



# The development of sustainable practices in complex organizations

## Implications and potentials for integration into the accounting curriculum

Seleshi Sisaye

*Plumbo-Donahue School of Business, Duquesne University,  
Pittsburgh, Pennsylvania, USA*

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### Abstract

**Purpose** – The purpose of this paper is to document the integration of sustainability into the accounting curriculum. Compared to many disciplines in the social and administrative sciences, the greening of the curriculum in accounting is a recent phenomenon. Nevertheless, there has been a remarkable growth in both the content and the coverage of sustainability topics integrated into the accounting curriculum.

**Design/methodology/approach** – The approach to the paper is multidisciplinary. It has combined organizational sociology and ecological anthropology approaches in the integration of sustainability into the accounting curriculum. In accounting, there is an increasing emphasis on the application of social science perspectives, particularly sociology and anthropology in curriculum development and pedagogical issues. This paper demonstrates that the influence of these two disciplines in accounting education is substantial.

**Findings** – Sustainability in accounting has both theoretical and practical implications. Theoretically, sustainability has integrated social and environmental dimensions into accounting education and research. Sustainability reporting contains information on the economic, social, and environmental activities of business organizations. In practice, sustainability has influenced the accounting standard-setting organizations in developing guidelines on how to integrate sustainability into corporate reports so that the information can be verified and certified by public accounting and regulatory organizations.

**Originality/value** – The paper is among the first to demonstrate the importance of organizational sociology and ecological anthropology for the integration of sustainability into the accounting curriculum. Both sociology and anthropology have been in the forefront of the study of ecology and natural resources management and conservation in sustainability development. The paper approaches have important implications for sustainability education and framework in accounting theory and research.

**Keywords** Sustainability, Sustainable development, Accounting

**Paper type** Research paper

### Erratum

*It has recently been brought to Emerald's attention that the article by Seleshi Sisaye (2013), "The development of sustainable practices in complex organizations: implications and potentials for integration into the accounting curriculum", published in World Journal of Entrepreneurship, Management and Sustainable Development, Vol. 9 No. 4, pp. 223-245 was received in October 2012, and not January 2013 as stated in the originally published version.*

Emerald sincerely apologises to the author and readers for this oversight.

### Introduction

Sustainability development and reporting has emerged as one of the main competitive forces that business organizations employ to differentiate their products and services



to customers. The press and media have popularized sustainability by publishing positive reports of organizations with sustainability programs. Federal government organizations including the Environmental Protection Agency (EPA) and the Department of Commerce have established guidelines to promote sustainability. Recently, the Department of Commerce has included in the Malcolm Baldrige Award sustainability as one of the several criteria in recognizing corporations' manufacturing and service excellence. The accounting profession, particularly the American Institute of Certified Public Accountants (AICPA) in collaboration with the big four accounting firms have established guidelines for voluntary disclosure of sustainability information and data by corporations. The market for consulting firms have increased for improving accounting systems to better collect data and report sustainability performance.

Moreover, The Association to Advance Collegiate Schools of Business (AACSB International) has recommended in favor of integration of topics related to corporate governance, ethics, and social responsibility into the business curriculum. Colleges and business schools are realigning their curriculum to increase sustainability topics coverage by revising current business and accounting course offerings at both the undergraduate and graduate levels. The deans and administrators of the leading business schools have called for integration of sustainability, ethics, and social responsibility in functional business courses including accounting to provide an overall picture of the economy, polity, and society that affect business organizations on resource allocation decisions and competition.

### **Research approach: emerging trends that call for the integration of sustainability into the accounting education**

In accounting, there is a movement toward integration of topics that cover social, environmental and resource issues. For example, the question of the integration of ethics in upper-level accounting courses has generated discussion among the accounting academy and practice. Fisher *et al.* (2007) study reveals an increasing trend toward ethics integration in accounting course offerings, which they attributed as one of the main underlying causes for a decline in standalone accounting ethics courses.

In general, integration has been favored by business schools deans as the best approach to overhaul the business curriculum. Resources constraints, staffing shortages, limited availability of faculty expertise in these subject areas coupled with changes in the business environment have put integration as the best alternative approach to incorporate current topics such as ethics and sustainability into the business and accounting curriculum. In a recent *Wall Street Journal* (July 7, 2011) interview article, Dean R. Glenn Hubbard of Columbia University Business School pointed out that the recent problems of financial crisis could be attributed to "a failure by leaders to successfully see the big picture, focusing instead on their area of expertise." Accordingly, students and corporate leaders are not able to make the connections required to understand the issues. He suggested instead an emphasis in business courses in providing students with "a broader education in order to thwart an economic meltdown." He indicated that Columbia Business School has emphasized the importance of integration by "deliberately weaving topics such as decision making and ethics into classes across all disciplines" (p. B6). Dean Hubbard noted that students will not pay attention to issues of ethics and social responsibility unless these topics are integrated into existing finance and accounting courses. There is a tendency to marginalize standalone ethics courses unless they are integrated into existing functional area courses.

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Hopwood (2009), who chaired the Prince of Wales Accounting for Sustainability Forum, has endorsed an integrated holistic approach for sustainability reporting that relates environmental and sustainability information to account for their consequences and their presentation in “connected reporting framework” to report “the economic costs and benefits of environmental considerations” and to make sustainability a “more mainstream part of business,” thus making the management of environmental issues “an increasing material factor in many sectors of the economy in the years to come” (p. 141, see also Hopwood, 2010). Hopwood (2009) placed a sustainability agenda in organizational life cycle that has the potential to change corporate actions and policies to develop the “connected reporting system” (p. 141). Hopwood’s suggestion underscores the importance of integration of sustainability in all aspects of corporate economic, social, and environmental performances.

Following AACSB International, Dean Hubbard’s and Hopwood’s recommendations, this paper proposes that there is a need for integration of social and behavioral approaches of sustainability in business and accounting courses. The research motivation is to present the recent developments in sustainability management and reporting within the context of the evolution of the subject of sustainability in the social sciences disciplines, particularly sociology and anthropology. The paper documents how ecological concepts derived from sociology and anthropology have been transferred to the business management and accounting literature. Given the co-evolution history of sustainability, the research question has been framed to address the extent and level of integration of sustainability materials specifically into the accounting curriculum.

Accordingly, the proposed approach for integration requires linking accounting to the social and ecological resources contexts where sustainability evolved. Within the ecological approach, there is the presupposition that organization systems undergo an evolutionary process of change and development. A discussion of sustainability in organizational sociology and ecological anthropology provides the evolutionary context for the integration of sustainability in the accounting curriculum. It needs to be noted that integration of sustainability is a recent phenomenon in accounting education and practice. Ecologically, it is in the beginning or in the first stage of the evolutionary process of accounting educational development.

The paper discusses the development of sustainability in order to provide a general framework for the integration of sustainability in accounting: financial, managerial, and auditing courses. Sustainability has been a subject of interest in sociology and anthropology for many years because it addressed ecological resources, organizational development, community welfare, economic growth, and national geographical boundaries. Accordingly, it is proposed that, following both sociological and anthropological ecology focus on the economy and society, the integration of sustainability into the accounting curriculum is shaped by evolutionary changes in natural and resources management, the environment, competitive forces, as well as other external factors that shape ecological processes of organizational change and development. It is within this integrative framework that the questions of the evolution of the ecology of sustainability in the sociology and anthropology fields and their recent impacts in business development and accounting education are discussed.

The paper is organized into five sections to describe the integration of sustainability into the accounting curriculum. The first section outlines the resource-based ecological approaches for the integration of sustainability into the accounting education. Section 2 outlines the ecology of sociology and anthropology to present the societal and cultural perspectives of sustainability and their implications for accounting reporting systems.

Accordingly, the section discusses the co-evolution of sustainability, and potential integration from sociology and anthropology into the business management and accounting literature. The third section bridges the evolution of sustainability with contemporary developments in environmental resources management and sustainability accounting issues in business organizations. Section 4 examines relevant sustainability topics which should be included or integrated in financial and managerial accounting and auditing courses. Section 5 concludes the paper and raises sustainability research issues that are emerging in accounting education.

### **1. The resource-based ecological approach for the integration of sustainability into the accounting education**

In the business management literature, the resource-based view of the firm has been derived from the ecological approaches of sociology and anthropology. Given the co-evolution history of sustainability, it becomes apparent that the integration of sustainability into the accounting literature will be largely influenced by the resource-based framework of the organizational ecology of sociology and ecological anthropological literature.

Resource-based view of an organization has been commonly used in strategic management research to study how differences in resources among organizations affect their capabilities to undertake planning and control initiatives in response to environmental changes. It is assumed that organizational resources do provide the necessary support for “learning” and “exploration” when organizations engage in “exploitation” of knowledge that they already acquired or when they try to use their resources to improve what they already have in existing products and/or services. According to Kratz and Zajac (2001), organizations undertake plans to innovate only when the environmental change(s) create constant threats to the organization’s survival and/or growth. However, the ability of these organizations to respond to environmental and competitive changes depends on the availability: slack or scarce ecological resources.

The resource-based view of an organization emphasizes the importance of heterogeneity in a firm’s ecological resources: physical, natural, economic, and financial. It suggests that those firms who possess heterogeneous resources that are non-substitutable, difficult to imitate, and are rare and valuable, have a relative advantage to withstand external changes and adapt to them relatively easily compared to their competitors. When firms have both the resources and the complementary assets that provide access to both manufacturing and distribution facilities to reduce cost and improve the quality of products and services, they have acquired competitive advantage strategies from their competitors. These organizations have the resources to withstand externalities costs associated with liability costs, legal fees, or clean-up costs that are necessary to support improved organizational performance (Barney, 1988, 1991, 2001; Rumlet, 1974; Christmann, 2000).

Organizations can thus take advantage of learning and innovation as a competitive advantage to secure control of valuable and scarce resources (Sisaye and Birnberg, 2010). Accounting educational changes facilitate the realignment of organizational ecological resources to advance learning and knowledge systems development related to sustainability management, resources conservation, and environmental management, and their integration into the organization’s activities to improve operational performance. Sustainability development and reporting thus becomes one of the differentiating competitive strategies among organizations. From a strategic point of view, the ecology of sustainability has become one of the most important resources available to manage

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discontinuity of changes in the environment, market forces, technology, natural resources, and geographical locations. Accordingly, the integration of sustainability into the accounting education need to be viewed within the ecological resources endowments of an organization to manage continued performance improvements.

Sustainability has thus emerged as an important subject area of research and teaching in the business education curriculum. In accounting, there is a growing interest in sustainability as the demand for voluntary uniform disclosure of sustainability and environmental data by business and governmental organizations have increased over the years. In business administration and accounting, sustainability is a contemporary area of study that has received a great deal of scholarship in the scholarly and pedagogical publications. Recently, books and articles have appeared which discuss sustainability accounting and reporting (e.g. Aras and Crowther, 2008; Bowden *et al.*, 2010; Epstein, 2008, 2010; Hopwood *et al.*, 2010; Gray, 2006, 2010; Unerman *et al.*, 2007; Vann and White, 2004). A number of business schools have developed standalone courses in sustainability accounting (Nicholas, 2010; Parisi, 2010; Senge, 2010; University of South Australia, 2010), while others have integrated sustainability in existing courses in accounting ethics or corporate social responsibility (see Becker Professional Education, 2010; University of South Florida, St Petersburg, 2010; Wolcott, 2010).

The subject of sustainability accounting and reporting is an emerging phenomenon and can be best addressed through integration within the resource-based view of organizations, that is, ecological approaches of sociology and anthropology. For example, Hopwood (2009) suggested that an accounting theory with accompanying measurement techniques for sustainability has not yet been developed. It is in the preliminary evolution stage as the subject of sustainability has focussed exclusively in public interest and corporate governance issues of business. Accordingly, sustainability has been viewed as a subject of corporate social responsibility that is consonant with accounting and business ethics. Integration of sustainability into the accounting curriculum in financial, managerial, and auditing courses would enable students to have the overall picture of the subject matter and their implications in organizational resources allocations decisions. Sociology and anthropological approaches have the potential to contribute for the possible integration of sustainability into accounting education and professional practices.

In this paper, we extend research on the organizational sociological and anthropological approach to study the relationship between ecology, sustainability reporting, and accounting education. Within the ecological framework, sustainability reporting is approached as part of either internal and/or external accounting reports prepared by corporations for both external and internal use by stakeholders and management. Accounting reports are broadly classified into two major types: managerial and financial accounting. Managerial accounting reports are prepared for internal use by managers for planning and control of the operating activities of an organization. On the other hand, financial accounting reports have a multi-purpose function and, therefore, are prepared to serve various external stakeholders including investors (individual and institutional), financial analysts, and creditors. The reports are of interest to government regulatory agencies which have oversight responsibilities for the activities of business organizations. Economic (financial) information in these reports is mandatory and is prepared periodically. Accordingly, sustainability reporting has been closely associated with external reporting systems.

The resource-based view of management approaches the development of sustainability accounting and reporting as a strategic management process that is

evolutionary, which follows a staged growth development process in the preparation and disclosure of social and environmental information in financial (external) and managerial (internal) accounting reports. In accounting, the disclosure of economic, social, and environmental reports is broadly classified as triple-bottom line (TBL) reports which are included in external accounting reports. TBL reports containing sustainability information on social and environmental issues are considered voluntary information. Nevertheless, the accounting profession has emphasized the importance of including standardized sustainability information in annual reports (AICPA, 2010). It has become part of the business practice to report social and environmental information, when necessary, at the discretion of the organization, either in footnotes, appendices, or supplements to the annual reports. However, the information reported is not uniform: it is either included in the introduction of the annual report as part of the overall report provided by the president or the chief executive officer (CEO), or included in a footnote as supplementary information in the annual report, or provided in a separate publication prepared for external constituencies.

Sustainability reporting has been recognized as one of the most important recent developments in accounting education. Accordingly, the question of integrating it into the overall accounting curriculum is a subject of paramount interest. To address integration best, there is a review of the literature of ecology from the standpoints of both organizational sociological and anthropological perspectives, of current trends in sustainability accounting, as well as of topics that can be integrated into the accounting education and practice.

## **2. The co-evolution of the ecology of sustainability in sociology and anthropology and their implications for sustainability accounting and reporting systems**

Ecological studies consider internal and external environmental conditions related to social, economic, cultural, and political systems as factors determining organizational forms and structures; growth, maturity, and mortality rates; and, adaptation and selection strategies. Ecology views organizations as communities having interdependency relationships among multiple and diverse populations (Astley, 1985). Similarly, accounting systems, including sustainability accounting reporting are considered part of ecological systems that belong to populations or groups or units (instead of individuals). Organizations co-evolution involves competition, growth, decline, and death. Learning and innovation support the prerequisite for organizations evolution and growth.

The organization learning process facilitates evolution and adaptation; and it may involve both gradual and organizational transformational changes (Amburgey and Rao, 1996; Barnett and Carroll, 1995; Singh and Lundsden, 1990). The change process requires organizations to go through a series of innovation, cost reduction (accounting) strategies, and growth and development stages (life cycles) to maintain stability and continuity (Sisaye and Birnberg, 2010). Sustainability development and reporting thus increases organization chances for competition and survival when it is used as a strategic resource for differentiating measures of performance associated with organizational growth, death, and survival.

Barnett and Hansen (1996) suggested that the organization's competitive firms often are sources of external constraints. They indicated that an organization's competition changes when its cohort of rivals that share the same strategic interaction and resources change. The organization is then "confronted with new rivals that do

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not share the organization's co-evolutionary history" (p. 143). The new rivals bring new constraints and change the dynamics of competition, which creates opportunities for organizations to institutionalize adoption of innovation strategies related to organizational development and/or transformation (Sisaye and Birnberg, 2010). Sustainability reporting has been one of the recent developments in financial accounting reporting that has changed the dynamics of competition among organizations. It has become sources of competitive advantage for organizations to differentiate themselves from others for the purpose of increasing market share, charging higher prices for their products and services, and to sustain long-term growth and profitability.

Sustainability has contributed to improving the association between strategy and structure to better position organizational capability to resources access in order to compete and adapt to environmental changes. According to Lant and Mezias (1992), "organizations with an adaptive strategy search for information that reveals the relationship between organizational characteristics and performance. That is, they determine which mix of organizational characteristics is associated with the highest performance and adopt those characteristics" (p. 55). The strategy becomes revolutionary when sustainability is adopted and recognized as a relevant approach for organizational learning to accomplish transformational changes of organic and dynamic learning that are broader in orientation and scope. The innovation process becomes entrepreneurial and focusses on new methods and/or creating a new sustainability culture to solve problems, to search for new market opportunities, and to promote product innovations or seek alternative strategies to respond to environmental uncertainties (Sisaye and Birnberg, 2010). Accordingly, strategy, competition, and cultural adaptations – both organizational and anthropological ecological practices – are intertwined to form the basic foundation for sustainability development and reporting.

Ecological anthropology has laid the foundation for the most widely used social soundness approach to sustainable development programs that links economic growth with sustained improvement of community development needs of the people. Kottack (1999) has related the social soundness analysis (SSA) approach to "sustainable development aims at culturally appropriate, ecologically sensitive, self-regenerating change" (p. 26). In accounting, Sisaye *et al.* (2004) has suggested that SSA has implications in the development and preparation of accounting sustainability reports that promote the conservation of environmental resources.

The contribution of ecological anthropology to sustainability development is that the level of acceptance of sustainability programs depends on how well these programs can best promote and support economic development programs that are compatible with existing cultural practices (Bozzoli, 2000; Stone, 2003). Hence, ecological anthropology assumptions in sustainable accounting and reporting suggest that they address conservation and natural resources management issues that are central to promoting sustainability development consistent with national and local cultures, customs, and mores. Otherwise, if there is a lack of fit, these sustainability accounting methods do not have relevance and are doomed to ecologically fail and die, which then necessitates the replacement of old with new, contributing to new birth of accounting rules, which over time due to legitimacy and institutionalization, constitute a breed of population of sustainability accounting rules.

From an ecological anthropology perspective, sustainability has economic, technological, as well as market development dimensions and social components to safeguard and protect the environment and natural resources. Therefore, sustainability

is embedded in ecological ethics which suggests that those people who are in positions of power and influence have the responsibility not to harm the environment, but to use it in a manner that morally and equitably shares the ecological resources for the survival of humans and other species today and in the future (Sisaye, 2012). There is a consciously intended social aim to use resources morally and responsibly in order to manage and sustain long-living systems. Organizational ecology enhances sustainability by linking environmental resources management to quality, production, service, and managerial systems (Cohen-Rosenthal, 2000; Ehrenfeld, 2000). It promotes organizational learning where employees are trained and made aware of the importance of environmental issues and natural resources conservation. In accounting, the balanced scorecard (BSC) umbrella in organizational and human resources development to improve organizational performance has ecological anthropological dimensions of sustainability of human resources management policies. Ecologically, sustainable development and sound environmental management constitute the primary components for establishing organizational and anthropological relationships.

### **3. The ecology of sustainability in business organizations recent developments**

The business management approach to sustainability has been largely shaped by the sustainability programs and policies of federal, state, and local governmental regulatory organizations, consumer advocacy groups as well as organized bodies, such as the Sierra Club and other environmental private organizations who lobby for legislation and government oversight of business activities. The US Federal Governmental Agencies, the Departments of Agriculture and Commerce, and in particular the EPA, have regulatory control over business activities to enforce natural and resources conservation policies to support sustainability programs. The EPA has enforced environmental regulations and legislations that require business organizations to meet governmental standards of pollution control and to institute programs that prohibit the exploitation and use of natural resources (US Environmental Protection Agency, 2010).

Environmental preservation and resources conservation has thus now become the main development efforts of business organizations, particularly those in oil, gas, and other types of natural resources utilization, including coal and petroleum, as well as manufacturing organizations, such as the automobile, steel, and mineral extracting industries. Consequently, an overlap of concern has emerged among many business organizations about issues of sustainable growth, ethics, and corporate social responsibility. Accordingly, sustainability has been embedded in environmental and ecological ethics where the concern for natural resources conservation and utilization has been intertwined with land ethics. As a result, sustainability has been integrated with environmental and natural resources management and has formed the core foundation of ecological ethics. Thus, corporations have incorporated sustainability as part of their strategic planning process. A synergy has developed between environmental ethics and strategic sustainability management which focussed on how corporations have integrated sustainability into their strategies with examples of best practices from business corporations (Bansal, 2005; Dilling, 2009; Epstein, 2008; Sahlin-Anderson, 2006). Consequently, examples of best sustainability practices among business corporations are recognized and discussed by the popular press: newspapers, magazines, periodicals, and other forms of mass media communications including television.

Sustainability planning has evolved as an ecological resources endowment providing ecosystem advantages or opportunities for businesses to operate competitively in environmentally sensitive and resources conservation societies. Ecologically,

environmental issues shape market (new and emerging) strategies among corporations to promote long-term sustainability vision and mission for many organizations. The role of leadership in embracing sustainability and championing them among employees to create eco-culture (more value creation with fewer products) promotes eco-tracking and environmental imprinting. Some business organizations who adopted ecological imprinting have made the transition from product companies (e.g. autos: Volkswagen and Toyota) that sell cars into service transportation companies with multi-purpose functions that handle financing, leasing, insurance, maintenance, roadside assistance, and related services and operating as a global mobile integrated sustainable business organization (Esty and Winston, 2006).

Sustainability has promoted the value of sharing and ownership of organizational resources among managers and employees to better formulate and implement strategic plans for sustained advantage (long-term thinking). These initiatives have promoted green innovation and diffusion strategies with performance issues. Corporations that have linked sustainability with corporate strategy are redefining the ownership of corporation resources, both assets and liabilities beyond shareholders' wealth. In other words, the ecological anthropological view of sustainability implies that there exists joint ownership or claim to corporate resources by all stakeholders, including shareholders and the community at large.

There are several examples and cases of corporations who practice the anthropological view of sustainability and corporate ownership. These organizations are involved in local community development programs where they sponsor public cultural and recreational events, supporting museums, art centers, libraries, and public parks. The Hershey Candy and Cocoa Cola Companies are cited as examples of corporations whose business interests have been linked and integrated with local and regional sustainability development. The Hershey Candy Company has long exhibited the value of sustainability by linking business wealth creation to community and the societal development at large, where the corporation has been housed and located. The Hershey Company is central to the Hershey community: the company runs schools, parks, recreation centers, hospitals, and other facilities that promote sustainability development (Esty and Winston, 2006). Similarly, the Coca Cola Company supports museums, play houses, libraries, and recreation facilities throughout Atlanta as part of its sustainable programs and integration within the community. There are many other examples of corporations' contributions (both financially and materially) to support local/community schools, parks, recreational centers, libraries, and sponsorship of public events that advance school sports and entertainments groups. Big corporations like Target, Apple, Microsoft, Wal-Mart, and others with chains of stores and merchandise companies regularly contribute to support community public projects based on percentage of total sales or from sales of special products designated for specific projects.

When corporations are integrated into community development programs, their names, and logos/trademarks are associated with towns, designated streets, parks, or recreation centers. When the community becomes dependent on the location of the company's headquarter, any move by the company to relocate is resisted. For example, when the Hershey Board of Directors voted to sell and relocate from Hershey, management, employees, and concerned citizens organized to object to the sale. They shared the philosophy that Hershey does not belong to the highest bidder, but to the community where it was founded (Esty and Winston, 2006).

The Hershey Candy Company and Coca Cola are examples of sustainable companies that integrated and merged both private profit and public good. This approach is

commonly used in emerging economies in sustainable programs of micro-small business lending and long-term community projects such as roads, dams, and irrigation projects. Private business interests are inter-wined with public goods to advance the philosophy of sustainability embedded in environmental and social responsibility, community benefits, and enhancing the well-being of its citizens (Mog, 2004).

Stakeholders' analysis in sustainability accounting has been employed to define and identify the value chain between internal and external stakeholders. The yardstick for such analysis has focussed whether or not corporations focus on maximization of wealth creation for shareholders are compatible with external stakeholder benefits of society and community at large, as well as government agencies. This link between private profit and public welfare has been formulated on the "trickle down" theory assumptions of the economics of sustainability growth and development. Accounting guidelines provide the defining methodologies, procedures, and key performance indicators for wealth creation, welfare management, and corrective action measures to reduce economic and income imbalances within the community (Savitz and Weber, 2006; Schaltegger and Burritt, 2006). To support business development growth and expansion, sustainability accounting is used to appraise the investment (project) return, and risk potentials by analyzing cost-benefit relationships of investment projects in environmental programs that are expected to generate high return on projected investments. Sustainability accounting is being applied in balance sheet disclosures for integrated external reporting of social, environmental, and economic performance; for developing sustainability metrics for cost drivers (assets that have future economic benefits), as well as lean accounting techniques for improving businesses operating processes (Savitz and Weber, 2006; Sustainability Index, 2010; Koehler *et al.*, 2005).

Epstein and Young (1999) have suggested that economic value-added measures can be incorporated to develop profitable investment decisions in line with responsible environmental management policies. In other words, there are synergies among a balanced pro-growth environmentally responsible management program, improved organizational performance, and accounting indicators of profitability. In the process, these types of business investments provide simultaneous support for community economic development programs to sustain social, environmental, and economic performance and growth among business organizations indefinitely.

In other words, it is evident that ecologically, sustainability accounting analysis is being incorporated into corporate strategic planning to address environmental factors that mitigate financial risk management associated with investment decisions. These issues can be integrated into financial accounting courses to address the planning and control issues that top management committees can formulate to manage financial and associated risks. Sustainability analysis in risk assessment focusses on risk-sharing strategies, insurance coverage, divestment and/or acquisition strategies, loans coverage – debt financing, strategies for lean productive operations, survival, and sustainable growth strategies (Bowden *et al.*, 2010). If it is strategically used; it can assist managers to develop alternative plans that include the conversion of environmental crisis into opportunities for new products and/or services for increasing or maintaining market share. In competitive analysis, sustainability accounting is incorporated to identify and analyze environmental risks, manage political risks through lobbying strategies, mitigate the impact of market volatility on corporate economic performance, link the objectives of greening with the supply chain management process, and enable corporations to take ownership or stewardship of environmental programs (Esty and Winston, 2006; Savitz and Weber, 2006).

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#### 4. Sustainability accounting and reporting: evolving topics that call for integration

Although initiated in emerging economies to promote social and economic development for community growth, sustainability has also become central to business development in industrially developed countries, particularly in North America and in Western Europe. These countries have instituted measures that go beyond economic performance, in that they have also included social and environmental accomplishments.

In addition, the subject of sustainability accounting and reporting has benefited from the organizational and ecological anthropological disciplines. Good examples are the SSA and social impact assessment (SIA) analysis that are based on anthropological and sociological disciplines (Kottack, 1999; Stone, 2003). SSA and SIA incorporated accounting income and performance indicators in the design and implementation of economic and social programs in developing countries. Both the United States Agency for International Development (USAID) and the World Bank for Reconstruction and Development (WB) use SSA and SIA, respectively, to study the feasibility of economic development programs which they funded or supported in these countries (Vondal, 1988; United States Agency for International Development, 2002, 2010; World Bank Group, 2003; Sisaye *et al.*, 2004). If the projects proposed are not supported by these analyses, the strategy is to revise and/or modify the project should it become sustainable; otherwise, to abandon it in favor of other proposed project sites. Their approaches have influenced those of corporations by stressing the importance of sustainability and continued community economic growth in business ventures. Most corporations used the USAID and World Bank models in their approaches toward sustainable business interventions in developing countries (Sisaye, 2012).

Hopwood (2009) suggested that sustainability implies long-term interests where accountants develop “calculative devices” for investment, production, and preservation of natural and ecological resources (p. 433). He edited a collection of papers in sustainability accounting and reporting for a special issue of *Accounting, Organizations and Society* (AOS) (2009 and 2010). The 2009 AOS special issue has seven papers that addressed “the creation of a market in carbon emissions and the roles that accounting and calculative mechanisms can and cannot play in the environmental area” (Hopwood, 2009, p. 438). Some of the papers employed critical perspectives to question the “role and functioning of accounting in the environmental and sustainability spheres” (p. 439). In 2010, AOS issued another call for a special issue to publish papers on “the role of accounting in advancing sustainability” edited by Hopwood and Unerman (2010). The issue is planned for publication in 2011/2012.

Hopwood (2009) has articulated the need for research and education in sustainability accounting and reporting. Following Hopwood (2009, 2010) recommendations, this paper provides a general framework for the ecology of sustainability integration in accounting education. It suggests that there are three subject areas where the sustainability concepts can be integrated into accounting. These areas are broadly classified as financial accounting, auditing, and managerial accounting.

##### *A. Financial accounting: external reporting guidelines*

This section covers the integration of sustainability into financial accounting course materials. It describes several external financial reporting guidelines that have recently emerged in order to incorporate sustainability in corporations’ annual reports. These guidelines describe external reporting regulations that can be incorporated in a financial accounting course. Some of these external reporting guidelines are outlined

in the Global Reporting Initiative (GRI), Dow Jones Sustainability Index (DJSI), and the Morgan Stanley Capital International Index (MSCI).

They specifically address sustainability indicators to assess the performance of social and environmental programs. These guidelines have been favorably received by the Financial Accounting Standards Board (FASB) to develop Generally Accepted Accounting Principles (GAAP) to supplement the Sarbanes-Oxley Act of 2002 to provide a general framework and approaches for reporting on sustainability.

1. *GRI*. In 2000, the United Nations Environmental Programme, in cooperation with the Coalition for Environmentally Responsible Economies and the TELUS Institute, provided guidance and support for the creation of the GRI. The goal of GRI is to provide the international community with a common reporting framework for the reporting of sustainability efforts and initiatives. It is the world leader and largest producer of standards/guidelines for reporting ecological “footprints” in sustainability (United Nations Global Compact, 2009).

GRI outlines three forms (i.e. GRI-G3) of application disclosure information which are classified as: organizational profile, management approach, and performance-related indicators (Global Reporting Initiative (GRI), 2008, 2010). The GRI-G3 Organization Profile Disclosures include: strategic elements (priorities, targets, achievements, failures, challenges, risks, and opportunities); profile elements (brands, products, services, operating locations, legal form of ownership, employment levels, assets); and governance structure (officers and independent/non-executive members and linkage to their compensation and performance, guidance processes with regard to qualifications and expertise of members, codes of conduct, relevant risks, opportunities, and adherence/compliance to international standards, codes, and principles).

The GRI-G3 Management Approach Disclosures outline a brief overview of an organizational management approach to aspects defined under each category of performance indicator (Global Reporting Initiative (GRI), 2009, 2010; see also Etzioni and Ferraro, 2007). The GRI-G3 performance disclosure indicators are organized into three groups: economic/financial (revenues, operating costs, employee compensation, donations, and community investments); environmental (impact on living/non-living natural systems, emissions, effluents, waste, biodiversity, environmental compliance); and social disclosure (impact on human rights, labor practices, benefits, training, education, health, safety, diversity, equal opportunity, procurement practices with regard to anti-corruption and anti-trust practices). Of the three types of disclosures with which the GRI is concerned, the most relevant ones for inclusion/discussion in a financial accounting class deal with economic/financial and environmental disclosures.

2. *DJSI*. In 1999, the DJSI World was launched by the Sustainable Asset Management (SAM) Group of Zurich and the Dow Jones Indexes of New York. SAM was specifically founded to track the financial performance of leading sustainability-driven companies (Sustainable Asset Management (SAM), 2010; Dow Jones Sustainability Index (DJSI), 2010). The DJSI defines corporate sustainability as “a business approach that creates long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments” (p. 2). The main focus of the DJSI indices is to create performance indicators related to investable/traded concepts and to report on the firms’ financial performance. DJSI covers the top 10 percent of the biggest 2,500 companies in the Dow Jones Global Index which pursue economic, social, and environmental reporting (Dow Jones Sustainability Index (DJSI), 2009). According to DJSI, leading sustainability companies also display high levels of management competence in

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addressing global and industry challenges dealing with economic, environmental, and social opportunities and risks that can be quantified and screened for investing purposes.

Similar to GRI, DJSI (2009, 2010) used three performance indicators: economic, environmental, and social, with associated weights, depending on the industry-specific sector to which the corporation belongs. Economic dimensions included codes of business conduct, compliance, corruption, and bribery; corporate governance; risk and crisis management and industry-specific guidelines. The environmental performance indicators addressed eco-efficiency, environmental reporting, and industry-specific criteria. The social performance indicators are outlined in corporate citizenship/philanthropy, labor practices, human capital development, social reporting, talent attraction and retention, as well as industry-specific criteria.

DJSI gathering of information are obtained from diverse sources including annual reports, company reports, CEO mission statements, press releases, special reports, questionnaires, and interviews with managers. However, the information obtained is not uniform and comparable across organizations and corporations. The target selection for each eligible DJSI sector is 10 percent of the companies in the industry.

The SAM Group-Index Research (SAM, 2010) has developed a SAM Questionnaire specific to each of the DJSI sectors that is distributed to the CEOs and public relations officers of all companies listed that invest in DJSI stocks. SAM compiles company documentation from reports on sustainability, the environment, health and safety, as well as social reports, annual financial reports, and related special reports (e.g. by gathering information on intellectual capital management, corporate governance, R&D, as well as employee relations). It also refers to all other sources of company information including internal documentation, brochures, and web sites. In addition, it refers to media and stakeholder reports, including other publicly available information (SAM, 2010). SAM also reviews stocks and industry sector analysts, media, and press releases, articles, and stakeholder comments available on internet and other public sources. Moreover, SAM uses personal contact with companies to gather information. Each analyst personally contacts individual companies to clarify questions and/or inconsistencies arising from the analysis of questionnaires and information obtained from company internal documents.

Other sources include, the MSCI, which is comparable to the DSJI Index. It publishes international and US equity, fixed income and a hedge fund index for institutional investors. It has provided global equity indices for over 30 years and has become the most widely used international equity benchmark by institutional investors (Morgan Stanley, 2010). In general, MSCI is intended to fulfill the investment needs of a wide variety of global institutional market and mutual fund firm participants. Approximately 2,000 organizations worldwide currently use MSCI benchmarks to these indexes. When compared, the performance of DJSI and MSCI was virtually indistinguishable, although MSCI often is used as a common benchmark for “world” or “global” stock market (Christofi *et al.*, 2007).

While both GRI and DSJI collect information on the sustainability performance of various companies, there are differences in their disclosures and membership requirements. While GRI members are primarily Western European based corporations, the members of DJSI are from both North America and Western Europe. GRI G3 reports are required by all member organizations, whereas DJSI reports are voluntarily disclosed. Members of DJSI voluntarily disclose environmental and social performance data in annual reports, company publications. They are also publicized in various media outlets including newspapers, magazines, periodicals, as well as in television news and special reports.

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An overview of GRI and DJSI reports suggests that sustainability reporting provides indicators of performance related to economic, environmental, and social goals. These are external financial accounting reports that have devoted extensive coverage of sustainability. Financial reporting can play a very important role in advancing the calculative mechanisms of sustainability and their eventual mandatory disclosure requirements for inclusion in annual reports. However, the issue of whether sustainability creates wealth or not for shareholders that the stock market rewards (i.e. in the form of higher stock market prices) is mixed. The trend for sustainability reporting is growing and is supported because investors, both institutional and individual, value sustainability as a long-term rather than a short-term measure of economic performance and profitability.

3. *Sustainability reporting evolution from GRI and DJSI: TBL reporting.* The TBL reporting format follows DJSI and GRI in three main sectors/groups: economic, environmental, and social performance data regarding business organizations (DJSI, 2009; GRI, 2008, 2009). TBL reports include both profitability and shareholder value creation as well as social, human, and environmental management. The environmental and social indicators of sustainable reporting have become sources of accountability information for indicating levels of commitment to sustainability (Adams, 2010; Aras and Crowther, 2008; Hubbard, 2008; Lamberton, 2005; Pava, 2007).

When compared to the European countries of GRI, US external reporting issues related to sustainability are voluntary, even though the subject of sustainability has become important for business and governmental organizations. It is still in the evolutionary process of development, reflecting the voluntary, that is, first stage of information reporting. However, some public information also reports current sustainability trends among US companies.

4. *Indices and ratings/rankings of sustainable companies.* There are indices and rankings of sustainable companies in magazines, newspapers, as well as other published and on line reports. These reports provide details about companies that have sustainable accounting practices. The factors and indicators used to rank these companies become important topics that can be integrated into the financial accounting curriculum.

Such sustainable reports are available from several sources: Global 100 Most Admired Companies; Bloomberg SRI Index; Fortune's Most Admired Companies; Newsweek Green Ratings; DJSI; and press releases from sustainable corporations. In general, these are published reports that are readily available on line and/or in libraries that have business reference books and periodicals collections.

### *B. Auditing: sustainability disclosure and management*

Although sustainability reporting is a voluntary disclosure, there is a movement toward standardization of sustainability data reported by organizations for auditing and comparison purposes. In this regard, it is necessary to note that the most important source of information on sustainability is incorporated under external reporting requirements. These include GAAP and the Sarbanes-Oxley Act of 2002.

1. *GAAP.* The FASB issued SFAS No. 5 Accounting for Environmental Liabilities, Contingent Liabilities, and Asset Retirement Obligations to recognize and report corporate environmental liabilities associated with business innovations and growth. In addition, the EPA has established guidelines on environmental liabilities by providing specific definitions and categories, topics that are relevant for intermediate accounting courses (US Environmental Protection Agency, 2010). Most financial accounting text books include materials that address accounting loss contingencies

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and accounting for asset retirement. The US Securities and Exchange Commission (2010) has disclosures of climate change risks and opportunities that are considered material, for example, the BP Deep Horizon Spill.

Other related topics of interest about environmental issues include reports on climate change from meteorological and geographical reports (weather and maps). The Pew Center (2011) on Climate Change Report issues Green House Gas Reporting. Another source is the Carbon Disclosures Project USA (2009) Leadership Index. Moreover, PricewaterhouseCoopers (2010) has issued guidelines entitled “Report on A Framework for Greenhouse Gas Reporting.”

According to O’Dwyer *et al.* (2011), the four big CPA firms support an integrated sustainability reporting system which included third-party assurance statements from CPA firms. Moreover, both international and national setting boards have included guidelines for the development and conduct of sustainability assurance reports. These assurance audit services are co-evolving to secure legitimacy with clients, stakeholders, external regulatory agencies, and users of these reports and within the “auditing/assurance” firms who provide these services (pp. 38-39). The objective is to seek consensus on the structure of the sustainability reports among the assurance service providers and achieve general legitimacy on the importance, value, and instrumentality of these reports. O’Dwyer *et al.* (2011) noted legitimacy of the reports cannot be attained or sustained for the long term unless there is demand from stakeholders. O’Dwyer *et al.* (2011) noted that the general guidelines for sustainability and assurance reports are outlined by the GRI, World Business Council for Sustainable Development and the International Auditing and Assurance Board. They reported that most of the firms they studied used the assurance services certification to secure pragmatic legitimacy through exchange and reproduction of assurance reports (p. 42). It is apparent that internal legitimacy cannot be maintained unless it is enforced and audited through oversight and external regulatory enforcements.

2. *Sarbanes-Oxley Act of 2002 (environmental and sustainability reporting)*. Under SOX the Public Company Accounting Oversight Board (PCAOB) was created to oversee/control the quality of auditing performance of public corporations. The Act has broadened the scope of accounting reports to include sustainability programs, which have now been integrated by many organizations into some of their strategic planning processes. The PCAOB is “empowered to regulate the auditors of public companies, investigate rules violations, and sanction accordingly. Overseen by the SEC, PCAOB replace[d] the old system of accounting firm self-regulation administered by the AICPA” (Fisher *et al.*, 2007, p. 53). The Board also oversees the quality of auditing tasks and reviews auditor practices and procedures. It reviews the compensation, professional competency, and compliance of auditors and partners, as well as policies governing retention of auditors by client firms. It also appraises the overall human resources management policies of auditing firms (Cheng *et al.*, 2009).

The SOX has enforced oversight and intervention by governmental organizations to monitor the performance of corporations, accounting firms, and professional organizations, including the AICPA at the national and state levels. The Act required the audit committee of the Boards of Directors of corporations to select an independent firm to audit financial statements by limiting the role of accounting firms providing non-auditing, for example, consulting services (Fisher *et al.*, 2007).

The Act’s implications for the auditing profession are substantial. The Act has reinforced the requirement of auditor independence, commitment for quality service,

and independence from outside interference in conducting their auditing functions. It established continued professional education, particularly on accounting ethics and corporate governance as basic to maintaining professional certification. In addition, it provided guidelines for the separation of auditing and consulting services (Misiewicz, 2007). Thus, SOX provides a strong basis for recognition in some form of data related to sustainability.

*C. Management accounting: internal reporting and decision making*

While the focus of sustainability reporting has primarily been on financial (external) reporting and the auditing of the information, the managerial (internal) accounting and decision making aspects have not received much research attention. Nevertheless, sustainability is a management issue which requires the formulation of strategic planning and the implementation of operational guidelines. It shapes and influences the internal decision and operating functions of organizations. Within this context, it is apparent that sustainability's integration in managerial accounting and control curriculum is critical in improving corporate economic, social, and environmental performances.

The most important implications for managerial accounting curriculum can be derived from the SOX which recognized the importance of sustainability issues as being critical for management accounting decisions. Accordingly, sustainability is becoming a strategic planning initiative, for example, in the BSC framework for managing product and manufacturing cost analysis, new product development, organizational transaction cost management, as well as personnel training and development. Along with economic performance, environmental, and sustainability dimensions can be integrated into the BSB as important determinant factors in organizational resources allocation decisions.

Moreover, internal sustainability reporting provides information to management that can be used in managing the operational activities of the organization (refer to The Accounting for Sustainability Group, 2006; Herzog, 2010; Isenmann *et al.*, 2007; KPMG Australia, 2008; Wallace, 2000). This information can become valuable for generating profitability, sustainability, and continued productivity and performance of the organization (Bowden *et al.*, 2010; Esty and Winston, 2006; Gray, 2006; H.M. Treasury, 2005; Savitz and Weber, 2006; Wiedmann and Lenzen, 2006; World Resource Institute and World Business Council for Sustainable Development, 2009). Accordingly, sustainability reporting prepared for internal use by management may include (among others): sustainability costs and benefits for decision making; treatment of sustainability as a capital rather than as a revenue expenditure; when and how to treat sustainability as a cost (deferral) long-term asset rather than as an expense to be reported in a statement of income for the current reporting period; to identify and separate the various costs associated with organizational life cycle costs, i.e. product life cycles cost assessment; approaching sustainability in terms of a transaction cost approach within a resource-based view of the firm; the application of activity-based costing (ABC) to develop sustainability cost drivers; and use of sustainability in capital budgeting decisions.

Within the context of sustainability, ABC can be used as a cost control program to manage both costs and organizational change processes. New measurement and reporting techniques in management accounting are essential in sustainability management for changing the basis for cost allocation within a unit or division. Changes in accounting sustainability reports can be targeted to provide timely information (scorecard) that enables managers to achieve desired profitability and income objectives that are consistent with sustainability goals. These changes in reporting systems may require cooperation and teamwork among managers, corporate board members and employees for successful

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implementation. Similarly, in BSB, some of the topics that can be expanded within the context of sustainability accounting include process improvements, market focus, organizational growth and development, cost performance measures, as well as increasing the role and involvement of management/cost accountants in sustainability development (planning and control decisions). In other words, sustainability integration in managerial accounting, particularly ABC and BSC involve planning, budgeting, internal control and reporting systems that shape managerial communication and decision-making processes.

### 5. Summary and conclusion

Financial reporting guidelines in GRI, DJSI, and GAAP reports, auditing standards as required by FASB and PCAOB, and internal reporting (managerial accounting) use for strategic planning and control purposes raise a number of questions regarding the integration of sustainability into the accounting curriculum. The first important question in the preparation of reports involves the type, amount, and depth of information disclosure contained in these reports. With respect to sustainability, the question of corporate governance and accountability is significant. As discussed above, accounting reports on sustainability need to address the economic, environmental, and social performance of corporations. However, the inclusion of environmental and social reports with economic/financial performance is not mandatory, but voluntary, and this dilutes the importance of sustainability data and information disclosure in these reports.

Accounting professional practice has stressed the importance of accountability and verifiability of environmental and social information in annual reports. The AICPA and the big four accounting firms, for example, Ernst & Young (2010), provide guidelines and questions of sustainability reporting and suggest that the auditing of information be voluntary or required, depending on the organization, because the information is of value to management, employees, and shareholders. In general, Ernst & Young (2010) Sustainability Guidelines of Reporting and KPMG (2010) sustainability reporting focussed on the type of sustainability information (data) to be included in these reports. While it is important to note that the discussion has focussed on the reporting of data, the question of how to report and what data to use for assessment and measurement of sustainability compliance have not yet been addressed. The four big accounting firms have focussed on external reporting guidelines and possibly verification of information by CPAs. These are timely performance issues that need to be integrated and addressed in financial and managerial accounting and auditing courses.

Accordingly, the role of auditors in the sustainability reporting system has become important (see AICPA, 2010). In the auditing curriculum, some of the relevant issues that call for integration are related to the role of auditors in sustainability reporting are outlined as follows: assistance in the design/implementation of sustainability management system; facilitation with creating sustainability awareness or training employees; performance of limited scope audits requested by top management; conducting supply chain audits; organizing compliance audits; advice regarding the appointment of outside assessors; coordination of audit activities by external assessors; pension reviews and retirement funding (investments), as well as pension liability disclosures.

Accordingly, the AICPA (2010) has issued broad guidelines in its Auditing Firms and Sustainability Reporting Guidelines: The Trend Toward Comparability of Reports. Some of the guidelines covered include: good governance and sustainability fundamentals for improved business performance; focus on integrated social and environmental performance by means of financial rather than separate reports;

advocating an integrated oversight to review these reports (not necessarily mandatory); and provision of assurance of integrated reports (external opinion validation). These are pertinent sustainability issues that require integration in the accounting curriculum to provide students with a holistic picture of organizational performance as well as the economy and society.

In conclusion, this paper has presented the extent to which the ecology of sustainability, particularly organizational ecology has shaped environmental factors, industrial organizational structures, technological developments, government regulatory agencies, and ecological resources endowment differences. In contrast, ecological anthropology has addressed how cultural and social forces have shaped sustainability development. The co-evolution of organizational ecological and ecological anthropological views of sustainability development have related the resource-based approach overall framework for the integration of sustainability into the accounting curriculum. TBL reporting indicates the commitment of business organizations to ecological, natural resources, and environmental management objectives of sustainability. Accordingly, social and environmental data in sustainability reporting comprise interdependent co-existing ecological, natural resources, and geographical systems that have enduring and sustaining relationships. Ecology and natural resources management have sustainable relationships that govern individuals, group, and community behaviors, values, cultures, and mores of sustainability in order to conserve current use of resources to sustain future generations.

Ecology has promoted sustainability topics in higher education. Sustainability management is thus embedded in the Darwinian theory of natural selection, individual actions, and economic choices that make accounting education and training functional for the maintenance and stability of social systems. Accordingly, sustainability integration in accounting education has become a byproduct of organizational ecological and environmental resources of management. Organizational ecology of sustainability is embedded in the conservation and development of ecological and natural resources to balance the economic, social, and environmental ecological objectives of organizations, communities, and societies. The integration of sustainability into accounting education and the role that the accounting practice profession has played in promoting sustainability reporting reflect how environmental and ecological issues are important for the sustenance and long-term resources management of the natural resources of nations in order to advance economic profitability as well as the social and environmental well-being of individuals, business organizations, and societies at large.

### References

- Adams, R. (2010), *Accounting Report*, Association of Chartered Accountants, London, available at: [www.accaglobal.com/](http://www.accaglobal.com/).
- AICPA (2010), "Good governance and sustainability: fundamental for improved business reporting", *Accountants Today*, July, the issue contains reports by Professor M. King of South Africa titled Governance is King, pp. 16-23 and by other practitioners.
- Amburgey, T.L. and Rao, H. (1996), "Organizational ecology: past, present, and future directions", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1265-1286.
- Aras, G. and Crowther, D. (2008), "Developing sustainable reporting standards", *Journal of Applied Accounting Research*, Vol. 9 No. 1, pp. 4-16.
- Astley, W.G. (1985), "The two ecologies: population and community perspectives on organizational evolution", *Administrative Science Quarterly*, Vol. 30 No. 2, pp. 224-241.

- 
- Bansal, P. (2005), "Evolving sustainability: a longitudinal study of corporate sustainable development", *Strategic Management Journal*, Vol. 26 No. 3, pp. 197-218.
- Barnett, W.P. and Carroll, G.R. (1995), "Modeling internal organizational change", *Annual Review of Sociology*, Vol. 21, pp. 217-236.
- Barnett, W.P. and Hansen, M.T. (1996), "The red queen in organizational evolution", *Strategic Management Journal*, Vol. 17 No. 1, pp. 139-157.
- Barney, J.B. (1988), "Returns to bidding firms in mergers and acquisitions: reconsidering the relatedness hypothesis", *Strategic Management Journal*, Vol. 9, Special Issue, No. 1, pp. 71-78.
- Barney, J.B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.
- Barney, J.B. (2001), "Is the resources based 'view' a useful perspective for strategic management research? Yes", *Academy of Management Review*, Vol. 26 No. 1, pp. 41-56.
- Becker Professional Education (2010), "The future of corporate sustainability reporting", CPE for CPAs, available at: [www.becker.com/](http://www.becker.com/) (accessed December 2010).
- Bowden, A.R., Lane, M.R. and Martin, J.H. (2010), *Triple Bottom Line Risk Management: Enhancing Profit, Environmental Performance, and Community Benefit*, John Wiley, New York, NY.
- Bozzoli, M.E. (2000), "A role for anthropology in sustainable development in Costa Rica", *Human Organization*, Vol. 59 No. 3, pp. 275-279.
- Carbon Disclosure Project USA (2009), *Carbon Disclosure Project Leadership Indexes*, Mimeo, New York, NY.
- Cheng, Y.-S., Liu, Y.-P. and Chien, C.-Y. (2009), "The association between auditor quality and human capital", *Managerial Auditing Journal*, Vol. 24 No. 6, pp. 523-541.
- Christmann, P. (2000), "Effects of 'best practices' of environmental management on cost advantage: the role of complimentary assets", *Academy of Management Journal*, Vol. 43 No. 4, pp. 663-680.
- Christofi, P., Sisaye, S. and Bodnar, G. (2007), "Micro-socio-sustainable TQM", *Internal Auditing*, Vol. 22 No. 1, pp. 35-40.
- Cohen-Rosenthal, E. (2000), "A walk on the human side of industrial ecology", *American Behavioral Scientist*, Vol. 44 No. 4, pp. 245-264.
- Dilling, P.F.A. (2009), "Sustainability reporting in a global context: what are the characteristics of corporations that provide high quality sustainable reports – an empirical study?", *International Business & Economics Research Journal*, Vol. 9 No. 1, pp. 19-30.
- Dow Jones Sustainability Index (DJSI) (2010), "Dow Jones sustainability indexes in collaboration with SAM", available at: [www.sustainability-index.com/](http://www.sustainability-index.com/) (accessed December 2010).
- Dow Jones Sustainability Indexes (2009), "Corporate sustainability", available at: [www.sustainability-index.com/07\\_html/sustainability/corpsustainability.html](http://www.sustainability-index.com/07_html/sustainability/corpsustainability.html) (accessed December 2010).
- Ehrenfeld, J.R. (2000), "Industrial ecology: paradigm shift or normal science?", *American Behavioral Scientist*, Vol. 44 No. 2, pp. 229-244.
- Epstein, M.J. (2008), *Making Sustainability Work: Best Practices in Managing and Measuring Corporate Social, Environmental and Economic Impacts*, Greenleaf Publishing and Berrett-Koehler Publishers, Sheffield.
- Epstein, M.J. (2010), "The challenge of simultaneously improving social and financial performance: new research results", in Epstein, M.J., Manzoni, J.-F. and Davila, A. (Eds), *Studies in Managerial and Financial Accounting*, Emerald, Bingley, Vol. 20, pp. 3-18.
- Epstein, M.J. and Young, S.D. (1999), "'Greening' with EVA", *Management Accounting*, Vol. 80 No. 1, pp. 45-49.

- Ernst & Young (2010), "Sustainability reporting: seven questions CEOs and boards should ask about triple bottom line reporting", available at: [www.ey.com/GL/en/SearchResults?query=sustainability+reporting&search\\_options=country\\_name](http://www.ey.com/GL/en/SearchResults?query=sustainability+reporting&search_options=country_name) (accessed December 2010).
- Esty, D.C. and Winston, A.S. (2006), *Green to Gold*, Yale University Press, New Haven, CT.
- Etzioni, D. and Ferraro, F. (2007), *Accounting for Sustainability: Analogical Work and the Global Reporting Initiative*, IESE Business School, Barcelona.
- Fisher, D.G., Swanson, D.L. and Schmidt, J.J. (2007), "Accounting education lags CPE ethics requirements: implications for the profession and a call to action", *Accounting Education*, Vol. 16 No. 4, pp. 345-363.
- Global Reporting Initiative (GRI) (2008), "Sustainability reporting guidelines", available at: [www.globalreporting.org/ReportingFramework/ReportingFrameworkDownloads/](http://www.globalreporting.org/ReportingFramework/ReportingFrameworkDownloads/) (accessed December 2010).
- Global Reporting Initiative (GRI) (2009), "About GRI", available at: [www.globalreporting.org/AboutGRI](http://www.globalreporting.org/AboutGRI) (accessed December 2010).
- Global Reporting Initiative (GRI) (2010), "G# guidelines, G3.1 developments and organizational stakeholders", available at: [www.globalreporting.org/ReportingFramework/](http://www.globalreporting.org/ReportingFramework/) (accessed December 2010).
- Gray, R. (2006), "Social, environmental and sustainability reporting and organizational value creation? Whose value? Whose creation?", *Accounting, Auditing & Accountability Journal*, Vol. 19 No. 6, pp. 793-819.
- Gray, R. (2010), "Is accounting for sustainability actually accounting for sustainability...and how would we know? An exploration of narratives of organisations and the planet", *Accounting, Organizations and Society*, Vol. 35 No. 1, pp. 47-62.
- Herzog, C. (2010), *Internet-Supported Sustainability Reporting: Empirical Findings from the German DAX 30*, Centre for Sustainability Management, University of Luneburg, Leuphana.
- H.M. Treasury (2005), "Financial reporting advisory board paper: sustainability reporting", UK FRAB (74) 03, 24 June.
- Hopwood, A.G. (2009), "Accounting and the environment", *Accounting, Organizations and Society*, Vol. 34 Nos 3-4, pp. 433-439.
- Hopwood, A.G. (2010), "In memoriam, Anthony G. Hopwood, 1944-2010", *Accounting, Organizations and Society*, Vol. 35 No. 4, pp. 496-497.
- Hopwood, A. and Unerman, J. (2010), "Call for papers for a special issue on: the roles of accounting in advancing sustainability", *Accounting, Organizations and Society*, Vol. 35 No. 3, p. 11.
- Hopwood, A., Unerman, J. and Fries, J. (Eds) (2010), *Accounting for Sustainability*, Earthscan, London.
- Hubbard, G. (2008), *Beyond Accounting: Assessing the Impact of Sustainability Reporting on Tomorrow's Business*, University of Adelaide Business School, mimeo.
- Hubbard, R.G. (2011), "Business education: Columbia's Business School Dean on disclosure, leading, ethics", *Wall Street Journal*, July 7, p. B6, reported by Melissa Korn.
- Isenmann, R., Bey, C. and Welter, M. (2007), "Online reporting for sustainability issues", *Business Strategy and the Environment*, Vol. 16 No. 3, pp. 487-501.
- Koehler, T., Weber, O., Fenchel, M. and Scholtz, R. (2005), "Principles for sustainability rating of investment of funds", *Business Strategy and the Environment*, Vol. 14 No. 1, pp. 54-70.
- Kottack, C.P. (1999), "The new ecological anthropology", *American Anthropologist*, Vol. 101 No. 1, pp. 23-35.
- KPMG Australia (2008), "Introduction to the revised AA 1000 assurance standard and the AA 1000 accountability principles standard 2008", *AccountAbility*, available at: [www.kpmg.com/us/en/Pages/default.aspx](http://www.kpmg.com/us/en/Pages/default.aspx) (accessed October 24, 2008).
- KPMG (2010), "Reporting: sustainability briefing paper. In partnership with *AccountAbility* Journal.

- 
- Kratz, M.S. and Zajac, E.J. (2001), "How organizational resources affect strategic change and performance in turbulent environments: theory and evidence", *Organization Science*, Vol. 12 No. 5, pp. 632-657.
- Lamberton, G. (2005), "Sustainability accounting: a brief history and conceptual framework", *Accounting Forum*, Vol. 29 No. 1, pp. 7-26.
- Lant, T.K. and Mezias, S.J. (1992), "An organizational learning model of convergence and reorientation", *Organizational Science*, Vol. 31 No. 1, pp. 47-71.
- Misiewicz, K.M. (2007), "The normative impact of CPA firms, professional organization and state boards on accounting ethics education", *Journal of Business Ethics*, Vol. 70 No. 1, pp. 15-21.
- Mog, J.M. (2004), "Struggling with sustainability – a comparative framework for evaluating sustainable development programs", *World Development*, Vol. 32 No. 12, pp. 2139-2160.
- Morgan Stanley (2010), "Sustainability", available at: [www.morganstanley.com/globalcitizen/sustainability.html](http://www.morganstanley.com/globalcitizen/sustainability.html) (accessed December 2010).
- Nicholas, W. (2010), "ACCT 70161: sustainability: accounting and reporting", University of Notre Dame Business School, available at: [http://business.nd.edu/MSA/Academics/Elective\\_Courses/](http://business.nd.edu/MSA/Academics/Elective_Courses/) (accessed December 2010).
- O'Dwyer, B., Owen, D. and Unerman, J. (2011), "Seeking legitimacy for new assurance forms: the case of assurance on sustainability reporting", *Accounting, Organizations and Society*, Vol. 36 No. 1, pp. 31-52.
- Parisi, C. (2010), "HAHU1F – principles of sustainable accounting and finance", Copenhagen Business School, University of Siena, Siena, available at: [www.cbs.dk/cbs\\_international/summer\\_university/isup\\_courses/menu/courses/isup\\_courses\\_2010/undergraduate/financial\\_and\\_management\\_accounting/ha\\_hulf\\_principles\\_of\\_sustainable\\_accounting\\_and\\_finance](http://www.cbs.dk/cbs_international/summer_university/isup_courses/menu/courses/isup_courses_2010/undergraduate/financial_and_management_accounting/ha_hulf_principles_of_sustainable_accounting_and_finance) (accessed December 2010).
- Pava, M. (2007), "A response to 'getting to the bottom of 'triple bottom line''", *Business Ethics Quarterly*, Vol. 17 No. 1, pp. 105-110.
- Pew Center (2011), *Pew Center on Climate Change Greenhouse Gas Reporting and Registries*, Pew Center on Climate Change, Arlington, VA, mimeo.
- PricewaterhouseCoopers (2010), *A Framework for Greenhouse Reporting*, PricewaterhouseCoopers, New York, NY, mimeo.
- Rumlet, R.P. (1974), *Strategy, Structure and Economic Performance*, Harvard University Press, Boston, MA.
- Sahlin-Anderson, K. (2006), "Corporate social responsibility: a trend and a movement, but of what and for what?", *Corporate Governance*, Vol. 6 No. 5, pp. 595-608.
- Savitz, W. and Weber, K. (2006), *The Triple Bottom Line*, Jossey-Bass, San Francisco, CA.
- Schaltegger, M.B. and Burritt, R. (2006), *Sustainability Accounting and Reporting: Development, Linkages and Reflection: An Introduction*, Springer, New York, NY.
- Senge, S. (2010), "ACCT 497 B: an introduction to sustainability accounting and reporting", Accounting Department, College of Business and Economics, Western Washington University, available at: [www.cbe.wvu.edu/CourseInstructor.asp?CourseAbbr=ACCT&CourseNum=497B&PageLevel=4](http://www.cbe.wvu.edu/CourseInstructor.asp?CourseAbbr=ACCT&CourseNum=497B&PageLevel=4) (accessed December 2010).
- Singh, J.V. and Lundsden, C.J. (1990), "Theory and research in organizational ecology", *Annual Review of Sociology*, Vol. 16, pp. 161-195.
- Sisaye, S. (2012), "An ecological analysis of four competing approaches to sustainability development: integration of industrial ecology and ecological anthropology literature", *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 8 No. 1, pp. 18-35.
- Sisaye, S. and Birnberg, J.G. (2010), "Organizational development and transformational learning approaches in process innovations: a review of the implications to the

- management accounting literature”, *Review of Accounting and Finance*, Vol. 9 No. 4, pp. 337-362.
- Sisaye, S., Birnberg, J.G., Bodnar, G. and Christofi, P. (2004), “Total quality management and sustainability reporting: lessons from social soundness analysis”, *Internal Auditing*, Vol. 19 No. 5, pp. 32-39.
- Stone, M. (2003), “Is sustainability for development anthropologists?”, *Human Organization*, Vol. 62 No. 2, pp. 93-99.
- Sustainable Asset Management (SAM) (2010), “Sustainable investing”, available at: [www.sam-group.com/html/main.cfm](http://www.sam-group.com/html/main.cfm) (accessed December 2010).
- Sustainability Index (2010), “Dow Jones sustainability indices in collaboration with Robeco SAM”, available at: [www.sustainability-indexes.com/06\\_html/indexes/djworld\\_super\\_sectorleaders.html](http://www.sustainability-indexes.com/06_html/indexes/djworld_super_sectorleaders.html) (accessed February 2011).
- (The) Accounting for Sustainability Group (2006), “Accounting for sustainability: introduction and executive summary”, A report from the Accounting for Sustainability Group convened by HRH The Prince of Wales, December 5, mimeo.
- Unerman, J., Bebbington, J. and O’Dwyer, B. (2007), *Sustainability Accounting and Accountability*, Routledge, London.
- United Nations Global Compact (2009), “Overview of the UN global compact”, available at: [www.unglobalcompact.org/AboutTheGC/index.html](http://www.unglobalcompact.org/AboutTheGC/index.html) (accessed December 2010).
- United States Agency for International Development (2002), *Social Soundness Analysis*, Mimeo, Washington, DC.
- United States Agency for International Development (2010), “USAID 2010 agency sustainability plan”, available at: [www.usaid.gov/](http://www.usaid.gov/) (accessed February 2010).
- University of South Australia (2010), “ACCT 3010. Sustainability accounting and reporting”, available at: [www.unisanet.unisa.edu.au/courses/course.asp?Course=105462&Year=2010](http://www.unisanet.unisa.edu.au/courses/course.asp?Course=105462&Year=2010) (accessed December 2010).
- University of South Florida, St Petersburg (2010), “MBA program in corporate social responsibility”, available at: [www.stpt.usf.edu/cob/graduate\\_studies/index.htm](http://www.stpt.usf.edu/cob/graduate_studies/index.htm) (accessed December 2010).
- US Environmental Protection Agency (2010), *Sustainable Development*, US Environmental Protection Agency, Washington, DC, available at: [www.epa.gov/ebtpages/pollsustainabledevelopment.html](http://www.epa.gov/ebtpages/pollsustainabledevelopment.html)
- US Securities and Exchange Commission (2010), *SEC Issues Interpretive Guidance on Disclosure Related to Business or Legal Developments Regarding Climate Change*, US Securities and Exchange Commission, Washington, DC, Press Release, January 27.
- Vann, J.W. and White, G.B. (2004), “Sustainability reporting in the accounting curriculum”, *Journal of Business & Economics Research*, Vol. 2 No. 12, pp. 17-30.
- Vondal, P.J. (1988), “Social and institutional analysis in agriculture and natural resources management project assistance: suggestions for improvement from Africa Bureau experience”, Social/Institutional Analysis Working Paper No. 2, Office of Development Planning, USAID, Bureau of Africa, March, Washington, DC.
- Wallace, P. (2000), “Assurance on sustainability reporting: an auditor’s view”, *Auditing: A Journal of Practice and Theory*, Vol. 19, Supplement, pp. 53-65.
- Wiedmann, T. and Lenzen, M. (2006), “Triple-bottom-line-accounting of social, economic and environment indicators: a new-life-cycle software tool for UK businesses”, Sustainability – Creating the Culture, Third Annual International Sustainable Development Conference, Perth, November 15-16.
- Wolcott, S. (2010), “Sustainability accounting: what it is and how to feed it”, CPE Workshop No. 40, American Accounting Association, San Francisco, CA.

World Bank Group (2003), "Social analysis sourcebook", available at: [www.worldbank.org/socialanalysis](http://www.worldbank.org/socialanalysis) (accessed December 2010).

World Resource Institute and World Business Council for Sustainable Development (2009), "Product life cycle accounting and reporting standard", The Greenhouse Gas Protocol Initiative, Review Draft for Stakeholder Advisory Group, Geneva, November.

### Further reading

Batie, S.S. (1989), "Sustainable development: challenges to the profession of agricultural economics", *Proceedings of the American Agricultural Economics Association*, Vol. 71 No. 5, pp. 1083-1101.

Brundtland Report (1987), *Our Common Future, The World Commission on Environment and Development*, Oxford University Press, New York, NY.

Etzioni, D. and Ferraro, F. (1986), "Management in context: an essay on the relevance of culture to the understanding of organizational change", *Journal of Management Studies*, Vol. 23 No. 6, pp. 587-607.

### About the author

Dr Seleshi Sisaye is a Professor of Accounting at the Palumbo-Donahue School of Business, Duquesne University. His research interests are in organizational sociology, management control systems, process innovations, sustainable development, and reporting. His publications have appeared in accounting, management, sociology, and international development journals. He has published over 30 refereed articles, three scholarly books, and numerous conference proceedings and papers. He has assumed leadership positions including President, Secretary-Treasurer, and Conference Program Chair within the Accounting, Behaviour and Organization Sections of the American Accounting Association. He earned two PhD degrees in Development Sociology from Cornell University and Accounting from the University of Pittsburgh. Dr Seleshi Sisaye can be contacted at: [ssisaye@gmail.com](mailto:ssisaye@gmail.com)