated and its products will be priced higher, or its profit margins will be smaller. If management uses a traditional value-chain analysis, it would surmise that since customers do not value the source of power, the more costly power obtained from 'clean' sources is non-value added, and hence it would seek out cheaper power providers, such as those using fossil fuels. Thus, optimising based on prevalent management practices may lead to a sub-optimal decision from a societal standpoint.

The limited scope of current economic models was largely accepted throughout the twentieth century. It is becoming increasingly clear that this is no longer the case. As the effects of pollution caused by economic activities become increasingly evident, there has been a growing outcry for a more balanced approach to economic activity and development.

One of the reasons for the failure of business leaders to incorporate these measures into their decision making may stem from the limitations of what was taught to them in business courses, primarily the lack of tools and measurements of these issues. As just noted, often what gets measured in traditional financial analysis as resources consumed are only a fraction of the total when environmental impact is considered. Thus, reported profits on financial statements, as measured by the excess of resources generated over resources consumed, are typically over-stated due to the systematic failure to measure and report environmental costs. To start addressing this concern, ideas such as 'carbon footprint' and carbon accounting have been put forth as ways to better measure an important aspect of an organisation's environmental impact. In the next section we suggest an extended framework to better incorporate effects external benefits and costs

into management decision making through an explicit consideration of these costs and benefits in the application of various management tools.

## **6 Incorporating sustainability concepts into management tools**

Of late, some management researchers have focused on the business implications of sustainability and the measures adopted by various businesses. One such effort has been undertaken by Epstein (2008), who chronicles best practices in various areas of sustainability. Furthermore, he outlines how current business tools have been (or could be) adapted by businesses to effectively implement sustainability principles. In this section we explain how some commonly taught management concepts can effectively be extended to include the dimension of sustainability. As mentioned earlier, we strongly believe that the concepts of sustainability can be more effectively imparted when integrated into current courses rather than teaching these concepts in a special course. Towards that end we provide suggestions for enriching the presentation of these concepts.

### *6.1 Measuring corporate performance*

Current coverage of corporate performance generally focuses solely on the financial dimension. The content of most accounting and finance courses use 'earnings' as the cornerstone for evaluating corporate performance. Hence, the remaining focus of these courses is on predicting 'earnings', estimating the permanence of the earnings measure, gauging the volatility in the earnings measure, and so on. We feel that this over-emphasis on earnings measures in business education unfortunately conveys to the impressionable minds that is the 'only' measure that matters. While most faculty members do not necessarily hold that view, their over-emphasis of one concept and systematic under-weighting of others unfortunately creates that impression.

This problem can be easily rectified if the limitations of financial analysis are made clear and then periodically reinforced. Instructors could start lectures in financial analysis by providing examples in which companies use many resources to produce the goods and services that they sell to their customers. Some of the resources consumed will get measured through the financial system whereas others will not. Hence, financial analysis itself is limited by the data captured through the financial systems. Environmental and societal costs are external to the financial system and hence are not incorporated. As these resources are under-costed (valued) there is a propensity to over-consume these 'free' resources in order for companies to produce goods/services at a minimum cost. However, in reality for society and the environment these resources are not 'free' but can in fact be more significant than what does get measured.

Instructors need to make explicit the limitations of the existing framework for measuring corporate performance. This could create meaningful classroom discussion regarding the need to view corporate performance in a broader context, the need to consider the environmental and social impact of a company's actions, and possible ways in which this impact might be measured. Providing such a foundation in finance and accounting courses would help raise the environmental consciousness of the students of today and the business leaders of tomorrow.



## 6.2 *Measurement of costs*

Another course that is taught to all business students is a basic course on cost measurement and management. Again, these courses are limited in what gets measured and, again, these limitations are not explicitly conveyed to the students. We strongly urge that these limitations be repeatedly mentioned so that students are conscious that the failure to measure some costs and effects is due to the shortcomings of the measurement system and not because these costs are of little importance.

By teaching and testing students only on the costs that can be measured (and hence can be adopted into elegant problems), we unintentionally convey the message that these are the only important aspects of business. However, that clearly is not the case. While for an introductory course the actual techniques for measurement of these costs may be difficult to convey, teachers should still stress the importance of the costs that cannot be measured using traditional systems. We as academicians have a responsibility to teach the limitations of the methodologies we disseminate so that our students are equally aware of these shortcomings.

## 6.3 *Value chain broadened*

In a similar manner, value chain analysis as currently taught can be broadened to incorporate not only the financial and customer perspectives but also societal and environmental perspectives as well. Using traditional value chain analysis, efforts are made to optimise the financial profitability of the organisations in the value chain, as well as customer value. Under this framework as typically applied, initiatives that enhance the social or environmental impact of an organisation may not be considered acceptable. Hence, such a framework is inadequate to supporting a company's efforts to address social and environmental issues. There is thus a need to extend the framework used when applying this tool.

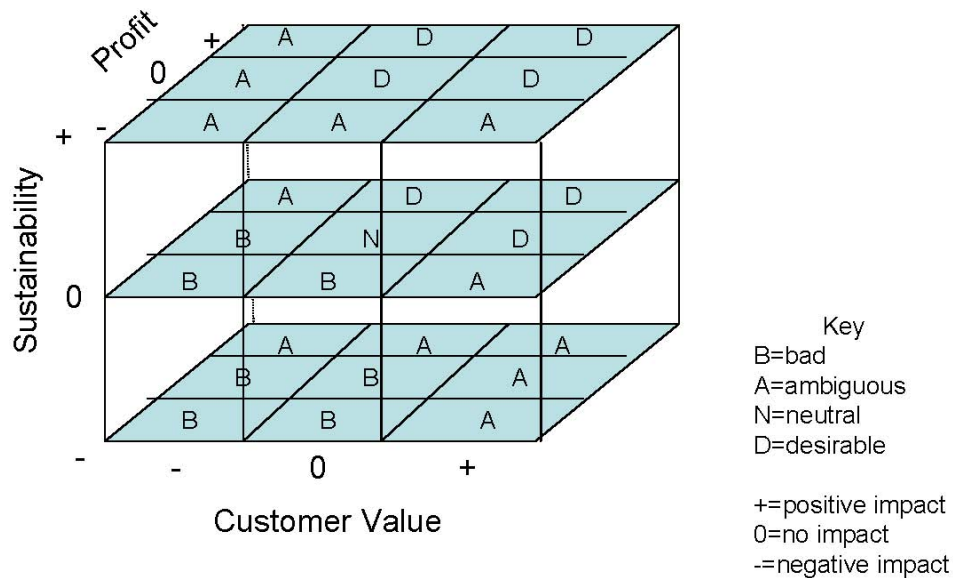
Managing costs effectively requires a focus broader than just an individual firm. Porter (1985) has called this broader focus the value chain. This is the linked set of value-creating activities all the way from basic raw material sources for component suppliers through to the ultimate end-use product delivered into consumers' hands. The focus is external to the firm, seeing each firm in the context of the overall chain of value-creating activities of which it is only a part, from basic raw materials to end-use consumer.

Accounting today often adopts a focus that is largely internal to the firm – its purchases, its functions, its products and its customers. Another way of saying this is that management accounting takes a value-added perspective, starting with payments to suppliers (purchases), and stopping with charges to customers (sales). From a strategic perspective, the value-added concept has two problems: it starts too late and stops too soon. The value chain concept is fundamentally different. It contends that starting cost analysis with purchases misses the opportunities for exploiting linkages with the firm's suppliers. Stopping cost analysis at sales misses the opportunities for exploiting linkages with a firm's customers (Shank and Govindarajan 1993).

Figure 2 depicts such an extended framework. In addition to the traditional dimensions of customer value and profitability, there is a third dimension: sustainability. This additional dimension – like the other two – can be thought of as having three states: positive, neutral and negative.

Without the addition of the 'sustainability' dimension, there would only be nine possible decision cells. These are depicted in Figure 2 by the plane for which the 'sustainability' dimension is zero. The immediate impact of adding the third dimension is an increase in the number of decision cells from nine to twenty-seven. The upper plane in Figure 1 includes initiatives that have a favourable impact on sustainability. Note the change from the middle plane in the designation of some of the cells. The cells that were desirable (D) in the middle-plane continue to be desirable. However, the cells that were bad (B) in the middle plane become ambiguous (A), as they become positive in one of the three dimensions. Most notably, the neutral cell (N) in the middle plane is no longer neutral, but in fact is desirable! The two cells that were previously ambiguous (A) do not change their classification.

**Figure 2** Expanded framework incorporating GHG emissions (see online version for colours)



It has been shown (Dutta and Lawson, 2008) that the addition of sustainability as a decision criteria introduces greater ambiguity into the decision making process. The change is expected, as greater complexity often results in greater ambiguity. From an actionable perspective, this extension of the analysis compels managers to reassess their decisions. From a pedagogical perspective the extended framework better captures the real-life complexity of decision making. Sustainability factors are explicitly considered, hence increasing the awareness of students to these factors and to how business decisions can be affected these factors. Moreover, it also educates students as to the need to consider multiple criteria when making decisions. Without the extended framework, certain actions that would be undertaken when ignoring sustainability factors may become ambiguous due to their adverse impact on environmental and social dimensions.

The framework presented above extends current thinking on achieving lower emissions and higher profitability by explicitly adding the customer value dimension. For example, a retailer could reduce emissions as well as costs by only shipping goods in

fully loaded trucks. This would reduce emissions and also reduce shipping costs, but could negatively impact customer value if it results in stock-outs. The framework presented here explicitly considers this impact by placing this initiative in the upper left hand corner cell, classified as ambiguous (A). Consequently, it is no longer evident that such initiatives should always be undertaken and they could be dominated by other initiatives which are classified in the desirable (D) cells. An example of such an initiative is e-billing. By e-billing, a company can reduce its costs of printing and mailing. It can also increase customer satisfaction through easier bill payment and increased accessibility. Finally, it can reduce the usage of paper and eliminate emissions resulting from delivery of the bills.

Another example of the utility of the above framework in decision making is that of fleet replacement by airlines. A new fleet of Boeing 787 airplanes requires substantial investment and hence may be costly in the short term but it is more efficient, resulting in less GHG emissions. Decision making in two dimensions frames this problem as a trade-off between profitability and reduction in emissions. Incorporation of the customer perspective may provide useful insight as to whether upgrading the fleet is beneficial. Passengers value safety, timeliness and comfort and if these characteristics are favourably impacted by the new fleet, then the initiative falls in the forward right hand corner cell in the upper plane.

#### *6.4 Broadening the balanced scorecard*

While the traditional perspectives of the balanced scorecard include the four discussed earlier, the framework can easily be extended to reflect sustainability concerns. First, a fifth perspective that includes measures of sustainability can be added to an organisation's scorecard. Alternatively, these measures could be incorporated into the existing four dimensions, as done by International Paper Company.

Epstein (2008) suggests that companies that view social and environmental responsibility as core strategy would benefit from broadening the balanced scorecard. We would go one step further: we believe that every company ought to view social and environmental responsibility as a core value and hence ought to incorporate these into their corporate strategy. In that vein, the extended balanced scorecard with an environmental dimension should not be an elective but mandatory. Thus, presenting the fifth dimension as a 'choice' may unintentionally portray as acceptable an organisation's not having environmental and social concerns as a core value. This, in our view, is not appropriate. It is similar to suggesting that increasing shareholder value is optional.

To reiterate Ghoshal's (2005) sentiments, why are we as business academicians surprised when disasters such as Union Carbide's in Bhopal or Exxon Valdez occur? We have for years ingrained in our students that as business managers their main – possibly sole – objective is to increase shareholder value. The failure of corporations to act responsibly towards social and environmental can be viewed as a natural outcome of these teachings (Ghoshal, 2005). In our view, classroom presentation of the balanced scorecard ought to include 'environmental and social factors' as an important perspective. Once environmental and social impacts are made explicit in classroom discussions, these not only would be incorporated into decision making but would yield much more responsible actions.

### 6.5 *Broadening to triple bottom line when teaching decision making*

As noted above, the traditional focus of managerial decision-making solely on financial profitability often leads to a failure to consider other important dimensions of decision-making. In order to achieve a more balanced approach to decision-making, companies are increasingly adopting 'triple bottom line' reporting, focusing on the financial, social and environmental (also known as profit, people and planet) impacts of an organisation and its actions. Examining decisions in this extended context can have significant positive benefits to companies: besides being 'good corporate citizens', companies are more likely to avoid the negative impacts that come with undesirable social or environmental actions, which often impact the 'bottom line'.

Given the potential for better decision making that the 'triple bottom line' provides, it is important that today's students be exposed to this concept. Teaching students to focus solely on economic profitability will not hold them in good stead as they enter a world of business in which ignoring social and environmental concerns is no longer acceptable. By being sensitised to a more balanced means of analysing business situations, students will have the skills necessary to succeed.

In this section altering topics commonly taught in management accounting and business strategy courses were suggested. Most introductory and advanced textbooks on these topics already include extensive discussion of these topics, especially value chain and balanced scorecard. Hence, the suggested modifications can be easily incorporated in the coverage of those topics in both textbooks and in courses, with minimal disruption. These characteristics make the contributions of this paper potentially easy and quick to implement in practice.

## 7 **Concluding remarks**

Humankind is entering a new era, one in which social and environmental responsibility by companies is increasingly expected, and rewarded. In the long run, these attributes may not just be desirable but in fact may be essential for the ongoing viability of the business. Consequently, these factors ought to be explicitly considered in decision making. This requires a shift in business paradigm from the sole aim of profitability to multiple objectives which include societal and environmental dimensions. The study reported in this paper makes an important contribution towards that end by outlining how existing tools can be modified to incorporate these factors. However, more work and awareness is needed to achieve a reorientation of the business standard.

Organisations that want to pursue the objective of being environmentally responsible can do so by pursuing objectives such as reducing their carbon footprint. Current management practices often ignore these costs and measures. In this paper, the adverse ramifications of this failure have been highlighted. In addition, ways have been suggested in which management tools and theories can be extended to incorporate the sustainability dimension. Including this dimension will enhance the awareness and sensitivity of future business leaders to environmental and social issues. While academicians are aware of the limitations of current methodologies to address broader societal concerns, these ought to be included in discussions in courses so that students become equally aware.

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