Organizational development and transformational learning approaches in process innovations

A review of the implications to the management accounting literature

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Abstract

Purpose – The purpose of this paper is to apply the organizational learning framework to the management accounting literature to better understand why management accounting innovations succeed or fail in organizations.

Design/methodology/approach – A theoretical framework integrating diffusion and organization learning theories is developed. Diffusion theory is used to describe the process whereby the innovation is implemented. Argyris’ and Argyris and Schon’s theory of organizational learning is used to describe the type of learning – single loop or double loop – required by the innovation. Finally, the works of Attewell, and of Schulz relating to organizational learning, and of Rogers and of Sandberg relating to adoption and diffusion theories, were utilized to identify and understand the potential pitfalls faced by managements implementing an accounting innovation.

Findings – The paper advances the notion that an organization’s approach to learning and innovation should be of interest to management accounting researchers. The single-loop (incremental/organizational development (OD)) and the double-loop (radical/organizational transformation (OT)) learning influences the adoption (stage one) and diffusion (stage two) strategies that are appropriate for the design and implementation of management accounting innovations.

Originality/value – The paper makes an important contribution to the behavioral accounting literature by integrating sociological diffusion and organizational learning behavior literatures and relating them to management accounting research.

Keywords Learning organizations, Management accounting, Innovation, Organizational development, Organizational restructuring, Process management

Paper type Conceptual paper

Introduction

Organizational learning has been viewed as a source of competitive advantage. It helps organizations respond to changes in their institutional environments and adopt...
innovations that will improve their performance. Organizational learning has been viewed as entailing "new insights and modified behavior. [It] occurs through shared insights, knowledge, and mental models" (Stata, 1989, p. 64). Researchers from a variety of diverse disciplines argue that an organization's effective utilization of innovations is enabled primarily by an appropriate learning strategy (Lant and Mezias, 1992; Attewell, 1992; Mezias and Glynn, 1993; Fichman and Kemerer, 1997; Schulz, 2001). Learning increases the organization's ability to adapt to its changing competitive environment and successfully implement appropriate strategic changes intended to improve its performance (Windrum, 2001; Lopez et al., 2005). Thus both the adoption and diffusion of innovations and organizational learning are important to organizations faced with the need to innovate to improve their performance (Sandberg, 2007).

In the organizational behavior literature, organizational learning is defined as the study of how organizations adapt to new and changing environments through the adoption and integration of new and innovative practices (see Davenport, 1993). Thus it is related to diffusion analysis in sociology which studies how innovations are disseminated across a particular population (Rogers, 1971, 1995; Rogers and Shoemaker, 1971) and within an organization (Sandberg, 2007). In this paper we apply the organizational learning framework to the management accounting literature to better understand why management accounting innovations succeed or fail in organizations.

We develop a theoretical framework integrating diffusion and organization learning theories. We use diffusion theory to describe the process whereby the innovation is implemented.

We use Argyris' (1992), and Argyris and Schon's (1978, 1996) theory of organizational learning to describe the type of learning – single loop or double loop – required by the innovation. Finally, we utilize the work of Attewell (1992) and Schulz (2001) from organizational learning, and Rogers (1971, 1995) and Sandberg (2007) from adoption and diffusion theories to identify and understand the potential pitfalls faced by management's implementing an accounting innovation.

Contributions to the management accounting literature
The management accounting literature contains many papers describing process innovation strategies and their implementation (see Anderson, 1995; Anderson and Young, 1999; Argyris and Kaplan, 1994; Gosselin, 1997; Jones and Dugdale, 2002; Hansen et al., 2003). What is needed is a framework within which to view these changes. Such an integrative framework would assist managers in successfully implementing any changes in the organization's management accounting system and aid researchers in understanding why the adoption and diffusion of some apparently desirable management accounting innovations have only mixed results.

The central contribution of our paper is to provide an organizational sociological approach to study organizational development (OD) and organizational transformation (OT) management accounting innovations. It will aid managers in planning and implementing management accounting innovations. The framework will also assist accounting researchers to understand why some management accounting innovations succeed and others fail and why the innovation may succeed in one firm and not in another.

By providing such a framework within which innovations can be analyzed and better understood, the paper also responds to two limitations recently noted in the management accounting literature. First, it provides the theoretical framework that Hansen et al. (2003) argued is needed to better understand the outcomes of management accounting
innovations. Second, it follows the suggestion of Merchant et al. (2003) for a multi-disciplinary approach in behavioral accounting research. This affords a richer basis for research and a framework within which potential new research issues can be identified.

Specifically, we attempt to provide insight into two important and inter-related questions:

1. Why are some management accounting innovations more widely adopted than others?
2. Why is a particular innovation successfully implemented and/or disseminated in some organizations but not in others?

The paper consists of five sections. Section one addresses the overall process innovation framework used in the paper. It describes further the two innovation dimensions: extent and scope dimensions of organizational learning as they relate to the adoption-diffusion approach of process innovations in management accounting and control systems. Section two discusses the OD and OT approaches to organizational learning. Section three provides an overview of the organizational learning literature within the context of the organizational behavior literature. The fourth section elaborates the sociological dimensions of adoption-diffusion and organizational learning. The implications of these approaches to management accounting innovations are addressed in this section. The final section concludes the paper.

**Section one: an overview of the process innovation framework in management accounting systems**

Innovation involves learning as the organization members adapt to and accept the change. This learning can be described along two dimensions. One, which we label extent, describes the degree to which an innovation affects the structure of the organization's management accounting system. The other, labeled scope, describes the portion of the organization affected.

Specifically, the extent of organizational learning is defined as the degree to which the innovation affects/alters the organization's (management accounting) structures and systems. Extent is associated with the two types of learning: single loop (technical change within an existing system, i.e. gradual-incremental) and double loop (the adoption of an entirely new system, i.e. radical-transformational) (Argyris and Schon, 1978, 1996).

On the other hand, scope refers to the breadth of an innovation's impact, and is defined as the ubiquitousness of innovation within the organization. It addresses the question of how many units within the organization are affected by adopting the innovation. Thus, scope can be viewed as referring to the degree to which the innovation is integrated into the core activities of the organization. Taken together the extent and scope of the innovation describe the manner in which learning affects the structures and processes of the organization.

**Scope dimensions: autonomous and systemic innovations**

We have adopted Teece's (1996) two dichotomous dimensions of scope: autonomous and systemic. Autonomous refers to those stand-alone innovations that are confined to a few subunits of the organization. Systemic are integrative innovations that have organization-wide impact.

**Autonomous innovations.** Autonomous innovations are those innovations directed towards a specific function, production system, operating activity or subunit of the organization. They can be directly implemented in manufacturing and production
technology at the departmental/divisional level without affecting other units of the organization. Autonomous innovations are more likely to be limited to technological changes. Their success depends on whether it can be demonstrated that the innovation contributes to the economic advantage of the adopter. Early adopters have at least a temporary advantage over later adopters. For example, a quality control innovation may win more customers, including their competitors’ customers.

Systemic innovations. Systemic innovations affect multiple units within the organization. They are intended to improve broad areas of organization’s activities. They require inter-departmental coordination and interaction. Unlike technological innovations, they involve heterogeneous groups/units and may lead to conflict in the organization because of different goals, values and interests in those units. As a result, systemic innovations require much greater coordination of resources and activities and sharing of information across divisions, functional areas or programs that may have conflicting goals. This can lead to conflict among group members (see Rowe et al., 2008). However, if the organization does not have structures to facilitate systemic innovations, the organization must have innovation champions who work across units and have shared values. These champions must promote boundary-spanning and minimize/overcome organizational and departmental resistance to innovations.

Organizational learning: single- and double-loop learning
Argyris and Schon (1978, 1996) have related organizational learning to the acquisition of new knowledge. They described two types of organizational learning: single-loop and double-loop learning. Table I compares the incremental change strategies in single-loop learning, and the radical change approaches associated with double-loop learning.

In general, organizations have two types of “innovations.” These are incremental (single loop) and discontinuous (double loop). Incremental changes are adaptations with an already established/existing system/framework and require limited acquisition of little, if any, new knowledge. In contrast, discontinuous changes occur when the organization adopts a new system/framework to improve its performance. Responding to discontinuous changes requires significant changes in the organization’s activities and, therefore, the acquisition of entirely new knowledge. While the focus of this paper is on discontinuous change in the environment (double-loop learning) and the link between innovation and organizational learning, we initially will describe both types of learning below to clarify the nature of double-loop learning.

Single-loop learning. Argyris (1992) and Argyris and Schon (1978) have used single-loop learning to describe those accretions to an organization’s knowledge that are intended to find better ways (i.e. new knowledge) of doing things the organization already is doing. The objective of single-loop learning is to find and implement new methods intended to improve organizational performance within the existing systems. The changes are gradual and occur in small increments. The learning process leads to a step-by-step accumulation over time of new skills, techniques and knowledge that have the potential to contribute to the organization’s implementation and use of existing systems. It may be a trial-and-error process. Knowledge is acquired by the organization as the result of the innovation, i.e. formal learning occurs which can lead to modifying or updating existing knowledge and/or mastery of new skills.

Single-loop learning is ubiquitous in organizations. Organizations regularly make incremental changes to elements of their management accounting systems as they learn more about their environment, for example, obtaining better cost estimates of
variables already included in a costing system or adding a dimension to the control system that does not change the system. Such changes are in a relative sense decorative and have limited impact on the portion of the organization affected by the change. When incremental changes are observable and successful at the unit level, they have the potential to be diffused to other units and divisions within the organization.

**Double-loop learning.** Double-loop learning is second-order learning that leads to reorientation by the organization (Lant and Mezias, 1992). It is associated with discontinuous change in the organization’s environment (Bessant, 2005), and the development of new paradigms to do things already being done in new and different ways. Unlike single-loop learning, double-loop learning involves radical changes that require the acquisition of significant amounts of new knowledge and greater effort on the part of the organization. This requires identifying problems impacting the organization and/or potential changes in the organization’s systems that will benefit the organization, presenting them to the appropriate segment of that organization, convincing them of the efficacy of the innovation and, finally, managing the innovation’s implementation. Double-loop learning can be

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Incremental changes</th>
<th>Transformational changes</th>
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<tbody>
<tr>
<td>Types of learning</td>
<td>First-order learning</td>
<td>Second-order learning</td>
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<tr>
<td></td>
<td>A routine incremental learning whose objective is to maintain or restructure existing rules, regulations, culture and relationships without fundamentally changing existing organizational culture</td>
<td>An organization attempts to explore several new alternatives of technology, innovations, and rules to adapt to environmental changes. Adaptation may involve restructuring existing overall norms and behaviors instead of specific activities so that the organization develops new skills, culture, norms and behavior</td>
</tr>
<tr>
<td>Occurrence of learning</td>
<td>Single-loop learning</td>
<td>Double-loop learning</td>
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<td></td>
<td>“An ability to detect and correct deviations from a set of values and norms”^a</td>
<td>“Occurs when the organization also learns how to detect and correct errors in the operating norms themselves”^a</td>
</tr>
<tr>
<td>Implementation strategy</td>
<td>Learning focuses on how to better implement the incrementally revised strategy</td>
<td>Learning focuses on experimentation, development of new constructs, formulation of new goals, strategies, products and mission</td>
</tr>
<tr>
<td>Learning outcomes</td>
<td>Convergence learning whereby organizations make incremental changes in strategy, structure and systems to remain competitive</td>
<td>Reorientation learning occurs when the organization realizes that the current system and theory is not working and needs to be changed through the creation of new structures, systems, strategy, paradigm and cognitive framework</td>
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Note: ^aVan de Ven (1986, p. 603)

Sources: Adapted from Lant and Mezias (1992), Mezias and Glynn (1993), Stata (1989), Tushman and Romanelli (1985) and Van de Ven (1986)
characterized as occurring when an organization is able to “detect and correct errors in the operating norms” and activities of the organization (Van de Ven, 1986, p. 603). Thus, double-loop learning significantly modifies existing operating activities. It enables organizations to institute essentially new norms and procedures to transform organizational activities. In other words, the organization must significantly change existing procedures, rules and modes of operating activities and replace them with new and fundamentally different methods of conducting business. In accounting, double-loop learning occurs when an organization has instituted or adopted integrated management control systems, for example, the adoption of balanced scorecard (BSC) as described by Kaplan and Norton (2001).

Argyris (1992) and Argyris and Schon (1978) classification of double-loop learning parallels radical-transformational learning. Radical change involves OT of existing mission, strategy, policies, culture, leadership and structural arrangements. The change requires employees to adopt new cultures and approaches to the work environment that may be contrary to prior behaviors. Sandberg (2007) noted that radical innovations require new behaviors that foster enthusiasm among its champions and core team members. Because radical innovations create ambiguity and uncertainty in an organization’s members, Sandberg (2007) argues that they require “champions.” The champions’ role is to promote change and commit to them by displaying persistence and courage. They utilize formal and informal networks to communicate the innovation and to sustain enthusiasm for the innovations among employees within the organization.

While double-loop learning can be considered to be a continuum, consistent with Sandberg (2007), we describe radical innovations and double-loop learning as dichotomous. At one end it is has an autonomous-division/unit-level orientation. At the other it is a systemic organization-wide strategy. That is, the organizational scope of double-loop learning depends whether it is autonomous (limited/divisional) or systemic (extensive/organization wide) for process innovations. When innovations in accounting follow double-loop learning strategies, they have both autonomous-technical and systemic-administrative dimensions and are intended to facilitate the implementation of long-term organizational plans and short-term divisional objectives.

In management accounting these processes include a wide variety of administrative systems, e.g. organization-wide performance measurement and resource allocation systems, and information systems development and change. These innovations are designed to improve internal control and accounting systems, organizational structures, administrative processes, and departmental coordination. Control and motivation systems, including cost and budget systems, are examples of administrative innovations in accounting systems that support the operating activities of the organization and impact more than one functional area of the organization.

The management accounting literature contains many examples of double-loop learning. Ness and Cucuzza’s (1995) discussion of organizational changes at Chrysler and Safety-Kleen parallels double-loop learning in systemic innovations. The double-loop approach is illustrated when an autonomous activity-based costing (ABC) system (the innovation) brought dramatic changes in the organizations rather than only technical improvements. ABC gradually evolved from a costing system into an activity-based management (ABM) system and became a systemic innovation to manage costs, processes and market strategies and transformed organizational management systems. For example, Chrysler integrated ABC as a continuous improvement program where it was jointly managed by the controller and the vice-president of continuous improvement programs to move the focus of ABC from a cost control to a strategic planning system to manage processes and market synergies.
At Safety-Kleen, the strategic approach was to use ABC-based performance measures using industry benchmarks for rewarding plant managers for control of unit costs for materials processed in their plants by moving away from the regular performance measures based on operating budget standards. In cases of Chrysler and Safety-Kleen, both managers followed prospectors’ strategies where ABC was integrated into critical business management systems to a greater extent than any of their competitors. Moreover, their managers perceived that the adoption of ABC had strategic and long-term planning implications and those radical administrative and technical improvements could be achieved through ABM by managing processes and market synergies. Accordingly, their learning processes combined both incremental and radical approaches. Both front-line managers and rank and file employees were persuaded to accept ABC through education, persuasion as well as trial-and-error experimentations. The Chrysler and Safety-Kleen transition from ABC to ABM can be considered an example of double-loop learning.

The Chrysler’s and Safety-Kleen’s experiences demonstrate that organizations can make the transition from ABC to ABM if they adopt the double-loop autonomous and systemic innovation strategies. When the innovation has autonomous double-loop learning approach, ABC is used as a cost control program to manage divisions/units performances. On the other hand, when the innovation evolves from autonomous to systemic double loop, the shift from ABC to ABM occurs. The systemic double-loop learning mode entails the use of ABM to manage both costs and organizational processes related to markets, synergy and product developments. This transition from ABC to ABM occurs when double-loop learning encompasses both autonomous and systemic innovations.

The introduction of a new incentive scheme using non-financial measures such as that described by Banker et al. (2000) or the introduction of BSC (Kaplan and Norton, 2001) would be examples of new management accounting knowledge (adoption) that could lead to radical organizational change, i.e. transformational learning (diffusion). Banker et al. (1996) suggested that the initial adoption of an innovation (initiation) may be technical and autonomous, i.e. limited in its impact on the organization and its systems. This is related to our first question of why some innovations are adopted. However, ultimately their initial successful adoption by a single unit or only a few units may result in its being diffused throughout the organization, i.e. an administrative innovation. For example, the initial adoption of ABC is technical and tends to be autonomous in nature, i.e. limited to a division or a unit. However, the successful adoption-implementation of ABC in the unit can lead to its diffusion to the other units or divisions of the organization. This can be the result of inter-dependent relationships among divisions/units or its obvious success. This is related to our second question of why some innovations are more successfully diffused than others.

In contrast to innovations that are limited to a single unit or begin by being implemented within a single unit, an innovation that initially affects multiple units may require new (sub) systems to support the innovation and to provide inter-unit coordination. For example, implementing an organization-wide ABC system may require more extensive data gathering and reporting than previously was the case. It will become apparent that planning, coordinating and the designing of supporting information subsystems need to be put in place to ameliorate coordination difficulties among the various units/divisions that have adopted the accounting innovations. Since autonomous and systemic innovations are the types of management accounting innovations with which researchers and consultants typically are concerned (Gosselin, 1997; Kaplan and Norton, 2001; Rowe et al., 2008), the remainder of this paper is concerned with understanding innovations that make a radical change in the management accounting system.
Section two: OD and OT learning strategies in management accounting innovations

Table II describes the differences between OD and OT, the two forms of radical transformation. The table indicates that while the OD approach is organizationally self-contained (autonomous), i.e. limited to a department/division, the OT strategy has an integrative (systemic) scope that is organization-wide in scope. Both OD and OT follow a radical strategy embedded in double-loop learning. They reflect the administrative innovation strategy instead of the narrowly defined technical innovations. Administrative innovations require that the unit/division that pursues OD or that undertakes OT strategy will accomplish a significant organizational change. These changes likely reflect the adopter’s perception of a need to change in order to meet competition.

**OD process innovation strategies**

The OD intervention strategy is described as a gradual, double-loop, step-by-step, incremental process that focuses on division/unit-level interventions. The approach emphasizes the importance of leadership and change agents (champions) in change management. As such, OD stresses cultural change and education, which focus on changing and reorienting employee attitudes, behaviors, work habits and beliefs to facilitate the acceptance of the innovation. The OD approach to change is a gradual adjustment and is phased in over time. It emphasizes the importance of employee involvement, participation, consensus building and, ultimately, the acceptance in the change process by those working in the unit(s).

According to Buller and McEvoy (1989), in OD:

[...]

the initial adoption of a planned organizational change is a function of a number of individual, group, and organizational factors. These factors combine to determine the overall level of acceptance and commitment to the change by organization members (p. 35).

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Organizational development</th>
<th>Organizational transformations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization types</td>
<td>Low performing organizations that are likely to use participative/collaborative style to gradually improve performance in the changing environment</td>
<td>High performance organizations that employ directive/coercive leadership style to take radical action to transform their organizations to survive and strive in the new conditions</td>
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<tr>
<td>Intended environmental impacts</td>
<td>Minimal due to incremental improvements</td>
<td>Large scale because of revolutionary changes</td>
</tr>
<tr>
<td>Change management strategy</td>
<td>Incremental involving improvements &quot;within already accepted framework&quot;- fine tuning strategy</td>
<td>Discontinuous shifts in framework-revolutionary strategy</td>
</tr>
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<td></td>
<td>First-order change in improving/revising the organization’s strategy</td>
<td>Second-order change where there is rethinking the organization’s mission</td>
</tr>
<tr>
<td>Styles of change/leadership</td>
<td>Participative/collaborative leadership style to change-consultative approach</td>
<td>Directive/coercive leadership style to change-top-down approach</td>
</tr>
</tbody>
</table>

Table II.
A comparison of OD and OT change intervention strategies

**Sources:** Adapted from Dunphy and Stace (1993), Porras and Hofer (1986), Porras and Silvers (1991), Porras et al. (1982) and Sisaye (2001)
These factors are supported through training, employee involvement, promotion and a combination of intrinsic as well as extrinsic rewards (Butler and McEvoy, 1989). The objective of OD not only is the improvement of administrative structures and organizational performance but also to foster the personal growth of employees that is expected to facilitate future learning.

**OD and incremental change strategy.** The line in OD between single-loop and double-loop learning can be illustrated by the organization’s allocation of overhead. As the allocation of overhead costs is expanded to include several cost pools and drivers to allocate overhead costs as in ABC the movement from single- to double-loop learning becomes clearer. This can be considered a radical change when the ABC system not only changes the accounting system from one controlling costs and expenditures in a division (autonomous double loop) to one where ABC is integrated into the financial performance measure and reporting systems and is part of managing processes in the organization (systemic double loop).

When the organization-wide intervention requires systemic change, it can create coordination problems. Ansari and Euske (1987) investigated the conflict over cost accounting systems between headquarters and the military repair installations. The military repair installations continued to follow the old system, but reported to headquarters using the new system, thereby defeating the intent of the designers of the new system. Thus the management of cost data was primarily influenced by socio-political considerations rather than technical considerations creating coordination problems between the repair installations and headquarters. Headquarters failed to recognize that a successful implementation of the new system necessitated an institutional environment that led management to accept the change either because of its obvious merit or its support by headquarters. In the environment they described, the repair depots were physically removed from headquarters in Washington DC and were decentralized operationally as well. Announcing the new system was not sufficient to overcome the resistance to change which, in fact, was not even observable by headquarters.

The existence of employee resistance to a change/innovation is present in the adoption and implementation of accounting innovations, particularly in traditional manufacturing organizations. Ness and Cucuzza (1995) reported that employee resistance was the “single biggest obstacle for ABC implementation” (p. 130). Introducing changes can lead to fear and ambiguity among employees regarding job security, and new performance measures can become sources of opposition and resistance to innovations by the employees.

Both Chrysler and Safety-Kleen overcame employee resistance through persuasion and education. They followed a planned OD gradual change strategy where education about ABC generated consent and commitment from employees. Seminars and workshops were conducted regularly. At the same time, experimentation with the introduction of ABC at a plant and at division levels facilitated involvement of local and front-line managers in the implementation of ABC.

**OD and autonomous double-loop change/learning strategy.** The autonomous double-loop OD approach to process innovation following a gradual change strategy that tends to be evolutionary and incremental in nature has been popular in continuous improvement programs such as total quality management (TQM) (Sisaye, 2001). TQM is based on the principles of education, training and organizational learning to sustain continuous improvement and change in organizational performance. TQM uses teamwork, inter-divisional cooperation, cultural change and institutional development in planning and implementing successful process innovations. TQM’s approach of
bottom-up participation and the use of change leaders (e.g., quality circles) have been advocated for production and quality improvement programs.

The incremental-gradual change strategy of TQM is reflected in various accounting control systems including ABC. These changes have been primarily incremental, involving procedural and operating changes (Sisaye, 2005). New measurement and reporting techniques in management accounting could fit into the technical category, e.g., changing the basis for cost allocation within a unit or computerizing an existing data collection/analysis activity. Accounting as an administrative tool involves planning, budgeting, internal control and reporting systems that affect managerial communication and decision-making. Accordingly, organizational contextual and process factors including culture shape the accounting system and the degree to which planned administrative innovative changes in accounting systems can be implemented (Anderson and Young, 1999; Young, 1992).

OT process innovation strategies

OT refers to administrative innovations that have a wider systemic scope. In contrast to OD, OT is present when the change is targeted at changing organizational structures as well as the individual and group members of the organization rather than focusing on accounting-related systems within a particular unit. OT innovation(s) are, as the name suggests, characterized by major strategic changes in the organization’s direction. It has a broader focus beyond the cultural change programs (OD) that are targeted at changing individual employee behavior at division level (Porras and Silvers, 1991). OT focuses on broader/integrative scope of comprehensive change in organizational paradigm. They typically are the result of external forces instigating the change.

OT and radical change/systemic double-loop learning strategy. OT accompanies the business process reengineering (BPR) approach, which follows systemic double-loop learning. Davidson (1993) has suggested that BPR programs focus on business transformation (another term for OT), followed by organizational change. Accordingly, the philosophy of “transformation focuses first on business processes and infrastructure, and second on organizational structures and systems.” In other words, business activities can be structured to improve performance “and to then drive organizational change to align with the new business model” (Davidson, 1993, p. 77).

The OT-BPR business transformation strategy assumes that organizational innovations encompass structural changes that involve beyond improvements in operational performance (Sisaye, 2001). The focus of the transformation is on the development of core competencies and infrastructure to support core business activities in a changing environment. The OT approach recognizes the utility of open systems approach to institutionalize behavioral and structural strategies of change (Young et al., 1981).

Comparing OD and OT intervention strategies for accounting innovations. While the OD and OT frameworks approach accounting innovations as administrative innovations, they differ on the scope (impact) of the innovation dimension and the magnitude of change in management accounting and reporting systems. The magnitude of the innovation may depend on the complexity of organizational structures and the urgency with which the innovation is perceived to be required to become organization-wide strategy. The focus of accounting innovation initially may be limited to a single unit or department (OD) if the innovation is complex or is significantly different than existing practices. However, if the need for change is perceived to be urgent, the innovation is much more likely to be initially implemented organization-wide (OT).
Organizational structures may create impediments to diffusion of innovations in organizations. Accounting innovations that involve administrative control changes are more likely to be resisted than technical autonomous innovations that occur in manufacturing and production technologies, e.g. Ansari and Euske (1987). Similarly, the compensation system described in Banker et al. (1996) tended to focus on routine operations at the outlet level and had the characteristics of a technical innovation. Its successful dissemination transformed the technical focus to an administrative dimension and affected the management of compensation systems at several outlets throughout the organization. The impact of organizational structure on the diffusion of administrative innovations, particularly accounting changes, is highly significant in performance evaluation and reporting systems. For example, Malmi’s (1999) study indicated that Finnish subsidiaries of multi-national firms were among the early adopters of ABC. He suggested that headquarters forcing the adoption decision to the subsidiary level in effect dictated/facilitated the adoption decisions. This allowed central management to follow an OD gradual-incremental learning strategy and to experiment with the innovation at a unit or division level. This OD approach affords central management the opportunity to better understand how the innovation can best be introduced into a unit. When the innovation is successful in the initial unit(s), it not only reinforces management’s plan to move forward with the innovation, but also helps management to better understand how to implement the innovation and, ultimately, increases the expectation that the innovation can be adopted successfully by other divisions. This gradual adoption is consonant with an OT strategy and allows central management to diffuse the innovation to other units within the organization with reduced structural resistance and fewer disruptions to normal operating activities.

Thus OD and OT intervention strategies can be seen to play complementary roles in both the adoption/implementation and diffusion/dissemination decisions of accounting innovations. While the OD intervention is critical in the diffusion/dissemination decision, OT intervention is required in the adoption/implementation process organization-wide. The successes of OT organization-wide innovations are related directly to the successful implementation of OD innovations at the divisional level. Thus OD and OT interventions can have broader implications on the adoption and diffusion of accounting innovations. They both pursue complementary learning strategies for management accounting innovations: autonomous double loop for OD and systemic double loop for OT. Accordingly, the autonomous change reflects the adoption (stage one) in OD and the systemic change displayed in diffusion (stage two) of organizational learning and innovation strategies.

Section three: organizational learning and change processes
Section three reviews the organizational behavior literature on organizational learning. In this section, we develop a framework that relates the organizational sociology/behavior literature to the management accounting literature.

An overview of the literature on organizational learning
Schulz (2001) suggested that the learning process usually follows a sequence of steps/stages that reflect how the subunit’s/organization’s experience influences the process by which knowledge is adopted and disseminated to peers and supervising units. He argued the organizational learning and change processes usually follow an evolutionary growth process in terms of the “number of processes that create new knowledge or modify existing knowledge” (p. 663). These processes start with how knowledge is gathered or
obtained (codified), followed by the extent to which it is analyzed (explored), and ultimately communicated (selectively diffused). Schulz described the process as having two inter-related stages. The first stage acquisition/production (adoption) consists of the gathering of knowledge/information, its codification and exploration. It is followed by the second stage, the dissemination/distribution (diffusion) processes.

Nevertheless, when changes in the organization’s external environment persist and the organization faces a crisis, this can overcome management’s resistance to change and accentuate the need for organizational learning, and proactive change and adaptation strategies of development and transformation. When the organization recognizes the need to innovate to solve a problem, particular innovations are championed by opinion leaders who both perceive the existence of the problem and ascertain what they believe to be a viable solution. These opinion leaders typically are executives or front-line managers who communicate and champion the innovation to lower level managers and/or employees. This represents the first stage of learning (adoption) illustrated in Figure 1. When managers/employees accept and implement the innovations at the division/unit level, the second stage of process (diffusion) has taken place within the subunit. The implementation of a successful organization-wide innovation requires a second stage of learning and diffusion. These two stages relate to the two questions we identified at the outset. Stage one considers why certain innovations are more likely to be implemented. Stage two helps us to understand why the dissemination within the organization of some accounting innovations is more successful than others.

Figure 1 describes the process whereby an organization becomes aware of the need to change (innovate) and later disseminates (diffuses) the innovation to other parts/all of the organization. It traces how the adoption-diffusion process is shaped by a variety of activities in which individuals, change agents and organizations participate in the learning/innovation processes. Accordingly, the learning process is analogous to the two phases described by Attewell (1992): awareness of the innovation and acquisition of the know-how required to implement the new process. In Figure 1 the term diffusion refers to the dissemination of the innovation within the organization rather than its spread to other organizations. For example, the experiences of Safety-Kleen with ABC and ABM illustrates the two stages of innovation, where at stage one, the adoption of ABC was limited to a single division-wide intervention making it an OD double-loop autonomous learning strategy. After the success of the ABC innovation, it was disseminated to other divisions in the organization during stage two, diffusion of innovations at the organization level, making it ABM and double-loop systemic learning.

These findings are reflected in the pattern of adoption and dissemination of an innovation described in Figure 1. Figure 1 also incorporates the results of Sandberg’s (2007) study, which reported that top management’s (champions) deliberate support and involvement in large organizations (as is the case with Chrysler and Safety-Kleen Corporations) become necessary to adopt and disseminate the innovations throughout the organizations. In this view of learning, the adoption processes included the acquisition of knowledge (Schulz, 2001) and the diffusion stage encompassed the dissemination of that knowledge to targeted markets and differentiated customers (Sandberg, 2007). The diffusion-communication processes thus become central in the dissemination of new practices and modes of behavior across all organizational members. Nevertheless, there are constraints inherently associated with the adoption of innovations.

Figure 1 lists several reasons that have been associated with both the successes and the failures of diffusion of innovations. One possible cause of a failed innovation is that
Figure 1. The adoption-diffusion processes of innovations in management accounting systems

Sources: Adapted from Sandberg (2007) and Wejnert (2002)
the process used to facilitate the adoption of the innovation was flawed. As Brunsson (1982) noted, there is a difference between the economic decision (selecting the best course of action) and the political process of implementing that course of action. The former typically relies on formal cost-benefit analysis. The latter is a more political process and involves persuasion and coalition formation (Cyert and March, 1963; Pfeffer, 1992). It may not be politically feasible to implement the “best” course of action or outcome.

Thus, a successful adoption requires the opinion leaders championing the desirable innovation to mobilize sufficient support for its adoption. We apply an evolutionary perspective to describe the two stages: adoption and diffusion processes of management accounting innovations. Figure 1 outlines the process and provides the general framework for the evolution of management accounting innovations. It describes the process from the demand (adoption/implementation) for innovation to the diffusion (dissemination) processes. The need for an accounting innovation begins when external environmental and internal constraints give rise to the perception of the need for organizational learning. It is the cumulative effects of both the constraints and the perceptions of a need for change that affects whether or not a specific organization at a particular time adopts an innovation to meet a particular perceived need.

Accounting innovations enhance organizational learning to promote growth and development. As organizations evolve over time, they create accounting mechanisms that serve to maintain organization stability and the status quo. Organizations develop new accounting rules to address “new problems that do not seem to be covered by existing rules and when these problems are fairly recurrent, consequential or salient” (Schulz, 1998, p. 845). This enables the organization to retain what has been learned from their experiences when it becomes “codified” in the form of rules and regulations, i.e. bureaucratization takes place (Schulz, 1998). However, this bureaucratization is not without its costs. The new mechanisms may inhibit subsequent learning and, as the result, diminish the likelihood of subsequent innovations by the organization. In the case of accounting, learning and innovation lead to the birth and codification of accounting rules. As organizations develop more rules, it increases the potential for greater bureaucratization and, in turn, the breeding of more rules which, in turn, may inhibit future learning experiences.

Specifically, Schulz (1998) stated:

As lessons from past experiences get encoded in rules or other systems of automated responses, new experiences become scarce. As a result, learning through further codification of experiences declines. Making rules and routines helps organizations respond to problems in a programmed and efficient way, but, at the same time, rules create a dangerous sense of familiarity with arriving problems that reduces the likelihood that new problems will be seen as opportunities to draw new lessons (p. 872).

Lawrenson (1992) described the bureaucratization of the organization’s decision making in British Rail. Prior to Margaret Thatcher’s becoming prime minister, British Rail was engineering driven. Its incremental learning had created values and mechanisms that reinforced the importance of maintaining a superior engineering. Decisions were made with the intent of maintaining an organization reflecting the highest engineering standards. British Rail responded to changes in the competitive environment by searching for engineering innovations. As the environment changed and economic-based issues became more important under Thatcher, the organization remained insensitive to the changing political environment. It required an explicit
intervention by the government to alter the organization’s orientation to learning and innovation (Dent, 1991).

Organizational learning approaches in the management accounting literature
Organizational learning has been identified as critical in promoting strategic cost accounting changes (Kaplan and Norton, 2001). The rise of new rivals, i.e. external constraints, leading to the perception by management of the need for a change in cost management system is illustrated by the rise of competition from Japan in a variety of industries including automobiles. This competition created a sense of a need to adapt on the part of US firms. The result was the adoption of a variety of new (for the US firms) management activities such as just-in-time technology (JIT), Five Sigma quality control and in accounting an increased interest in cost measurement, e.g. ABC (Anderson, 1995). However, the actual adoption of ABC was constrained by internal organizational structures.

Barnett and Hansen (1996) noted that the organization’s history and the lessons learned from past failures and/or accomplishments are internal constraints to the adoption and diffusion of an innovation/change. They are reflected in the organization’s internal structures related to strategy, policies, employees, and organizational culture including norms, shared values and behaviors. For example, Anderson and Young (1999) discovered that context and organizational factors affected the nature of the ABC system developed within a firm. They found that the complexity of the ABC system increased with the size of the group making the decision. This suggests that the system they adopted represented a compromise among the parties. The Anderson and Young (1999) study reveal that initially organizations may be rigid and resistant to change when they have stable routines and cultural practices that satisfy current performance levels and managers perceive no need to change. Ansari and Euske (1987) in a field study reported similar results. They observed resistance to change when “top management” in DC imposed a new costing method on the decentralized repair depots. Management of the depots were satisfied with the old system and, therefore, resisted the new method and continued to use the old costing method for managing their activities and adapted the data to the new system only for reporting to headquarters.

Over time, what are initially new accounting innovations tend to become institutionalized as autonomous operating procedures used to administer stable and routine functions. The bureaucratization of the innovation in management accounting leads to programmed rules and routines that later tend to be mechanistic and associated with efficiency of work procedures (Burns and Stalker, 1961). When mechanistic innovation prevails in day-to-day activities, management planning and control systems become more formal and institutionalized. Accounting tasks are centralized to handle operations and production activities that are routine, repetitive and programmable (Dirsmith and McAllister, 1982). Formal rules not only specify procedures, they also define employee roles. Accounting numbers, in effect, control employee behavior as well as the operating activities of the organization. Formal accounting control systems monitor employee performance and replace the use of personal and qualititative feedback and inter-personal relationships in control systems. In essence, technical innovations lead to the establishing of stable rules that can contribute to resistance to new mechanistic innovations.

The predominance of a formal intra-unit orientation, i.e. controllability, in the organization’s performance evaluation and reward systems has the effect of reducing interactions among units and discouraging the natural diffusion of innovation within the
organization. Each unit operates as a hierarchy. This favors stand-alone innovations and inhibits the flow of innovations across units (Schulz, 1998). The awareness of the need for inter-unit cooperation may increase when organizational problems have “thematic relatedness” or require joint dependence on the same resources as often is the case with accounting problems or procurement problems (Schulz, 1998). Under these circumstances, the central management of the organization can develop relatively generic common rule(s) that can be utilized by many or all of the organization’s subunits. When an innovation requires a large-scale abolition of old rules to eliminate obsolete systems and help to alter the system, the recommendation is that the organization undertakes a large-scale intervention program specifically intended not only to abolish old rules but also to replace them with new ones. It can be inferred that Schulz’s (1998) radical measures of rules changing are consistent with OT approach described in Section two.

Organizational learning of the sort contemplated in management accounting, e.g. ABC or BSC, requires a significant change in the organization’s rules and procedures. This involves a gradual-OD or radical-OT change strategy. This type of change is accompanied by organizational response to natural selection process of new forms (innovations) and results in transformational second-order change (double loop) learning. The BSC is an example of double-loop learning in management accounting, which stresses product development and new markets that focus on delivery of goods and services that meet customers’ needs. It emphasizes the user’s need to think beyond the traditional management accounting model of short-term profitability “outside the box” and integrate new dimensions into it. The introduction of non-financial measures of marketing, production and human resources management requires re-orientation, i.e. double-loop learning, by those involved in managing the organization. Davis and Albright (2004) reported the results of a quasi-experimental field study within a single banking organization. They suggested that those units that adopted the BSC showed superior performance when compared to those that did not. Speckbacher et al. (2003) reported data indicating the difficulty in the implementation of the BSC. The responses of the firms in their survey showed the evolutionary process required when organizations move from the traditional financial model to a new approach utilizing both financial and non-financial inputs required a longer time horizon to plan and implement.

In general, OD innovations involve both technical and administrative innovations in accounting. When OD focuses on technical improvements, accounting innovations address incremental changes that are targeted at formalization, specialization and efficiency in operations, e.g. work structures, processes or procedures and changes in individual and group behaviors. Damanpour (1987), Damanpour and Evan (1984) and West and Farr (1989) refer to these changes as having a micro-orientation focusing on division and/or departmental structural changes. On the other hand, when OD process innovation is accompanied by transformational changes, accounting changes entail administrative reform. The change is broader and addresses reorientation learning focused on new ways to do things, e.g. search for new market opportunities and product innovations, or seek for alternative responses to environmental changes. Fox-Wolfgamm et al. (1998) associated these changes with organizational adaptation commonly pursued by prospector organizations. Davis and Albright (2004) and Speckbacher et al. (2003) argued that BSC is successful in companies that are willing to invest in a longer time horizon to implement and realize the benefits of BSC. These characteristics are commonly associated with prospector organizations and support the argument that OD’s administrative innovations promote integrative and systemic changes when the time horizon is longer to support organization-wide (OT) interventions.
Van de Ven (1986) noted several factors that facilitate and inhibit the development of innovations associated with technical and transformational changes. He suggested that “these factors include[d] ideas, people, transactions, and context over time” (p. 591). Molinsky (1999) argued that employees’ mores, customs and cultures can impede the management of organizational change innovations. Perera et al. (2003) highlighted the importance of the implementation stage of the innovation adoption when organizational values, norms, social systems and past experiences of adopters affect accounting innovations choice and their subsequent adoption decisions. Accordingly, differences in institutional and organizational behaviors and cultural processes among institutions of various sizes at either divisional or field levels contribute to variations in the adoption and diffusion of process innovations, e.g. new practices, as discussed by Loulsbury (2001) in university recycling programs. It is widely accepted that in larger organizations, greater structural complexity and inter-dependence require an emphasis on incremental as opposed to transformational changes. While organizations may prefer incremental approaches because of their desires for short term, less disruptive improvements, they are more likely to pursue radical transformations of strategic change following a trial-and-error period of unsuccessful incremental changes. They undertake these radical reorientations primarily for two major reasons: first due to sustained low performance, i.e. internal cause, or second, because of the need to address major technological, social and environmental changes, i.e. external cause (Tushman and Romanelli, 1985; Barley, 1986).

Section four: sociological adoption and diffusion analysis in organizational learning
There is an extensive literature in process innovation in sociology, which examines how a wide variety of classes of innovations are adopted and diffused. Sociologists have examined how learning (called “innovations”) occurred in organizations and societies (see Coleman et al., 1966; Leagans and Loomis, 1971; Rogers, 1971; Rogers and Shoemaker, 1971; Zaltman et al., 1973). Although innovation involves learning, the nature of the learning process does not completely describe the manner in which an innovation affects the organization. Accordingly, we have applied sociological approaches to study organizational learning as having two inter-related processes: adoption and diffusion of innovations (Rogers, 1971, 1995).

Adoption of innovation
Thus far, the literature on the adoption of innovation has largely concentrated on the external factors that created the conditions appropriate for adoption decisions and internal characteristics of the organization that facilitated its implementation. Attewell (1992) specifically expanded Rogers’ (1971) concern for innovation adoption by focusing on the adopters (see also Riemer-Reiss, 1999; Rogers, 1995; Rogers and Shoemaker, 1971). He elaborated Rogers’ (1971) framework from focusing not only on the causes of the diffusion process, but also to include examination of the adopters as well as the change agents. By doing this, he refocused the attention from the existence, i.e. the supply, of innovations, to the awareness of the need, i.e. the demand, for innovations. This is important because learning in an organization requires both the awareness and enthusiastic support and acceptance of the innovation by the management team of the potential adopting organization.

Attewell (1992) identified four factors related to the demand for innovation adoption that are relevant for management accounting innovations. They are:
The first factor, the presence of potential innovation champions, means that there are individuals in the organization who are motivated to initiate the proposal and try to persuade others to adopt a particular innovation (see also Howell and Higgins, 1990). The second factor, organization size, suggests that larger organizations have greater resources and opportunities to innovate than small ones. The third factor, profitability, argues that a more profitable organization has greater resources and the capabilities available to undertake innovations. The last factor refers to organizational and environmental attributes of the organization. They are related to divisional autonomy, degree of functional specialization/expertise and centralization vs decentralization of the decision-making process in adoption decisions (Daft, 1978; Perrow, 1986; Scott, 1987). In general, organizational/divisional bureaucratic structures affect innovations outcomes. In centralized organizations that adopt accounting innovations, the likelihood that these innovations will be successfully implemented is higher than in decentralized and less formal organizations. Decentralized organizations have the autonomy and flexibility to slow down or abandon accounting innovation implementation, if they feel it is relevant to protect their divisional interests (see Brunsson, 1982; Ansari and Euske, 1987). In accounting, while decentralization and differentiated structures have more impact on the decision whether or not to adopt an innovation, Gosselin (1997) documented that in ABC’s adoption, the centralized structure was needed to support the successful implementation of accounting innovation.

We add a fifth and sixth factor to those outlined by Attewell (1992). They are: fifth, the congruence between the prospective innovation and the firm’s competitive strategy and environment. The sixth factor is the degree of management’s support for the innovation intended to bring management accounting reporting changes in the organization.

The fifth factor addresses the prevalence of competition, and the consistency of the organization’s desire to undertake innovations to overhaul their technological capabilities with its strategy, i.e. sustained efforts with improving the operating efficiency of the organization. According to Barnett and Hansen (1996), the organization’s competition or rival firms often are sources of external constraints. They indicate that an organization’s competition changes when its cohort of rivals that share the same strategic interaction changes. The organization is then “confronted with new rivals that do 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 adopt innovation strategies related to OD and/or OT.

Competitive strategy thus becomes a process through which a firm utilizes its resources or competencies to maximize environmental opportunities, while minimizing potential threats raised by the environment (Porter, 1980). The mix between strategy and structure influences the ability of the organization to 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).
In other words, performance is dependent upon whether or not there exists a close relationship between current environmental changes and the ability of the organization to handle and process these changes (Porter, 1980, 1985).

Process innovation strategies such as OD and OT become the main core competences for organizations, characterized by a high competitive environment. Their successes depend whether or not they have the ability and resources to sustain continuous change. To remain competitive, for example, manufacturing organizations that follow OD-incremental intervention strategies, ABC becomes the appropriate technical innovation approach for cost reduction strategies to attain improved organizational performance (Ittner et al., 2002). However, researchers also have examined the potential interaction between the innovation and the organization’s competitive strategy (Butler, 1988; Gort and Will, 1986; Porter, 1980, 1985; Schroeder, 1990; Baptista, 1999; Jensen, 1983, 2001). Thus a firm that follows a low-cost producer strategy (OD-incremental) would be more receptive to ABC or JIT than one that follows a strategy that stresses product innovation, and research and development (OT-systemic). Accordingly, adoptions of technical management accounting innovations follow strategies that are assumed to meet cost-benefit tests (Attewell, 1992; Jensen, 1983, 2001). In management accounting these innovations have included the introduction of quality improvement programs and changes in management accounting, reporting and control systems (Sisaye, 2001).

Our sixth factor relates to the demand for innovation adoption and implementation is associated with organizational commitment, i.e. top management support of the innovation. Managers can serve as agents of change in the adoption of innovation throughout the organization when they championed the innovation. Rogers (1971, 1995) suggests that innovation champions can be effective sponsors and opinion leaders if they possess the basic knowledge and understanding of the innovation that they are championing. Jones et al. (2003) referred to them as “knowledge champions” who are able to effectively diffuse and transfer the innovation in the organization. When knowledge champions accept and are committed to accounting innovations, they will actively promote and advance the implementation processes.

The study of Chrysler and Safety-Kleen corporations’ implementations of ABC as ABM system (Ness and Cucuzza’s, 1995) illustrated the importance of top management’s buy-in to an innovation. The chief operating officer (COO) at Chrysler and a divisional level manager at Safety-Kleen bought into ABC because they had a basic understanding of both the technical and administrative components of ABC. Although the approaches used by Chrysler and Safety-Kleen differ slightly, they both recognized the potential for improved long-term profitability goals by identifying which products to produce and sell, and as well as which customers to serve. At Chrysler the COO followed the implementation through the organization (OT systemic double-loop learning), while at Safety-Kleen a middle manager initiated the pilot project at one plant (OT autonomous division-wide) and then used its success to win over executives and other plant managers (Ness and Cucuzza, 1995).

In order to get employee acceptance, the pilot project approach at Safety-Kleen gave managers the option of dropping ABC if they found that the adoption of ABC did not help them make better decisions. The experiment with ABC convinced managers within a relatively short time that ABC was instrumental in reducing costs and making the division more competitive and more profitable (Ness and Cucuzza, 1995). At Chrysler, the COO was the main advocate for ABC to transform and restructure the company by forming “more flexible, efficient, cross-functional, and process oriented teams to manage
product development and realign distribution by developing closer links and relationships with suppliers and dealers” (p. 130). The successes at both Chrysler and Safety-Kleen reveal that top management buy-in and support are crucial for the adoption of an innovation. It also supports Sandberg’s (2007) claim that business performance becomes the main enthusiasm driver (i.e. top management support) for the diffusion of innovations throughout the organizations.

**Diffusion of innovations**

Rogers (1971) and Rogers and Shoemaker (1971) describe how the second stage, the diffusion of the innovation, is relatively dependent on the flow of innovation information and technological know-how. This flow is facilitated by the extent of contact between the originators and adopters of innovation, personality characteristics of early adopters, nature of the information flow and the choice of communication channels: formal and less formal (individuals and groups networks) throughout the organization (Baptista, 1999; Coleman et al., 1966; Leagans and Loomis, 1971; Rogers, 1971; Rogers and Shoemaker, 1971; Zaltman et al., 1973). They stressed the best strategy to accelerate the diffusion process is through the identification and involvement of opinion leaders who can be influential early adopters. Opinion leaders are referred to as “champions” when they sponsor innovations (Howell and Higgins, 1990).

As described in Figure 1, the diffusion of an innovation within an organization begins with its identification by champions who obtain the support of their top management and acquire the information they need to influence others (followers) to adopt it. Information and communication are critical to moving forward the innovation and in determining the length of the time lag between early and late adopters. Sandberg (2007) noted that enthusiastic champions serve as catalysts in organizations for the developmental stage of radical innovations (generating of ideas) and subsequent diffusion throughout the organization. “At the development stage, the enthusiasm spread from the champions and the core team to other parts of the organization, and in some cases also to other development partners” (p. 269). She associated radical innovations with technologically new commercially successful products and services that offer substantial benefits to customers. The role of networking serves as a driver in the diffusion of the innovation and its successful marketing to customers through “personal visits, customer education, simulations and trials” (p. 271). While radical innovations resulted in the development of new products and services (for example, the ePost Letter and the Nordic Walkers cases that were commercially successful), their diffusion to customers and outside of the organization was a gradual process in order to sustain enthusiasm for the long term.

There are several studies in management accounting that also have related the successful dissemination of accounting innovations to the diffusion literature in sociology. Two studies that are of particular interest are Banker et al. (1996) and Malmi (1999). These studies have described accounting innovations as following a trial-error strategy whereby innovations are tried out first in one unit or a subunit and, if they are successful, later are implemented in other units within the organization. The study by Banker et al. (1996) of a performance-based compensation plan illustrates this point. The performance-based system proved to be successful initially and gradually was implemented in additional locations. When an accounting innovation is tried on an experimental basis in a unit/division and results in positive outcomes, the innovation can be more easily disseminated to other divisions within the organization. Similarly, Malmi (1999) discussed the role of corporate management in the “forced selection perspective” that led to early adoption of ABC among Finnish firms, a study that corroborates the findings of Banker
et al. (1996) on the role of headquarters in implementing an organization-wide change. While the initial support (championing) for the adoption of the innovation was dictated by top management, its diffusion from one unit to another was associated with the innovation’s record of successful outcomes in those units that had adopted. Thus, the adoption-diffusion model depicted in Figure 1 presented a framework for successful adoption process requiring that management (opinion leaders) championing the innovation dictate or mobilize sufficient support for innovations implementation.

Section five: summary and conclusions
We suggest that an organization’s approach to learning and innovation as exemplified by the extent: technical and administrative; and scope: autonomous and systemic dimensions of the innovation process shape the adoption and diffusion strategies appropriate for the design and implementation of management accounting innovations. It is thus imperative for managers and accounting researchers to examine the relationships of OD and OT using the single-loop (incremental) and double-loop (discontinuous) organizational learning strategies.

Schulz (2001) described the learning-innovation process as having two inter-related stages. He related the first stage to the acquisition production (adoption) of knowledge that results in the gathering of information, codification and exploration. This is followed by the second stage of distribution (dissemination) processes. We apply these two stages to management accounting innovations. Adoption, stage one is related to acquisition of knowledge. Diffusion, the second stage, involves the dissemination and transfer of knowledge from a unit/division to the rest of the organization. We related these two stages to the two questions we identified at the outset. Stage one reveals why certain innovations are more likely to be implemented than others. Stage two details why the dissemination of some accounting innovations is more successful than others. These two stages of organizational learning implied that the knowledge production (adoption) and dissemination (diffusion) process of organizational learning follows an evolutionary process.

We apply an evolutionary perspective to describe the adoption-diffusion processes of management accounting innovations. Figure 1 outlined the constructs used to trace the process from the demand (adoption) to the diffusion (dissemination) of process innovations. We argue that one of the most critical factors that impacts the understanding of the innovation process and determines the intervention strategies in the context of OD and OT innovations is the learning process: OD as gradual (autonomous) and OT as radical (systemic) double-loop learning. While both OD and OT focus on the technical and administrative extent dimensions, their differences arise on the scope/magnitude of the change: OD is autonomous while OT is systemic (refer to Tables I and II). Accordingly, the organizational context for either OD or OT is largely influenced by the structural arrangements of the innovation process.

When the organization structure is decentralized, the innovation’s impact is primarily limited to individual departments or divisions. OD becomes the appropriate intervention strategy when accompanied by the need for behavioral or cultural changes that resemble TQM’s approach of incremental change. However, when the structure is centralized, it has organization-wide implications. The changes become consonant with OT-BPR that accompanies radical approaches necessitating long-term organizational restructuring and job realignment programs. The OD and OT strategies thus provide the appropriate adoption and diffusion strategies to accounting innovations depending on the time...
horizon of those changes: OD are expected to have short-term effects, and OT long-term effects in the organizational accounting and reporting functions.

The OD and OT framework facilitates the analysis of the two inter-related research questions of why some innovations succeed and others fail when viewed within the context of adoption and diffusion of ABC and BSC as illustrated in Figure 1. While both ABC and BSC have the goal of improving management's effectiveness in controlling costs, ABC has been more widely accepted than BSC. One could hypothesize that ABC is more amenable to single and/or autonomous double-loop learning that requires gradual introduction into the organizations systems as an incremental change. These changes can be instituted following OD strategy of limited breadth confined to a single division. When they are found to be successful at the division/business unit levels as Ness and Cucuzza's (1995) described, they are adopted and implemented at the organization-wide levels.

On the other hand, the introduction of BSC is expected to require systemic double-loop learning and an OT intervention strategy. This necessitates the development of a comprehensive strategic plan with a long-term time horizon that is more costly to implement in comparison to that of ABC. When accounting innovations call for BSC that require OT intervention strategy, the potential disruptions of the organization's processes, e.g. resistance to the changes are expected to be significant. When systemic double-loop organizational learning strategies result in reorientation and paradigmatic learning changes, accounting innovations become instrumental to institute transformational changes to replace existing accounting reporting and control systems.

The OD-OT framework can be applied to issues in management accounting reporting changes advocated or initiated by forces external to the organization. The current movement towards measurement of environmental concerns of sustainability reporting reflects an example of such an issue. The framework can assist in the understanding of how the innovation will be received by the organization. It suggests that the greater the degree of the scope (autonomous or systemic) to which a reporting innovation will impact the activities of the organization, the greater the learning (double loop) effort required in implementing it.

References


Further reading


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