

Management accounting change as a learning process: a longitudinal analysis

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Abstract

Purpose – The purpose of this paper is to investigate how a substantial organization gradually builds a management accounting system from scratch, changing its accounting routines by learning processes. The paper uses the experiential learning theory and the concept of learning style to investigate the learning process during management accounting change. The study aims to expand the domain of management accounting change theory to emphasize the learning-related aspects that can constitute it.

Design/methodology/approach – The paper provides an interpretation of management accounting change based on the model of problem management proposed by Kolb (1983) and the theory of experiential learning (Kolb, 1976, 1984). The study is based on a 14-year longitudinal case study (1994-2007). The case examined can be considered a theory illustration case. Data were obtained from a broad variety of sources including interviews, document analysis and adopting an interventionist approach during the redesign of the costing system.

Findings – The paper contributes to two important aspects of management accounting change. First, it becomes apparent that the costing information change was not a discrete event but a process of experience and learning conducted through several iterations of trial-and-error loops that extended over the years. Second, the findings reveal that the learning process can alter management accounting system design in a radical or incremental way according to the learning style of the people involved in the process of change.

Research limitations/implications – Because of the adopted research approach, results could be extended only to other organizations presenting similar characteristics. Several further areas of research are suggested by the findings of this paper. In particular, it would be of interest to investigate the links between learning styles and communication and its effect on management accounting change.



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Practical implications – The paper includes implications for the management of learning during management accounting change, to improve the efficiency and effectiveness of this process.

Originality/value – This paper is one response to the call for an interdisciplinary research approach to the management accounting change phenomena using a “method theory” taken from the discipline of management to provide an explanation of the change in management accounting. In respect of the previous literature, it provides two main contributions, namely, the proposal of a model useful both to interpret and manage learning processes; the effect of learning style on management accounting routines change.

Keywords Learning, Longitudinal analysis, Management accounting change, Costing systems

Paper type Research paper

1. Introduction

Management accounting is a human construct and its form can only be determined by the actions of the actors involved. Many non-human factors can affect change (for example, the Actor-Network Theory research stream), nonetheless, people involved in change have an active role in identifying and interpreting pressures, constraints and opportunities coming from networks and embedding both human and non-human factors (Teittinen, 2008; Rautiainen and Scapens, 2013). Thus, every study intended to explain and improve the understanding of management accounting change needs to acknowledge the roles played by the actors involved and their actions (Anderson, 1995; Shields, 1995; Krumwiede, 1998; Thrane and Balslev, 2017). The selection and the shaping of new accounting routines (Burns and Scapens, 2000) may be affected by many factors, both internal to the organization, such as the need of cost control, new beliefs and values brought by a new top management, power and politics mobilization or outside organizations (e.g. regulation and pressures coming from professional association) (Hardy, 1996; Dillard *et al.*, 2004; Burns and Scapens, 2000; Alsharari *et al.*, 2015).

The study of management accounting change asks for a theoretical framework able to consider many factors, especially the human one and the process nature of the change. We consider management accounting change as constituting an *experiential learning process* for those involved (Kolb, 1983, 1984). In this paper, we aim to investigate how a substantial organization gradually built a management accounting system from scratch, changing its accounting routines by learning processes. Routines here are considered as the management accounting practices in use (Burns and Scapens, 2000, p. 7). We explore change as an outcome of the learning embedded in the production and reproduction of management accounting routines. Indeed, the phases of the learning process can affect the reproduction of management accounting routines, stimulate reflection and criticism. Hence, adopting a learning approach is useful to investigate in a holistic manner the way people make sense of their experiences of change and the ways in which these are, in turn, influenced by the context and historical legacy of past processes (Dawson, 2014). The basic idea underlying this paper is that the learning process can influence the change of management accounting routines and, so, the trials and errors made. This perspective provides a focus on how participants respond to the circumstances of the setting in which they operate through their engagement in learning from their experiences with management accounting, in a way, which leads to ongoing change in management accounting practice. This way, the interactive and learning-by-doing character of management accounting routines and the importance of openness and flexibility of people are emphasized (Pettigrew, 2012).

Our aim is to explore why and how learning experiences affect management accounting routines changes and it is focused on an organization where management accounting routines have been gradually built from nothing. The research is based on a longitudinal case study over a 14-year period during which different management accounting systems were

introduced. The length of time (14 years) shows the enduringly dynamic nature of the learning that underlies the process of practice change. The findings reveal that the learning process can alter management accounting system design in a radical or incremental way according to the learning style. It demonstrates the multiple sequential stages, which can constitute the change process (Krumwiede and Roth, 1997; Dawson, 2003; Quinn, 2014) and how the expansion or contraction of these learning stages affect change in management accounting routines. The contribution of this research lies in the exploration of the relationships between the way learning processes are carried out and changes arising in the managing accounting routines.

The paper is structured as follows. In Section 2, the prior literature on related studies of learning and change in management accounting is reviewed, then the learning process based on the *Experiential Learning Theory (ELT)* (Kolb, 1983, 1984) is presented. In Section 3, the research design and data collection are described. In Section 4, the case study setting and the results are presented and then discussed in Section 5. Finally, some conclusions are drawn in Section 6.

2. Literature background

2.1 Learning and management accounting change

Busco *et al.* (2007, p. 146) emphasize that the complex nature of management accounting change creates a need for ongoing research. The nature of change can be difficult to conceive (Quattrone and Hopper, 2001) because change can take many forms (Libby and Waterhouse, 1996; Sulieman and Mitchell, 2005). Organizational learning has been proposed as a critical factor in promoting strategic cost accounting changes (Kaplan and Norton, 2001). Finding out how people increase their knowledge about the effectiveness of management accounting by learning, is one way to investigate the relevance of learning within organizations. It can contribute to an understanding of how and why routines involving management accounting are altered and how they can assume different degrees of importance in organizations (Burns and Scapens, 2000; Quinn, 2014). Management accounting change studies show that learning and change could occur from experience (Libby and Waterhouse, 1996; Williams and Seaman, 2001) and that a person's learning orientation could affect the development of accounting concepts (Schiller, 2010).

In general, a high level of organizational capacity to learn may facilitate change and innovation in management accounting because the expertise and personnel to educate managers about the benefits of change are present (Argyris and Kaplan, 1994; Schiller, 2010). Capacity to learn enables the people and organization to retain results of its experiences when it becomes codified in the form of rules and regulations (Schulz, 1998). However, this coding may inhibit subsequent learning and, as the result, diminish the likelihood of subsequent innovations by the organization. In the case of management accounting systems, as organizations develop more rules it increases the potential for greater bureaucratization and, in turn, this may inhibit future learning experiences (Sisaye and Birnberg, 2010). Hence, when a management accounting system is changed also the legacy of past experience can affect the process of development (Hopwood, 1987).

In promoting and supporting management accounting change it is important to investigate how the learning process is carried out. The study of specific change as a discrete event may be inadequate to fully represent change complexity, above all if the change is conceived as a more incremental *evolutionary* chain of development (Burns and Vaivio, 2001; Lämsiluoto and Järvenpää, 2010). Schulz (2001) identifies in the learning-innovation process two interrelated stages. He related the first stage to the production (adoption) of knowledge that results in the gathering of information, codification and exploration. This is followed by the second stage of the distribution (dissemination) process.

Sisaye and Birnberg (2010) apply these two stages to management accounting innovations. They suggest that the greater the degree of the scope (i.e. limited to a division or diffused to the entire organization) of a management accounting innovation, the greater the learning effort required in implementing it.

Schiller (2010) applied experience learning theory (Kolb, 1984) addressing the question of how management accounting information can change when holistic learning is the basis for the implementation of network-oriented lean production systems. Developing the concept of a local management accounting system, Schiller identified two types of management accounting information, namely, one (Type 1) corresponding to the accountability aspect, whilst the other (Type 2) referring to problem-solving and control. According to the type of learning styles adopted within a production environment, the type of management accounting information may uphold higher-order learning.

2.2 Learning as a trial-and-error process and the research gap

Learning has a processual nature. Single or double loop learning processes can lead to a gradual accumulation over time of new knowledge having the potential to contribute to the organization's implementation and use of management accounting systems (Argyris and Schön, 1978, 1996; Argyris and Kaplan, 1994).

Learning may also be conceived as a trial-and-error process. To illustrate this, McLaren *et al.* (2016) mobilize the concepts of *schema*, *routines* and *trial and error processes* (Feldman, 2000; Rerup and Feldman, 2011). In the case of a managerial innovation such as economic value addedTM (EVATM), the schema is represented by its value-based management philosophy (McLaren *et al.*, 2016). Organizational routines, such as those involved in budgeting, are repetitive patterns of interdependent actions, carried out by many actors (Burns and Scapens, 2000; Rerup and Feldman, 2011). Routines and schemata are interactively “co-constituted” (Rerup and Feldman, 2011). Trials are actions that respond to problems emerging from routines. Finally, problems or errors could be of two types, namely, *error*₁ occurs when “performances fail to accomplish a task-specific routine or fail to do so in a way that is acceptable to organization members”; whilst *error*₂ “are concerned about whether performances are consistent or inconsistent with the organizational interpretive schema, whether espoused or enacted” (Rerup and Feldman, 2011, p. 586). Because of their definition, *error*₁ and *error*₂ may be associated to the need for single and double learning, respectively.

The institutionalization of an innovation such as EVATM involved an ongoing learning process, which led to technical changes in its application (McLaren *et al.*, 2016). Learning is coming from routines, which could be viewed as generative systems involving trial and error processes (Sisaye and Birnberg, 2010; Rerup and Feldman, 2011). Routines may be subject to change (Feldman, 2000; Rerup and Feldman, 2011) as responses to individual, organizational and environmental pressures. Hence, this stream of literature (Feldman, 2000; Rerup and Feldman, 2011; McLaren *et al.*, 2016), suggests the idea that a costing system (such as activity-based costing (ABC)) could be viewed as a schema, and routines carried out to enact this schema can produce learning effects on the costing system routines (e.g. its improvement or its demise).

Summarizing, in management accounting literature it emerges that:

- learning has a relevant role in management accounting change;
- learning is developing by some phases and within these phases often trial and error processes are put in place to adjust management accounting routines; and
- past experience affects how learning processes are carried out.

However, previous studies did not investigate why and how trial and error processes are generated and how the learning process can influence the generation and sequence of trials and errors. The focus on learning phases and on their connection sheds light on the roots of trial and error patterns suggested in the literature as a typical way to develop management accounting systems (Sisaye and Birnberg, 2010; Rerup and Feldman, 2011). This investigation helps to understand why organizations are making some trials and errors and why they often repeat them. To this purpose, it is useful to mobilize the concept of learning style, as it leads the development of the learning process.

Schiller (2010) examined the alignment between the organization's learning style and the characteristics of management accounting systems. The focus of Schiller (2010) was on the enhancement of organizational learning within the production environment by appropriate management accounting systems. However, the relationship between learning style and management accounting systems was not studied over a long period of time, furthermore, the concept of learning style was not applied to the development of management accounting systems but primarily referred to the production environment. Consequently, it is still not clear how learning style can progressively increase or decrease the organizational knowledge concerning the design, use, hybridization and even abandonment of management accounting systems by trials and errors occurring through the circular approach typical of ELT, nor is the explanation of the learning loops involved clear.

Therefore, this paper will address the following research questions:

- RQ1. From a longitudinal perspective, which are the phases of the learning process underpinning management accounting change?
- RQ2. How do the phases of the learning process impact on management accounting change in the long term?
- RQ3. Does the learning style influence the phases of learning processes underpinning management accounting change?

2.3 The experiential learning model as a method theory applied to management accounting change domain

The choice and design of an appropriate management accounting practice can be approached as a *problem management* issue. The choice of the management accounting practice and its subsequent customization puts managers in the situation where they have to identify the nature of this problem (e.g. organization has no resources to devote to the costing system development, the costing system does not work because it is too sophisticated for the organization aims, etc.) and to devise and select an appropriate solution. This study uses the model of problem management derived from the ELT (Kolb, 1984) developed by Kolb (1983) to analyse costing system changes in a real-world setting. ELT is adopted here as a "method theory" (Lukka and Vinnari, 2014) taken from the discipline of management to provide an explanation of the change in management accounting. ELT permits to investigate how learning takes place, giving the opportunities to observe when, why and how learning is implicated in the change of management accounting routines.

ELT defines learning as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 41). According to Kolb (1976), learning should be an explicit goal for firms similar to profit making and related problem management processes should be carried out following a problem-solving stage model (Kolb, 1983). Kolb (1983, p. 111) sustains that this model, as it is based on ELT, conceives of problem management in a way that includes problem finding, as well as a problem-solving, non-

linear description of problem management process that is dialectic and emergent, both rational and intuitive way of knowing (i.e. based on comprehension through solution analysis/abstract conceptualization or on apprehension through situation analysis/concrete experience), active (by implementation/active experimentation) and reflective aspects (by problem analysis/reflective observation) and, cognitive and social/emotional aspects (again in this case are involved situation and problem analysis). Therefore, it is a holistic and normative approach, which allows both single and double loop learning, as well as the definition of procedures, to manage the learning process, and thus, improve its effectiveness (Argyris, 1977; Batac and Carassus, 2009). Finally, it does not neglect the role of groups in problem management. Because of these properties, it is suitable for investigating learning phenomena when management accounting change unfolds over a long period.

The basic stages of the model (i.e. situation analysis, problem analysis, solution analysis and implementation analysis) are outlined in Figure 1 [1].

These basic stages correspond to those of the experiential learning cycle shown between brackets (i.e. concrete experience, reflective observation, abstract conceptualization and active experimentation). Each stage is detailed in sub-activities [2]. An analysis of the context or situation is required as a means of identifying a range of possible problems and opportunities. The first stage of situational analysis is detailed in sub-activities such as

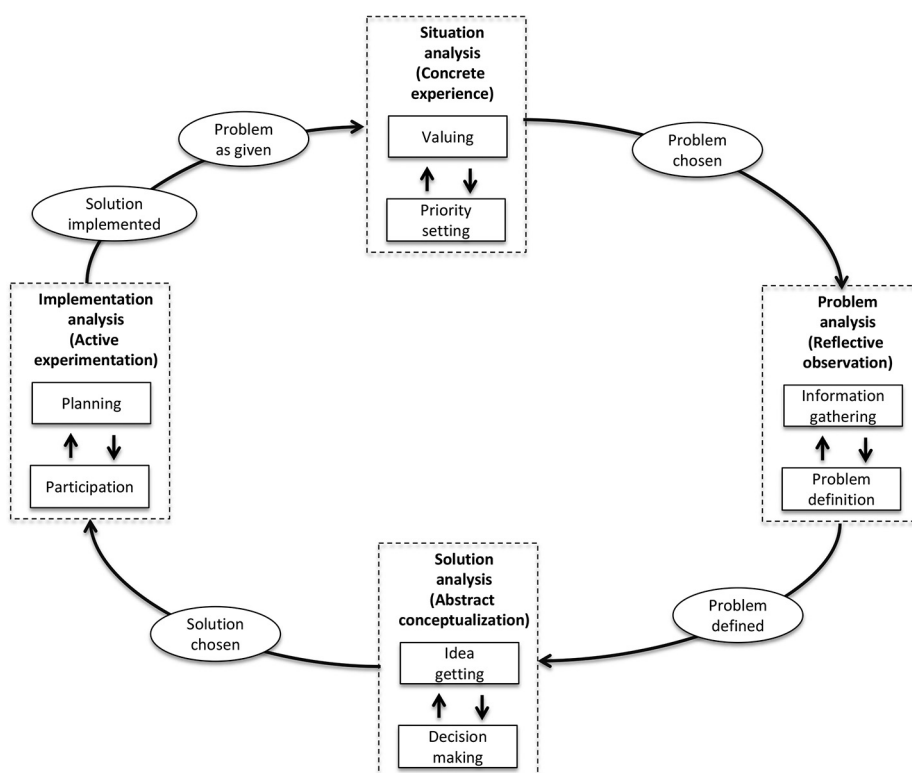


Figure 1.
The learning process
(between brackets)
and the stages of
problem management

Source: Adapted from Kolb,(1983)

valuing and priority setting. Valuing should permit to identify these values, which motivate learning and change. By contrast, priority setting aims to select features that facilitate or obstacle to goal attainment and define goals based on the reality. Situation analysis is carried out using experience grasped by a direct contact with reality, therefore, it corresponds to the concrete experience stage in the experiential learning cycle.

In the second stage the dialectic takes place between information gathering and problem definition. Information gathering identifies attributes of the problems, whereas problem definition provides an interpretative scheme of the problem.

In the third stage, solutions are generated and their feasibility for solving the problem are assessed according to the criteria defined in the previous stage. Here, there is an interplay between idea getting and decision-making. Idea getting is focused on the proposal of a solution for the identified problem, whilst decision-making addresses the feasibility of the proposals. Solution analysis needs to define relationships among variables involved in the situation examined, thus it coincides with the abstract conceptualization of the experiential learning cycle. The last stage of implementation analysis includes participation and planning and it is equivalent to the active experimentation of the experiential learning cycle. Participation is carried out by anticipating the consequences deriving from the solution; identifying the key persons essential to carry out the different tasks in implementation; involving key persons for a revising cycle to ascertain if the most important problem has been chosen, properly analysed and whether a suitable solution has been accepted.

Implementation activities modify the situation analysed in stage one and create a continuing iterative cycle. The four stages represent how the learning process takes place and deviations from activities described within each stage could produce ineffective learning and consequently unsatisfactory problem-solving. At the same time, deviations from the outlined model can also explain why some solutions rather than others have been selected and help in explaining why some management accounting routines have been modified and implemented in a specified way.

On the basis of the abilities developed in the different stages of ELT, Kolb (1984, p. 77) codified different learning styles according to the stage, which they tend to emphasize. Kolb (1976) underlines that people develop asymmetrical learning styles, which means that these styles emphasize some of the four learning skills over others. Particularly, he proposed four learning styles (Table 1). Learning styles are shaped by many forces, such as previous experiences and habits or current circumstances and a person could shift from one learning style to another to provide a better answer to the problem he/she have to face.

The concept of learning style seems relevant to us for investigating management accounting change as a useful construct for understanding why and how people support certain changes and discard others. Furthermore, the problem management model and the underlying ELT have a potential practical relevance (Rautiainen *et al.*, 2016), as organizations could plan learning and learning styles to improve the effectiveness and success of management accounting practices (Cinquini and Mitchell, 2005).

3. The case study

3.1 Choice of case study method

This study uses a longitudinal case study method (Scapens, 1990; Otley and Berry, 1994) for a number of reasons. Firstly, the case study is a method suitable to go in depth into empirical evidence analysis when an interventionist approach is adopted (Suomala *et al.*, 2014). Secondly, case study advocacy has stressed the advantages of this method for addressing both “how?” and “why?” questions. Thirdly, a longitudinal dimension was required to accommodate the dynamics of management accounting change according to a

Basic learning style	Dominant learning ability	Main characteristics of the basic learning style
Convergent	Abstract conceptualization and active experimentation	Strength in problem-solving, decision-making, practical application of idea. It is called converger because a person with this style seems to do best in situations where through hypothetical-deductive reasoning it is possible to find a single correct answer to a problem
Divergent	Concrete experience and reflective observation	Strength in imagination and awareness of meaning and value. Emphasis in this style is on adaptation by observation rather than action. It is called diverger because people with this style are good at generating alternative idea
Assimilative	Abstract conceptualization and reflective observation	Strength lies in inductive reasoning and in creating theoretical models useful to assimilate many observations into an integrated explanation
Accommodative	Active experimentation and concrete experience	Strength in doing things and carrying out new experiences. It is called accommodative because it is best suited in situation where one must adapt oneself to changing immediate circumstances. Where the theories or the plans do not fit the facts, this style will most likely lead to discard the plan/theory. People with this learning style tend to solve problems in an intuitive trial-and-error manner

Table 1.
Characteristics of the
basic learning styles

Source: (Adapted from Kolb, 1984, pp. 77-78)

processual research view (Pettigrew, 1997). This approach is coherent with studies on management accounting change, which emphasize the processual nature of change (Burns and Scapens, 2000), furthermore, it permits to collect evidence on cumulative changes over a long period. The case examined can be considered a theory illustration case (Keating, 1995) because it has the objective to establish the plausibility of a specific theoretical perspective (ELT). For this purpose, ELT was selected as a theory, which could be used in an explanatory manner as opposed to theory testing [3].

3.2 Data collection and analysis

The case stretches over a period of 14 years (1994-2007). Data were obtained from a broad variety of sources that are outlined in Table 2. One researcher was a member of the case study organization's board for a period of nine years (1996-2005) and another had an advisory input to the revision of the ABC system (1999-2000). This had the advantage of ensuring good access to staff and documentation for the researchers over the long period of time involved. It had the added advantage that observation of many board meetings became a valuable feature of the study as the motivation for top level decisions involving costing practice could be ascertained.

Participant observation (Jorgensen, 1989; DeWalt and Dewalt, 2002) and action research (Somekh, 2006; Jönsson and Lukka, 2007; Whitehead and McNiff, 2006; Suomala *et al.*, 2014), require the researcher to become closely connected to the subject of study, and in the latter case to be an active change agent. It is important to report the nature of the researchers' involvement so that the results can be properly interpreted (Eden and Huxham, 1996). One of the researchers was a non-executive director of the organization. The role was one of questioning and supporting managerial decisions. Thus, this position allowed to play an

Table 2.
Data sources

Data sources	Actors involved in collecting information	Timing	Data and information collected by the data source
Financial reports	Researchers and chief financial officer (CFO)	From 1994 to 2006	Company's financial performance and environmental/organizational changes (for example, financial report commentary section provided information on changes in regulation, main organizational and operational improvements)
Semi-structured interviews not tape-recorded	Researchers, chief executive officer (CEO), CFO, controller assistant, marketing manager (MM), assistant of quality director	4 in 2004, 6 in 2005, 2 in 2006, 8 in 2007; on average each interview lasted 1.5 h	Changes in management accounting system, particularly what changes, when they were realized and why
Informal discussions at least once a month	One of the researchers and the CEO	From 1996 to 2006	Information on the main organizational changes in progress; information on any changes in progress in the management accounting system; information about problems perceived; information provided by the management accounting system (i.e. low accuracy or lack of information). Any other insights on previous interviews made by other members of the research team
Participation in the seminars held at university courses regarding strategies, financial accounting and management accounting	Researchers, CEO, CFO, marketing manager	1 in 2004, 2 in 2005, 2 in 2006, 2 in 2007; on average each seminar lasted 1.5 h	Information on the company's strategy, organizational structure and management accounting system adopted at the time of the seminar
Participation to the board of directors	One researcher as member of board of directors	From 1996 to 2005	Opportunity to observe how management accounting information were used in supporting planning, control and decision-making
Involvement of one researcher in costing redesign	One researcher, CFO, CEO, MM	From 1999 to 2000	Information on the design of the existing costing system; the problems that managers perceived using that system; changes in costing system to solve problems coming from the previous one; new problems arising from the revised system

(continued)

Data sources	Actors involved in collecting information	Timing	Data and information collected by the data source
Consultation of internal reports regarding the method adopted for cost calculating, budgeting and performance measures	Researchers, CEO, CFO	From 1996 to 2007	How the management accounting systems were structured and how it worked. At least five types of reports on the cost accounting systems have been examined. Given the changes, the system went through during the period observed, for each type of report have been consulted more than one version. Furthermore, participating to the board of directors, one of the researchers had the opportunity to observe the performance measure reports used and the budgeting system adopted from 1996 to 2005
Degree thesis	Researchers, students	1997, 1999, 2004, 2006, 2007	Additional information on the changes in the management accounting system. This information was formalized in documents (i.e. degree thesis) available for next elaboration
Documents available on the web	Researchers	2003, 2004, 2005, 2006, 2007	Additional information on the current operations of the company

Table 2.

observational as opposed to interventionist research role. Instead, another researcher was involved in ABC redesign, a more interventionist role (1999–2000). Hence, the strength of intervention realized in this research could be coded both as moderate and strong (Suomala *et al.*, 2014).

The data outlined in Table 2 represented the “archive” of the material used as a basis for constructing the case study findings. We combined retrospective and real time analysis to illuminate patterns and mechanisms of change. Particularly (Table 2) informal discussions with the chief executive officer (CEO), participation to the board of directors, involvement in costing redesign, consultation of internal reports regarding the method of cost calculation, budgeting and performance measures, degree thesis, have been data sources, which permitted to collect in real time changes in management accounting routines. Also, degree theses assigned to students in management accounting topics related to the case study allowed to track management accounting changes when they happened and to discuss with managers in real time these changes.

The research focus described in this paper was not defined at the beginning of the data collection period. At that time the aim was wide, namely, to follow the changes in the company’s management accounting system and producing a “case history”. After the collection of data and analysis, we identified and refined our research purpose by focusing on the underlying mechanisms, which drove the management accounting processes changes.

Data collection was not uniformly distributed in the period under investigation but was concentrated in certain time intervals. As it can be observed in Table 5, in the period in which the research purpose was refined and changes in costing systems happened there is a concentration of interviews and degree theses. The information collected by the participation of one research member on the board of directors from 1996 to 2005 and by the direct involvement of another researcher in the costing system redesign were the main data source. Secondly, to go in depth in management accounting change, semi-structured interviews, financial report consultation, participation in specific seminars held at university courses and consultation of web documents (Table 2) were carried out by the researchers to complete data collected in real time. These data sources were used retrospectively.

Five persons (CEO, Marketing Manager (MM), Chief financial officer (CFO), Controller assistant, Assistant of the Quality director) were interviewed. These persons (particularly the CEO, the MM and the CFO) were fully involved in the development of the management accounting system and have been those who pushed changes during the period of the case study. They had different backgrounds and perspectives on the phenomenon under investigation.

All the members of the research team accessed the data and held periodic meetings to discuss how it could contribute to each part of the case study structure. Collected data were coded through the lens of ELT to put in evidence as knowledge on costing systems was produced by learning processes and used to make costing system changes. In this way also, the organizational mechanisms facilitating knowledge generation and sharing emerged. They will be described in the next paragraphs. Ideas were discussed and developed during research meetings, substantiating data were identified and interpretations agreed. Preliminary drafts were produced by one team member and then commented on by all of the others. During this process, the different data sources were referred to and in many instances, a triangulation of evidence to support the findings was achieved.

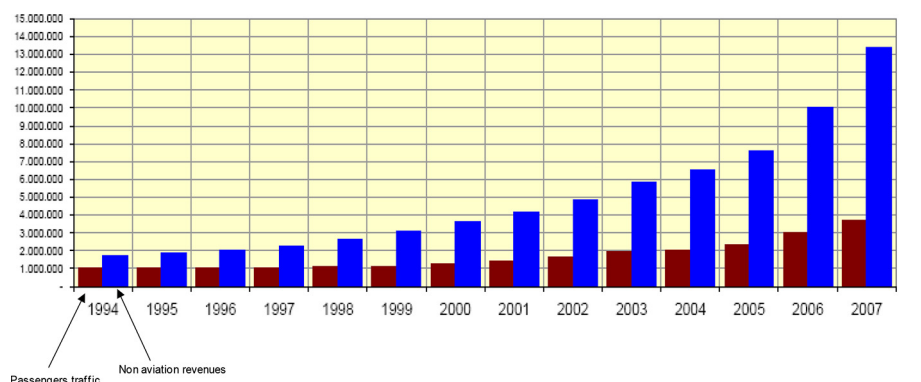
3.3 Background on the case company

The case study setting was “Società Aeroporto Toscano S.p.A” (SAT), the company managing the civil operations at the airport in the period under examination. Up to 1994, the

financial performance of SAT was poor and in 1994 even a loss was recorded, but in 2007, it had over 3.7 million passengers and became the sixth biggest Italian regional airport. Figure 2 outlines the steady and substantial growth achieved by SAT during the period of our study. Passenger's numbers rose by approximately 400%, total assets by 430%, revenues by 300% and profits by 1,600% (from 1995). The main focus of this growth was based on building a network of European connections mainly through low cost airlines, although by 2007, intercontinental links had been started.

The creation of SAT as a "new commercial organization" represents the birth stage of the new business. This stage lasts whilst the new firm is striving to become a "viable entity" and is characterized by the struggle to succeed, owner domination and simple, often informal, structures (Miller and Friesen, 1984). In the case of SAT, the struggle for profitability was only achieved after 1994. In 1994, a new Board of Directors was appointed and started to establish more formal ways of operating. By 1996, co-operation with low cost airlines had begun to develop and 1996 can be taken as the beginning of the growth stage of the SAT life cycle. The impressive growth record achieved since then meant that this stage endured for the remainder of the period of study. Low cost carriers have played a determining role. However, the Pisa airport kept operating according to a principle that combined profitability with services for the local community, without increasing the operating risk with the decision to only operate this category of carriers. In this regard, a press statement released on 23 September 2004 by the CEO is particularly significant:

In 1997, Alitalia served 5 national destinations (Alghero, Linate, Fiumicino, Catania and Palermo) and 2 international destinations (Paris and London), with 570,951 passengers. In 1997, the amount of Alitalia traffic had reached 75%. In 2003, Alitalia served from Pisa only Fiumicino, Malpensa and Palermo, with 368,214 passengers and a 20% share. This constant reduction of air services, which was also seen in many other regional Italian airports, would have led to the decline and



	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006*	2007*
Total assets (€000)	20,024	23,566	21,501	21,702	23,456	23,635	25,823	27,408	31,668	34,51	40,226	42,666	55,263	85,677
Total Revenues (€000)	16,289	16,536	17,58	17,444	18,913	20,43	20,883	23,543	25,99	31,54	32,256	35,243	42,998	51,266
Ebit (€000)	102	1,480	2,088	1,215	1,583	2,166	3,177	3,65	3,695	4,915	4,986	4,746	6,086	7,042
Net Income (€000)	-21	211	1,306	725	680	1,171	1,407	1,697	2,049	2,181	3,483	2,522	3,028	3,700
ROI (Ebit/total assets)	0.51%	6.28%	9.71%	5.60%	6.75%	9.16%	12.30%	13.32%	11.67%	14.24%	12.39%	11.12%	11.01%	8.22%
ROS (Ebit/Total rev)	0.62%	8.95%	11.88%	6.97%	8.37%	10.60%	15.21%	15.50%	14.22%	15.58%	15.46%	13.47%	14.15%	13.74%
ROE (Net Income/Eq)	-1.12%	10.36%	16.91%	8.56%	6.64%	10.07%	10.96%	11.94%	12.91%	12.41%	16.96%	11.21%	11.22%	7.10%

(*2006 and 2007 Financial Reports applied IAS-IFRS)

Source: Our processing on data in 1994–2007 SAT's financial reports

Figure 2.
Growth and financial
performance
achieved by SAT
during the period of
the study

then closing down of the Pisa airport (airports have their own breakeven to reach, like any other business), with a catastrophic economic impact on the Tuscan community, which instead needed appropriate air services for its economy and tourism. However, because of air transport liberalization facilities, other European airlines, both low-cost and non-low-cost (including Ryanair) have been able to enter our country and fill the market vacant slots left by Alitalia. We, as SAT, were not willing to exit the market and managed to launch the Galilei airport once again. Today, the airport has doubled its traffic (two million passengers per year), improved its profitability and connected Tuscany with virtually all the most important European centres, with both international air transport association and low-cost air services, at a 50%–50% ratio. We did not hamper competition: in 1997, only 6 airlines served the Galilei airport, whilst today there are as much as 13 [4].

Furthermore, the new CEO in charge from 1994 and the other top managers had always believed in a managerial approach, particularly in the quality of services as a key issue for the full satisfaction of the airport’s customers (airlines, passengers and any other user). The main activities are described in the Table below to demonstrate the validity of this statement (Table 3).

SAT’s strategy has always had two elements, namely, on the revenue side, the implementation of a partnership and the differentiation/diversification of the service portfolio, on the cost side, the improvement of efficiency (CEO, 2004, 2005, 2006, 2007, Pisa University Seminars).

As far as revenues are concerned, the CEO has sought to establish a customer-driven business and created the marketing function. He also pursued the goal to develop the airport’s traffic. A marketing strategy has been followed with the purpose of identifying Pisa as the gateway to Tuscany (2004 SAT SpA Financial Report). As to costs, the strategy has always aimed at implementing a careful control and rationalization.

SAT’s top management did not simply “cut costs”, but rather implemented (even without any clear statement on this) a cost management strategy. Focus on personnel costs (63% of total costs in 1994 and 46% in 2006), can be mentioned as a typical example within this approach. Initiatives in this direction have been the rationalization of activities by a process approach (pushed by the focus on total quality) for continuous improvement, the budget control and training to increase productivity. To consider this last issue, we examined the training expenses in the company’s financial reports from 1994 to 2007 on technical issues, quality, communication, etc. (Table 4).

In other words, rather than cutting personnel costs, the CEO preferred to increase their productivity leveraging on training and processes redesign. The CEO in particular was proactive and innovative but supported his decision by analysis and management tools.

1995	1997	1999	2000	2003
A customer satisfaction index is established	SAT is the first airport management company in Italia to obtain the ISO 9002 certification for handling activities	SAT creates the service card (a document to implement DPCM 30/12/1998, under the guidance of ENAC, with the objective to improve and document public services	ISO 9002 certification obtained for Airport Operator and Security activities	SA 8000 social accountability certification Vision 2000 after ISO 9000 revision ISO 14001 Environmental certification

Table 3.
The SAT initiatives to improve quality in operations

Notes: DPCM = Decree of the President of the Council of Ministers; ENAC = Italian civil aviation authority

4. Looking at costing change in Società Aeroporto Toscano S.p.A through the lenses of the experiential learning theory

Costing information other than that required for financial accounting purposes was not produced at SAT prior to 1994. Consequently, the first changes were substantial as they were made from a zero base as the CFO declared during an interview:

“With the new Board the management control that had not existed before was institutionalized. The need to have cost of the services started immediately afterwards.” (CFO)

Table 5 summarizes the changes in costing at SAT during the period of the study.

In this section, the story of output costing change in SAT is analysed through the problem management model and the ELT. We identified the working of five learning loops in the period of study. The presentation of empirical evidence will follow the logic of the four stages of ELT, focusing on sub-activities within situation, problem, solution and implementation analysis in each loop.

Learning loop number one: knowledge acquisition and (potential) organizational learning improvement from the adoption of an ABC System.

Situation analysis. In 1993, SAT was close to bankruptcy, its financial performance had been deteriorating for some years with consistent loss making and had reached a critical state. The strategic importance of the airport to the region prompted the local authority and local business to refinance the airport, to appoint a new Board and new top management in 1994. Improving financial performance was considered essential by the Board and made the explicit managerial priority. Furthermore, the owners, through Board membership, established on going pressure on management to succeed financially and required regular

Year of the financial reports	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Page where training investment are described	6	8	8	8	8	8	22	21	20	24	19	25	102	32

Table 4.
The training investment in the financial reports

Life-cycle stage	Year	Output cost information
Birth	1994	
	1995	
	1996	– ABC system operational
	1997	
	1998	– Revision 1 ABC system
	1999	– Revision 2 ABC system
Growth	2000	– ABC system abandoned
		– Full costing – regulated activity only
		– Incremental flight costs
		– Incremental flight costs abandoned
		– Average actual direct flight costs
	2001	
	2002	
	2003	
	2004	
	2005	– Overhead allocation
2006		
2007		

Table 5.
Costing system change in SAT

information to monitor performance and ensure satisfactory progress was being made. There was a top management consensus that gaining control of the business was another fundamental priority. The new CEO was an engineer and he had come from a manufacturing company. He had a very successful business track record and had placed great relevance (value) on the managerial conduction of the airport:

“Without a budgeting system I couldn’t do my job” (CEO)

Because of the CEO’s past experience and the situation he found in SAT in terms of both top management skills and available financial resources, he decided that responsibility accounting and budgetary system were a priority and the problem was to set up this management control system.

Nevertheless, the strong pressures on managers to achieve high level performance in the prevailing growth conditions and to deliver on ambitious strategic ambitions in a more competitive setting created a demand for output cost information, above all for handling services because of the imminent deregulation and the variety of services delivered by SAT. From the situation, analysis emerges that a need for managerial control had arisen and the problem was to select adequate managerial control systems.

Problem analysis. To define the detail of the problem from the situation analysis more information was collected, particularly, cost information. The newly-appointed CEO highlighted the need to determine the costs of handling services, which led to the need to re-determine their prices based on the costs incurred (8):

“CEO asked cost information for supporting price handling negotiation with airlines” (CFO)

The prices of handling services referred to different categories of services, such as passenger check-in, aircraft support services, freight support services, general aviation support services and others. The handling services, included in the Regulations approved by the government, were paid with the fees annually established by the Ministry of Transport. However, deregulation was expected to provide increased competition in the handling market. All this would, in itself, boost to start the construction of a costing system for handling services, but SAT’s top management was proactive and was already looking at the rising phenomenon of low-cost carriers. Low-cost carriers, in general, had a very simple approach to airport costs: once a certain number of expected flights had been established, with a given “load factor”, they could afford an “overall average airport cost” per passenger of – let’s say – “x”. So, on the one hand, the airport was encumbered by the formalities required by fee regulations (both for handling and for the duties to be paid for the other airport services). On the other hand, it had to negotiate with carriers and particularly with low-cost carriers, according to market logic. Furthermore, with the operation of low-cost flights, the portfolio of services required became even more differentiated. To face this challenge, the solution was to determine more accurately the costs for customized services (for pricing requirements) and to share with carriers the business risk of opening new routes. This approach was manifest in the activities of the newly created marketing committee (MC) within the top management team and was centered on achieving success in a fast growing but highly competitive market. One explicit task of this committee was to articulate the information needs of management also by external consultants. In addition, the committee was involved in pricing, customer negotiation and efficiency enhancement and all these activities contributed to generate cost information needs. The MC members claimed that pricing, customer negotiation and efficiency enhancement could all benefit from the availability of cost information on output. However, the new top management team (CEO,

MM, CFO) realized that in-house expertise in costing systems was non-existent and hiring staff to rectify this deficiency proved difficult.

Solution analysis. The MC formalized demand for cost information on output and decided to commission, in 1995, a firm of consultants to produce an ABC system that could identify the costs of individual flights and services.

Implementation analysis. ABC was developed with the advice of a consulting company, who worked for four months with two consultants in cooperation with the internal SAT personnel (Pirinei, 1997; Ameli, 1998).

Figure 3 summarizes the main steps in this first learning loop. It emerges that a wide amount of sub-activities was carried out within the phases of situation analysis (for valuing and priority setting) and problem analysis (for gathering information and problem definition) whilst the remaining phases (solution analysis and implementation analysis) are much less developed.

The change caused by the adoption of ABC could be considered as the result of double loop learning process (Sisaye and Birnberg, 2010) because it produces a very different way to conceive the resource consumption compared to the previous situation where only financial accounting was used. Hence, according to the ELT model, in the implementation analysis a more detailed inquiry on the consequences deriving from the solution chosen was expected. The ABC system, besides providing handling services cost data, increased the knowledge of top management of the organization. ABC made it possible to know, through the mapping of the activities, how the consumption of resources in the main airport services occurred. From this point of view, it allowed the acquisition of new knowledge concerning the process of providing services. Furthermore, the organization was equipped with a

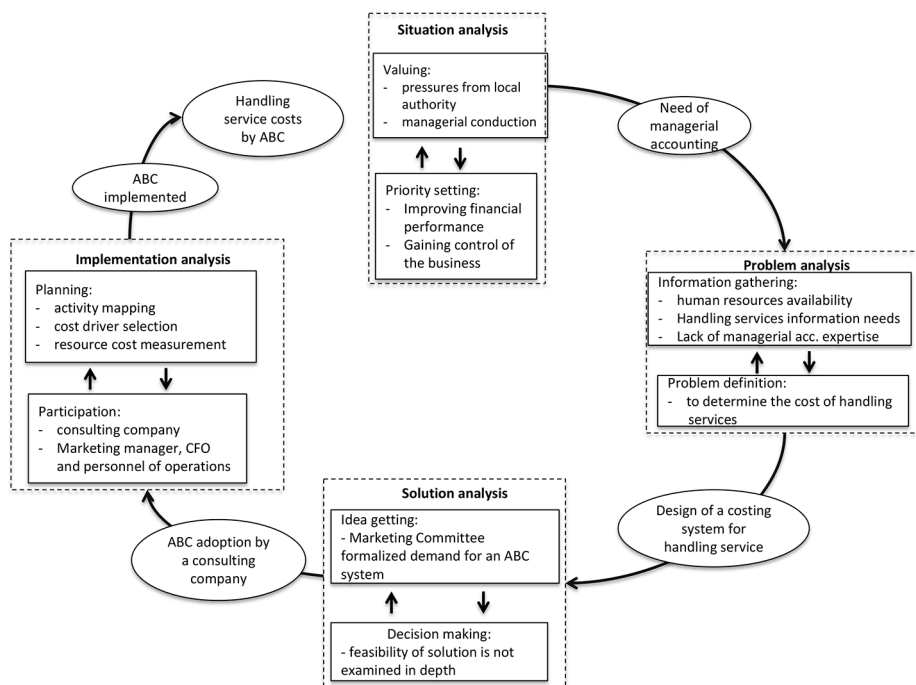


Figure 3.
The learning process
for adoption of
activity-based costing
in SAT SpA

costing tool, which provided specific learning and improvement opportunities for those working on the shop floor (Schiller, 2010).

Learning loop number two: the redesign of ABC and the knowledge, confirmation, acquisition and alignment.

Situation analysis. Technical factors bedevilled the development of ABC and exploitation of its potential benefits. The system that became operational in 1996 was very elaborate in nature and generated actual information costs. The outputs were perceived as both voluminous and complex. Managerial information overload was the consequence and a lack of user friendliness in the system restricted its use. Furthermore, there was a significant variation in calculated cost (e.g. in handling services costs). The MM recognized the usefulness of the ABC for supporting pricing settlement but called the output of that costing system “fluctuating”. Although it was logical to expect a fluctuation in unit costs, given an airport has high fixed costs and due to the seasonal nature of this business, this issue had not been properly focused in SAT up to this phase. Managerial confusion and consternation at this cost variation led to the ABC system losing credibility among the managers. However, after this “first learning cycle with ABC”, a knowledge confirmation was produced. Particularly top management realized that information costs effectively could be useful in decision-making (e.g. for setting the price of handling services), furthermore, it was useful to know how (by which main activities) services generated costs. However, there was a high uncertainty on the cost amount:

“Service costs change and we have many doubts on their amount above all in the traffic peak phase” (MM).

Moreover, the level of detail of the costing system was considered excessive for a company as SAT.

“ABC system was too analytic and the costs provided changed according to the airport traffic” (CFO).

Problem analysis. The problem was analysed by the members of MC and it emerged that the computation of actual costs on a monthly basis involved cost driver rates that were derived from actual activity pool costs and actual cost driver volumes. The latter varied considerably from month to month and, with so much of the airport costs being fixed in nature, cost driver rates and cost object costs exhibited great volatility, hence it was decided to change the ABC cost calculation.

Solution analysis. Managerial displeasure resulted in two attempts to change the ABC system [5]. Firstly, the system was simplified and a few prominent flight characteristics such as tonnage and number of seats were used as cost drivers. A further modification was tried and attempts were made to use capacities as a basis for cost driver rates.

Implementation analysis. The proposed changes were approved and implemented. Hence, the new ABC costing routines were adopted (Figure 4).

Figure 4 highlights the main steps of the second learning loop. In this loop and in the next ones, the priorities and values described in the learning loop number one remain (e.g. the priority for financial performance improvement or the belief in the managerial conduction).

Primarily, in this second loop, it emerges that the experience of the first version of ABC produced additional knowledge within management, about the use of resources during services delivery and, this time, also about the working of ABC. In fact, it was clear that the calculated cost of service depended on the type of cost drivers (capacity vs actual) and that there was a significant share of unused capacity. During an interview the MM said:

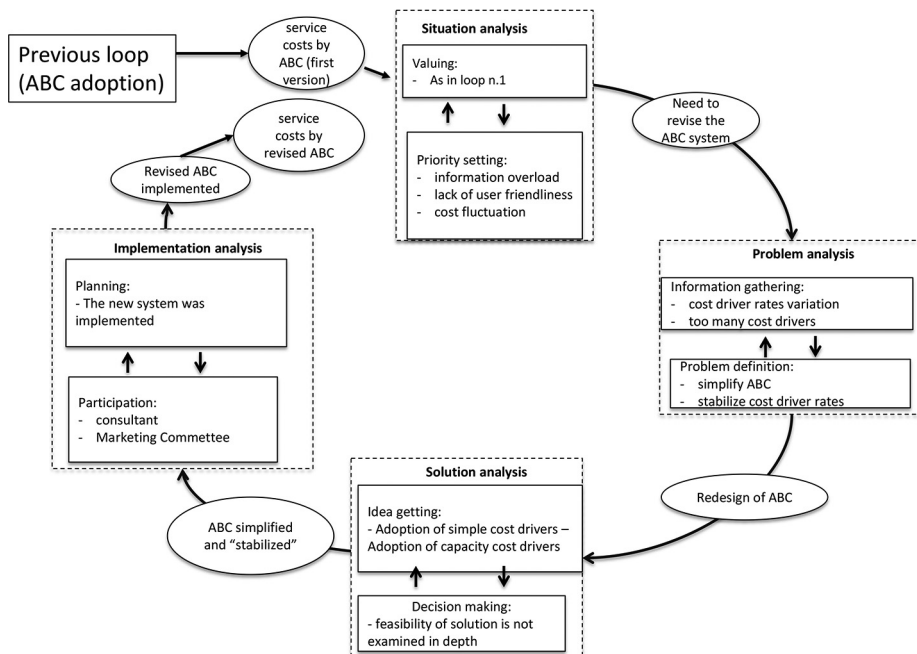


Figure 4.
The learning process
for revision of
activity-based costing

“We realized that there was a significant share of unsaturated capacity” (MM).

This was a novelty because managers had no expertise in handling services cost calculation. Furthermore, as in the previous loop, the ELT scheme put in evidence that the solution and implementation analysis were quite underdeveloped. For example, in the implementation stage, consequences of ABC improvement are not anticipated and the selected solution is not re-examined to verify if it has been properly chosen and defined.

Learning loop number three: the abandonment of ABC and the misalignment between knowledge required by the ABC and knowledge available in the organization.

Situation analysis. Whilst the changes in the ABC resulted in greater cost information stability, the outputs again lacked credibility for managers due to the poor accuracy and reduced timelessness of cost information.

Problem analysis. Analysing the problem, the MC discovered that many costs related to flights (e.g. the substantial cost of handling services) did not depend on aircraft weight. Furthermore, identifying and collecting capacity measures proved to be difficult:

“We realized that handling service costs did not depend only on the tonnage of the aircraft” (CEO)

Furthermore, at that time situation was clear both in terms of information needs and about technical and organizational troubles deriving from ABC adoption. Hence, the usefulness of cost information to support manager decisions was re-examined. MC realized that output cost information was useful above all to support the contracting with company airlines on the establishment of new flights and the furniture of a new bundle of service, hence SAT top managers were interested to know the costs emerging as a consequence of new services delivered.

Solution analysis. ABC was finally abandoned because it seemed too problematic. Because of cost information requests, the first response to the ABC abandonment was to provide incremental costs for each new flight. The available capacity was analysed in terms of personnel delivering the services so that it could be ascertained if more were needed. In addition, revenues generated by the start of a new flight were also estimated. Thus, for internal purposes, management started to assess the profitability of new handling services from a marginal cost perspective. Management considered the profitability of the relationship with the customer (airline) in the period in which transactions with the airport could take place. This analysis was useful to evaluate the convenience of a handling price reduction allowed by the regulator at that time and the profitability of the relationship with an airline company. Any change in prices had to be explained in terms of change in the amount of cost incurred because all agreements with the airline had to be profitable.

This new solution seemed to work because it was simple and it reflected the dynamic of expenses that, moreover, would be recorded into the income statement.

Implementation analysis. The incremental cost solution was implemented and became the new costing routine.

Figure 5 outlines the main steps of the third learning loop. In this loop additional knowledge was produced, that is:

- The cost of handling services did not depend only on aircraft weight.
- The consciousness that the effectiveness of a costing system depends on both technical aspects and organizational procedures needed to collect data on resource consumption and cost drivers.

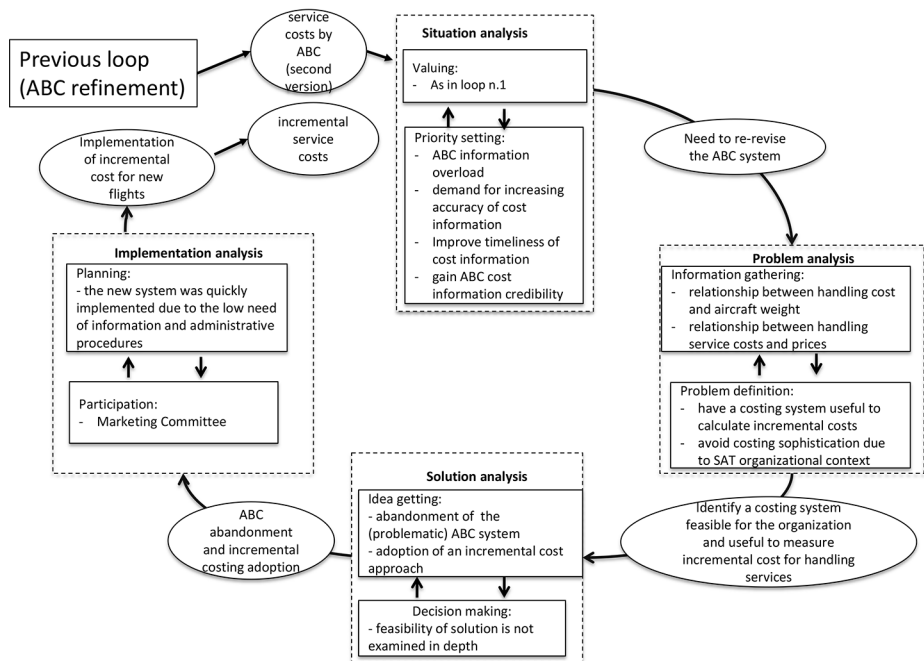


Figure 5.
The learning process for abandonment of activity-based costing and adoption of incremental cost approach

Indeed, it was difficult to obtain cost drivers based on capacity measures because this involved the adoption of administrative systems that were not yet developed within the company. As pointed out in the literature, when an accounting innovation is not only technical but involves administrative mechanisms at the organizational level, more effort is required in learning because many aspects need to be changed, diffused and routinized within the organization (Sisaye and Birnberg, 2010). Also, in this learning loop, “decision-making” (within “solution analysis”) and “implementation” phases seem flawed.

From a learning perspective, in this learning loop, there are at least two relevant elements. The first one is about the imbalance between the poor management accounting knowledge existing before the implementation of ABC and the level of knowledge required for improving ABC and exploit its potential benefits. This misalignment probably contributed to generate a negative perception of the ABC costs-benefits. The second one is about the priority setting carried out within the situation analysis step. The discussion about handling service costs outlined an emerging variety of handling services comparing to the past standard services and consequently, the need of more accurate costs for supporting decision-making (i.e. pricing and profitability analysis). Starting from this focus, incremental cost was selected as a suitable approach.

Learning loop number four: acquisition of new knowledge on the operational side, the abandonment of incremental costing and adoption of direct costing.

Situation analysis. However, after experimentation, the incremental cost solution showed some shortcomings. It was evident that the forecasted incremental cost often was significantly lower than the actual. Of course, contractual agreements based on the underestimated incremental costs were not profitable and so this costing approach had to be changed.

Problem analysis. Information on causes of misalignment between forecasted and actual costs was collected. It emerged that contracts with airlines typically ran for several years. Incremental flight costs were not stable but changed substantially over time and top managers were unable to predict these changes. This type of extreme cost variability again rendered the cost information unsuitable for managerial use, therefore the cost estimation should be done according to more conservative criteria. The difficulties in predicting incremental costs may seem obvious, however, the airport’s top management was facing two major innovations of which it had no experience, namely, one involved the provision of many different services (in the past few standard services were offered and a cost plus pricing approach was not necessary), the other innovation concerned the use of cost systems for which there was no experience (only financial accounting had been used).

Solution analysis. Due to the problems of the incremental cost approach, it was decided to cost services and flights assigning them direct costs according to the rationale of a standard cost approach. Costs were estimated by tracing the forecasted costs of resources used for service delivery and classified as direct costs (labour, direct material, depreciation of tools used for handling services, etc.). In this way, not only costs of forecasted additional resources were considered but also costs of existing resource consumption were attributed to the cost objects. The direct cost of services was always greater than zero, whereas previously it could sometimes be zero (in the event that it was not necessary to acquire additional resources externally to provide some services to the airline). The difficulty remained in predicting additional services, however. According to management, by the direct cost approach, the average cost of the services tended to be higher than the average cost obtainable by trying to predict only the incremental costs. Given that the service forecasted costs were the basis for estimating the prices, on average, through the direct cost

approach, management expected that the revenues for the services would be higher than those achievable through the incremental cost approach.

Implementation analysis. The method based on direct cost computation was planned and implemented. Field measurements have been conducted to obtain information on the times and procedures for the delivery of support services, based on an “average support cost” for a given type of handling services dedicated to a particular type of aircraft has been defined. The cost obtained with this survey has been defined as a satisfactory “average cost” because, once the type of service required has been established, the real delivery conditions may vary (e.g. depending on the weather conditions). This kind of costing was similar to a standard costing system. Through this costing system, direct costs were assigned to the activities necessary for supplying handling services. Of course, managers planned and realized all the procedures necessary to collect cost data, particularly for each service category, the standard cost were estimated, using the standard time as cost drivers (e.g. labour time, machine time, etc.) and multiplying the standard time for the relative hourly rate. In doing this, it was useful the activity map realized previously for ABC purposes.

Figure 6 shows the main steps of the learning loop number four. In this learning loop, additional knowledge was produced from two sides, namely, accounting and operations.

From the accounting side, management learnt that incremental cost was a rational, clear and simple approach, however, it was hard to put in practice because of difficulties in forecasting costs due to the variations in the flight’s programme. In addition, it is evident that this time management used knowledge produced by previous trial and errors because within solution analysis an accurate study of time for handling operations was made. Moreover, SAT benefited of previous experience because the new direct costing system had

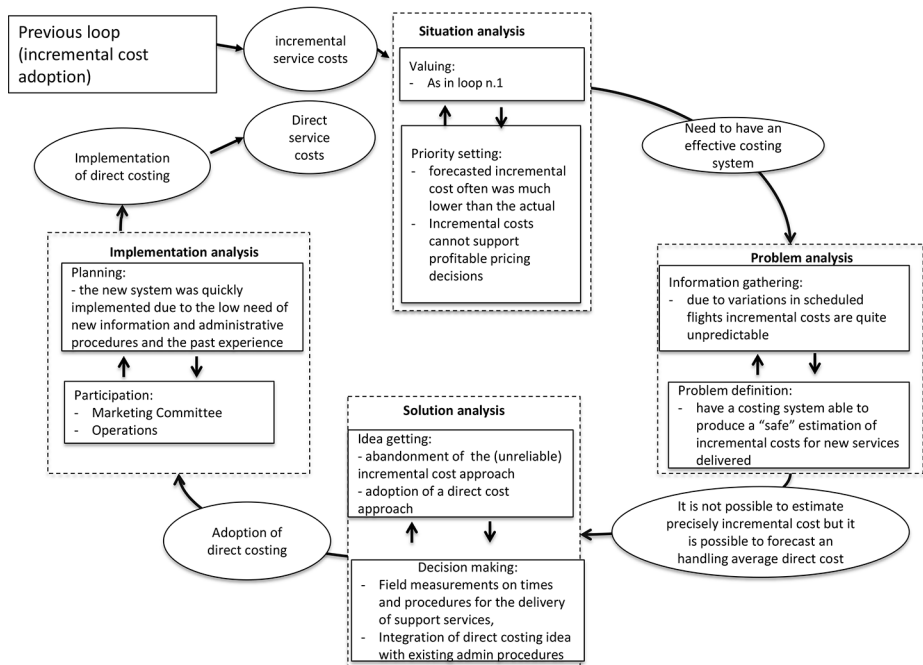


Figure 6.
The learning process for abandonment of incremental cost approach and adoption of direct costing

a high degree of relatedness (Ditillo, 2012) with existing knowledge on cost calculation produced through the previous learning loops. This confirms both the relevance of expertise in introducing costing innovation within organizations (Schulz, 1998) and the positive role that could have a high degree of relatedness between the existing costing knowledge and that introduced through the change.

From the operational side, top management realized that many variables can affect the quality and quantity of handling services demanded by an airline, so it was impossible to predict exactly their cost.

Learning loop number five: knowledge accumulation and adoption of the full cost approach.

Situational analysis. The “average direct cost” in front of the need to support services pricing and profitability analysis performed better than the incremental approach, but as regard pricing and profitability, it had a technical deficiency, as it excluded the significant overhead element of airport cost. Thus, the overhead allocation was considered as quite obvious step to refine the costing system.

Solution and implementation analysis. At this point of the learning process, due to the past experience, it was not necessary to analyse deeply why and how to allocate overheads. Cost allocation estimates were therefore, simply incorporated into the system (not by the sophisticated ABC procedures but in a way closer to a traditional costing system) and eventually actual costs were replaced by standard or normal costs. This provided the forward-oriented costs and the information stability that managers sought.

This learning loop was quite short due to the limited changes made, but it is very significant because it shows that previous learning loops permitted a progressive knowledge accumulation that gradually improved the capacity to design and use an effective costing system.

After these last changes, the costing system was subjected to some further modifications. However, the purpose of these last interventions was not to face problems of the existing costing system, but to update them. Since 2000, full cost information was required to meet the government’s uniform costing specifications for regulated airport activities. The regulated uniform cost obliged SAT to increase its knowledge on costing because the uniform scheme was comprehensive and devoted to produce full cost information to justify the prices charged. Finally, the assumption of a Stock Exchange listing in 2007 caused SAT to begin adherence to International Financial Reporting Standards (IFRS). IFRS 14 required the division of costs between aviation and non-aviation services, further cost pools and cost drivers were introduced within the existing costing system to allocate costs between these two service categories.

5. Discussion

This study explored management accounting change through the lenses of the problem management model based on the theory of experiential learning (Kolb, 1983, 1984). It has provided an interpretation on how learning is involved in changes of costing practice over an extended period of time and in a context where management had no management accounting experience.

The review of the SAT case highlights three main contributions. One is related to the phases of learning processes behind management accounting change from a longitudinal perspective; the second pertains to the impact of such learning phases on management accounting change; the third is about practical implications.

The phases of learning process behind management accounting change from a longitudinal perspective.

The analysis of the learning process carried out in the case study confirmed the well-known learning phases based on trial and error patterns. However, ELT offers some additional lessons.

Through ELT, the case history activities of management accounting change have been grouped within the following phases, namely, situational analysis, problem analysis, solution analysis and implementation analysis. This re-classification of empirical findings permitted some additional insights. Primarily, this scheme clarifies the level of effort within each phase of the learning process. The degree of this effort can be assessed by looking at the extensiveness ([Ansari et al., 2010](#)) of implementation of the activities included in each phase of the ELT scheme. We can distinguish far reaching or restricted efforts.

Secondly, telling the story through this framework permits to appreciate how knowledge was acquired and confirmed by several learning loops. New knowledge has been acquired both about the working of costing system and the delivering of services. As concerns costing systems, several iterations of practice were undertaken to get finally a cost information managerially acceptable and usable. Through these interactions, top management learnt that ABC, as a management accounting routine, produced error₁ (i.e. the cost fluctuation due to the use of actual rather than capacity cost drivers) and error₂ ([Rerup and Feldman, 2011](#)) because at a certain moment this system was not consistent with the rationale behind an incremental cost approach. Experiencing the complexity and detail of ABC, the problem of the capacity base for cost unitization and the inadequacies of incremental costs for pricing were all factors, which led to the progressive learning and consequently, to a costing change. This was new knowledge, identified through the ELT scheme. However, iterations of the learning loop put in evidence also cases of knowledge confirmation, regarding both usefulness of reporting resource consumption by activities and the right setting of priorities deriving from situation analysis (e.g. relevance of handling services cost information). However, costing design and implementation activities permitted also to increase knowledge concerning features of services delivered. Unused capacity ("discovered" by the second version of ABC) and unpredictability of some services ("discovered" by incremental cost) are examples of different types of knowledge acquired by repeating learning loops mapped according to ELT. Changes in costing systems are coming from this complex interplay among knowledge acquisition and knowledge confirmation, pertaining both to technical aspects of costing systems and cost objects measured through the costing systems (handling services in the SAT case).

Furthermore, coding events according to the ELT cycle helps to understand why top management has some perceptions about some costing systems and, consequently, decided to abandon it rather than to continue to modify it according to a continuous learning improvement path. In fact, top management learnt that a costing system, when it is a systemic and administrative innovation ([Sisaye and Birnberg, 2010](#)), has to be implemented integrated with other information subsystems and organization procedures. Otherwise, its accuracy or timeliness will be flawed. This integration asked for a pre-existing level of management accounting knowledge that in SAT was not available. Hence, management perceived a great gap between the level of "accounting knowledge" available or that can be acquired in the short term and that needed to refine and run an ABC system. This misalignment between the knowledge available and knowledge needed could have contributed to the abandonment of the ABC system.

This interpretive framework proposed adopting the phases coming from ELT it was useful to understand how different types of knowledge are implicated in the management

accounting change and, from an interventionist point of view, made it possible to plan how to shift from an unconscious learning and knowledge production to a conscious knowledge management.

The impact of learning phases on management accounting change.

The SAT case showed that the learning process develops differently according to the techniques adopted and when they are implemented. At the start, ABC exhibited technical problems (actual cost drivers varied considerably with so much of the airport costs fixed in nature) that were analysed and solved (use of capacity drivers). Capacity drivers were permitted to shed light on the unused capacity and avoided fluctuation of service costs because they moved the system from actual costs to standard costs. Nevertheless, this improvement caused other drawbacks (timeliness of information, accuracy and collecting information) that resulted in the abandonment of ABC because it was perceived too problematic. As a solution, incremental cost was adopted and used. In spite of its simplicity, incremental costing was soon perceived risky as it could deliver underestimated cost information for price setting. Due to this, incremental cost was abandoned without any attempts to modify or improve it. Looking at the learning processes realized for these two costing schemas and mobilizing the concept of routine (Feldman, 2000; Rerup and Feldman, 2011), some differences emerge. The first changes in ABC aimed to repair some routines to realign their outcome to the expected one. However, trials carried out showed that something was repaired (by capacity drivers a greater cost stability was obtained). The new routines impacted negatively on the perception of the entire schema (ABC system was considered too problematic) and contributed to the shifting towards another costing schema (incremental costing). In contrast, for the incremental costing approach, there were no attempts to repair routines, it was abandoned immediately just when it revealed the problems. Reliability of forecast incremental costs could have been improved by adopting new routines or by expanding or repairing some existing routines. However, considering the problems of the core characteristics of incremental costing and given the constraints of human resources to devote to the operation costing (in the SAT case priority for responsibility accounting was established), the incremental costing system was soon perceived not suitable to support the needs of management. These two different learning-loop stories of costing systems confirm that some trial and error patterns of learning lead to a gradual change in the schema adopted, whilst other experiences initiate the move to another costing approach. This could depend on the influence that the type of error has on the perception of the costing system as a whole and by the perceived costing system complexity. However, the problem management model of Kolb (1983) helps to enrich this explanation. The perception of a costing schema as problematic, unreliable and risky, could depend both on its technical characteristics, on social factors such as expertise, human resource availability, organizational priorities, management style and skills, costing knowledge available and that which can be acquired shortly but also on how the phases of the learning processes have been carried out (Kolb, 1984).

As mentioned in the previous section, mapping SAT management accounting change permitted to put in evidence that the problem-solving activities (and the corresponding learning activities) have been developed by a different effort in the learning loops. This led at a different extensiveness (Ansari *et al.*, 2010) of implementation of the activities included in each phase of the ELT scheme. Whilst situational and problem analysis are complete because they include the activities provided by the theoretical model and there is a comprehensive description of these activities (valuing and priority setting for situational analysis, information gathering and problem definition for problem analysis), implementation analysis and solution analysis are less complete (Figures 4-6). For instance,

in solution analysis, the feasibility by checking the implications of cost information reliability and organizational impact of the two versions of ABC and of incremental cost were not deepened in the same way, whilst in the implementation analysis, the participation of different people involved in new costing routines was not detailed. By contrast, for direct costing, the solution and implementation analysis were more developed (Figure 5). This situation suggests that in SAT the prevalent learning process style could be the “divergent” learning style (where the strength relies on concrete experience and reflective observation), given that in SAT case overall situational analysis (concrete experience) and problem analysis (reflective observation) were more emphasized than implementation analysis (active experimentation) (Kolb, 1984). Ideally, this learning style could be represented as in Figure 7.

In Figure 7, percentages range from 0 to 100% according to the weight that a learning activity has in the learning process. This representation is not based on a structured way to determine overall percentages for SAT, but aims to communicate the order of magnitude according to which the learning activities influenced the learning process. Hence, consistently with SAT findings and through the concept of extensiveness described before, we selected 100% for “situation analysis” and “problem analysis”, less for “implementation analysis” (60%) and even less for “solution analysis” (20%).

The divergent learning style has the greatest strength in imaginative ability and awareness of meaning and value. Indeed, as concerns meaning and value, in SAT the relevance of the managerial approach to improve a company’s financial performance is well-established, as well as its competitiveness and gaining control of the business. Furthermore,

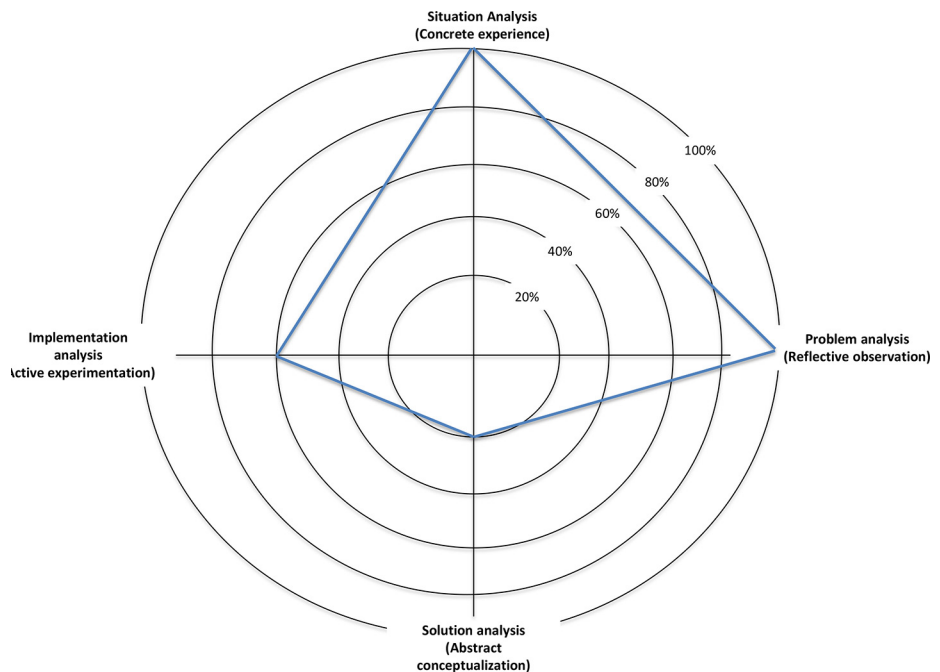


Figure 7.
The case study
learning style

Source: Adapted from kolb,1984

top management manifests a significant dynamism in shifting among different costing systems and in generating alternative ideas and implications. These two elements are the key characteristics of the divergent learning style (Kolb, 1984: p. 78) and can help to understand why the learning process was not linear (e.g. after the ABC rejection, the company returned to its initial practice situation).

As illustrated in Table 1, the greatest strength of the divergent learning style lies in getting involved in new experiences and generating new ideas. People with this learning style tend to discard theories or plans where they do not fit the facts and to solve problems in an intuitive trial-and-error manner. These characteristics are clearly evident in SAT case, as top management experimented with different costing routines and applied trial-and-error patterns (see evidence on the two versions of ABC and the experimentation of incremental costing). However, it is also evident that these costing techniques were selected and implemented without deepening solution and implementation analysis and this could be the reason why some additional trials and errors are made or repeated.

The perception leading to a shift towards another costing schema (Rerup and Feldman, 2011) and the repetition of trial and error can be rooted in scarce available resources, expertise but also in the prevalent learning style and in how this learning style is applied. In SAT case, the divergent learning style was dominant. Due to its emphasis on situational and problem analysis firstly, it brought about some additional trial and error, secondly, it pushed the transition from one costing system to another one. The next figure represents this shift from one costing system to another because of the action of learning style (Figure 8).

The influence of learning style on management accounting is considered in the literature (Lukka, 1998; Schiller, 2010). Particularly, Schiller (2010) underlined the need of consistency between the prevalent organizational learning style and the characteristics of management accounting systems. More precisely: “[...] analytical learning is the learning style that supports and underlies traditional accounting systems, whereas holistic learning provides

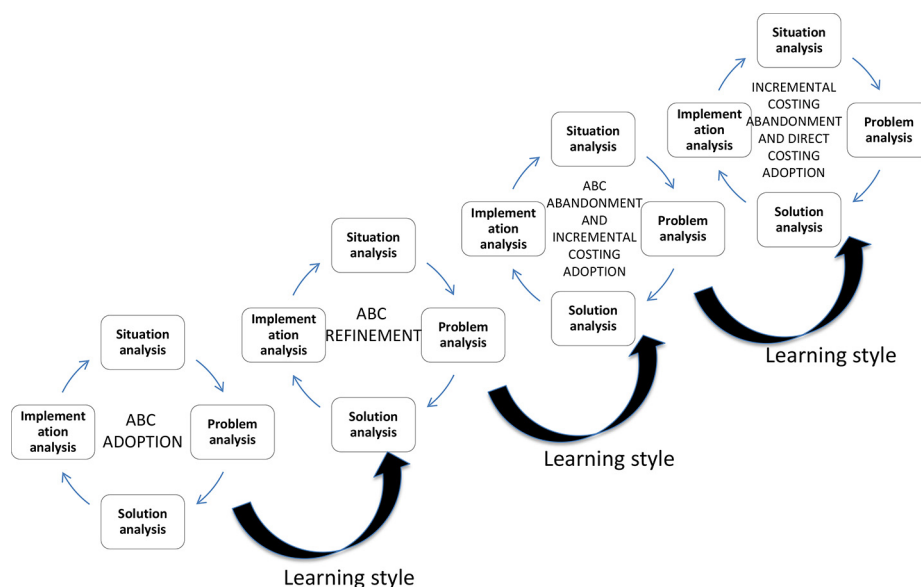


Figure 8.
Learning style and
change in costing
system

the basis for new accounting concepts” (Schiller, 2010, p. 127), furthermore “Kaizen and ABCs are examples of concepts that focus on learning and improvement because they provide specific learning and improvement opportunities for those working on the shop floor” (Schiller, 2010, p. 129). The study carried out in this paper relies on the linkage between learning style and management accounting systems in a different manner with respect to this previous literature. Firstly, this linkage here is between learning styles coming from people (namely, the Management Committee members) and the costing systems; secondly, this linkage is analysed through the ELT scheme applied iteratively on a longitudinal case study.

Possible practical implications for a management accounting change

Looking at SAT case through ELT, three main practical issues of the learning process come up.

The first is about the learning style. SAT case put in evidence that it is important how a certain learning style is applied: it could be “right” for a specific context, but the implementation could be incorrect (i.e. some phases not properly made). The nature of the process is such that opposing perspectives, such as action and reflection, concrete experience involvement and analytical detachment, are all essential for optimal learning. According to Kolb (1976, p. 26), the most effective learning systems are those that can integrate differences in perspective.

The second potential practical implication is about the lack of management accounting skills. In SAT, expertise in costing and in general in managerial accounting were absent. Analysing the learning activities that people put in place to create new knowledge, it is possible to note that these activities are mainly focused in the situation and problem analysis and much less on solution analysis and implementation analysis. Instead, the case shows that when there is not expertise the latter phases are very relevant and can contribute to reduce the risk of errors in selecting the costing system or in its redesign. It is possible to underline the potential benefits of these phases considering the implementation of direct costing, where the solution analysis was deepened in respect to other costing systems. Furthermore, the case of direct costing put in evidence also that the learning process is affected by the degree of relatedness (Ditillo, 2012) between existing knowledge and the knowledge required to assess and implement a new costing system. When managers decided to adopt the direct costing, they carried out also solution and implementation analysis (Figure 6). This produced a learning process not flawed and more effective and direct costing was implemented without a following rejection or radical redesign. The increase in attention by managers to the phases of solution and implementation analysis came from previous knowledge accumulated by ABC (measurement of cost labour for costing the activities) and incremental costing (it was not examined in depth). Hence, the lack of management accounting skills is a contingency that on the one hand shows the importance of a relatedness degree between existing management accounting knowledge and the knowledge needed to make changes, on the other hand side, it underlines the relevance of some phases within the learning process.

Finally, the case highlights that the roles of participants are highly relevant for the learning process. As underlined at the beginning of this study, people can change management accounting and determine its form. People involved determines what changes are to be made and how they are realized on the basis of experience, skills, management style and consistency between cost information features and decision-making needs (Anderson, 1995; Libby and Waterhouse, 1996; Anderson and Young, 1999; Williams and Seaman, 2001). Looking at the processes using the lenses of the problem management model helps highlight the roles played by organizational participants, in terms of their leadership

of change, their organization to facilitate change and their reactions to the realized change. In the SAT case, the leadership of the CEO emerges in driving changes. Furthermore, the Management Committee provided an organizational mechanism to support learning processes, i.e. the forum, which allowed criticisms of the information to be shared and solutions to be formulated. Some changes were aborted (ABC), others were maintained and modified progressively (direct costing). Top management acted continuously to adjust and improve the costing system change. The continuous effort to change costing systems and the openness to new ideas (e.g. incremental costing) shows the relevance for management accounting change of the management attitude to change. Hence, the message of ELT seems that also the key role of the people during the learning process should be considered and planned through suitable managerial initiatives.

6. Lessons learnt from the learning perspective and further research

The learning model used in this study (Kolb, 1976, 1983; 1984) provides a basis for understanding how costing system change can be interpreted as a cumulative learning process that requires a longitudinal and processual research perspective (Pettigrew, 1985; Burns and Scapens, 2000; Dawson, 2014). From this perspective, change is a function of learning, experience and learning style. Without considering the learning style of participants' experience from practice, it is unlikely that this dimension of change can be fully understood.

As illustrated in the paper, it is particularly relevant to understand the learning process because the ways in which phases of this processes are carried out and the emphasis on some of these phases can identify the management learning style and explain why some accounting routines may change in an incremental and radical manner or some trials and errors are repeated to adjust accounting routines. In the SAT case, management adopted a learning style focused on the situation and problem analysis and less on the solution and implementation analysis. Furthermore, it seems that some learning phases should have been carried out more thoroughly. This implied that some consequences of the costing system were not properly foreseen and the management tried to adapt the costing system to align it with the decision-making needs as they became aware of this. If the learning process had not been so unbalanced towards some phases, subsequent attempts to develop the costing system could have been avoided. The case also highlights that if an organization does not have previous experience in management accounting, during the learning process, it should also take particular care of the solution analysis and planning phases, to compensate for the lack of knowledge resulting from previous experiences.

The changes observed in this study could be related to the different theories of change, e.g. actor-network theory (the role of human and non-human actors in driving change), agency (the need for the owner to monitor the new board), diffusion (the information field, past experience, of new managers) and institutional (the routinization of new information). The learning approach, through the reiteration of its typical (four) phases, emphasizes, namely, how change can rise as a response to prior change when repeated attempts are made to overcome the practice deficiencies perceived in a trial-and-error process, the influence of the learning style on the change of management accounting routines.

Because of its explorative nature of the management accounting change phenomenon through the lenses of ELT, several further areas of research are suggested by the findings of this paper. In particular, it would be of interest to investigate links between learning styles and communication (Kolb, 1976, p. 29) and its effect on management accounting change.

Notes

1. The model of problem management includes also some complementary aspects such as the intellectual processes applied in each stage. Kolb (1983) explains that the experiential learning cycle is driven by two types of dialectically opposed sub-processes of learning, namely, “reality grasping” and “reality transformation”. Each includes opposing sub-intellectual processes to realize them. In reality grasping, sub-intellectual processes are apprehension and comprehension, whilst transformation sub-intellectual processes are extension and intention. Due to the aim of this paper these aspects of the model are not expanded.
2. Kolb (1983) considers as processes “valuing” and other sub-activities represented in Figure 1. To distinguish the overall learning processes represented in Figure 1 from its segments, we re-coded the four stages of the processes as activities (for instance, situational and problem analysis) whilst details of these activities such as valuing, are called sub-activities.
3. We are referring to a theory as “an ordered set of assertions about a generic behaviour or structure assumed to hold throughout a significant range of specific instances” (Keating, 1995, p. 68).
4. The complete text of the press release is available at the web site: www.pisa-airport.com/sat/cda/aree/index.php?idArea=19 (27 May 2007).
5. To the ABC redesign was involved also one of the co-authors of this paper.

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