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Linking strategic management accounting and quality management systems

Management
accounting and
quality
management

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Abstract

Purpose – Quality management is gradually becoming an area of interest among management accounting practitioners and scholars because of its significant effects on performance and increasing adoption by organizations. Therefore, the purpose of this paper is to explore the relationships between these two broad disciplines and provide guidelines for their joint consideration.

Design/methodology/approach – Two specific management innovations are analyzed in detail: strategic management accounting (SMA) and ISO 9000 quality management system (QMS). Such an analysis includes a literature review of both frameworks, the identification of benefits associated with their simultaneous application and the design of a comprehensive model integrating their individual principles.

Findings – It is concluded that these management schemes are compatible and complementary from a theoretical standpoint; and that, therefore, their combined implementation might help organizations improve overall performance. It is also argued here that their use in conjunction could facilitate the spread of SMA techniques and the full exploitation of QMSs.

Originality/value – A new management system proposing the incorporation of SMA tools into traditional QMSs is introduced, and some recommendations for its practical use are presented.

Keywords Quality management, ISO 9000, Management accounting, Strategic management accounting

Paper type Research paper

1. Introduction

During the last few years, management accounting literature has progressively recognized the growing influence of quality management on management control systems. Nevertheless, academic studies providing guidelines for the integration of these two distinct disciplines in practice are still scarce. Due to its strategic focus, strong interaction with operational processes and direct connections with different interested parties, strategic management accounting (SMA) appears as a possible link between conventional managerial accounting practices and traditional quality programs.

The present research explores the relationships between SMA and a specific quality management model: the ISO 9000 quality management system (QMS). Its main objectives are to assess the potential benefits of their joint utilization, to identify and analyze their theoretical commonalities, and to put forward an approach for their combination in practice. For this purpose, Section 2 presents a comprehensive theoretical framework on SMA, which consists of the definition of the tools it encompasses and the assessment of its current status. Similarly, Section 3 introduces some broad concepts and facts associated with the ISO 9000 QMS, covering the requirements for its implementation in organizations and its practical limitations. Subsequently, the reasons for suggesting the integration of these management innovations are introduced in Section 4, through the explanation of the potential benefits of their simultaneous application and an account of previous references to more general connections between management accounting and quality management. Finally, Section 5 provides guidelines for the effective consolidation of SMA practices and QMSs, including a detail of the theoretical links between these two models and a description of a tentative scheme for their use in conjunction.



2. Strategic management accounting (SMA)

2.1 Definition and tools

The term SMA was originally introduced by Simmonds (1981) in the UK, but it was not until a decade later that it acquired academic relevance through the work of Bromwich (1990) and Roslender (1995). The aim of this new discipline may be described as “[...] the provision and analysis of financial information on the firm’s product markets and competitors’ costs and cost structures and the monitoring of the enterprise’s strategies and those of its competitors in these markets over a number of periods” (Bromwich, 1990, p. 28). Almost simultaneously with the emergence of SMA, a similar movement arose in the USA under the name of strategic cost management (SCM), mainly developed by Porter (1985), Shank (1989) and Shank and Govindarajan (1995). In general terms, this field of study consists in “[...] the managerial use of cost information explicitly directed at one or more of the four stages of the strategic management cycle” (Shank, 1989, p. 50). Although SMA and SCM present some similarities and, therefore, might be regarded as synonymous, the former is usually considered broader than the latter (Langfield-Smith, 2008). Hence, the term SMA will be adopted in this paper in a generic way, comprising all the practices proposed by both subjects.

SMA is normally defined as a cluster of techniques more than as a discipline in itself (Guilding *et al.*, 2000; Langfield-Smith, 2008). In one of their studies, Cadez and Guilding (2008) identify 16 individual SMA tools grouped into five broader categories, as follows:

Costing: this encompasses specific techniques concerning cost measurements of various kinds, including attribute costing, life-cycle costing, quality costing, target costing and value-chain costing. Attribute costing involves calculating the costs of product attributes, such as reliability, innovative design and easy maintenance; and comparing them with the value that these attributes provide to customers (McNair *et al.*, 2001; Roslender and Hart, 2010). Life-cycle costing entails estimating all the expenses the customer will have to bear over the product life (such as operational, maintenance and disposal costs) apart from the initial purchase cost (Bell *et al.*, 2004). As for quality costing, there exists abundant literature on the topic proposing different definitions, classifications and measurement approaches (see Schiffauerova and Thomson, 2006), but most specialists agree that it basically consists of identifying and quantifying prevention, appraisal and failure costs (Gryna, 1998; Shank and Govindarajan, 1994). As its name implies, target costing is about establishing the target cost for a product by subtracting its desired profit margin from its market price and, afterwards, comparing that target with the actual cost (Kato, 1993; Monden and Hamada, 1991). The last tool in this category is named value-chain costing and suggests extending the traditional cost analysis beyond the boundaries of the organization to suppliers and customers, in order to take advantage of potential synergies and alliances (Cooper and Slagmulder, 2003; Shank and Govindarajan, 1995).

Planning, control and performance measurement: this comprehends two practices that involve comparison of performance to standards: benchmarking and integrated performance measurement. Benchmarking consists in continuously comparing and contrasting the organization’s processes against those of business leaders with the objective of improving performance (Cravens and Guilding, 2001; Lema and Price, 1995), whereas integrated performance measurement includes those sets of financial and non-financial measures, such as balanced scorecards, that provide information to enhance customer satisfaction and competitive advantage (Cinquini and Tenucci, 2007; Ittner *et al.*, 2003).

Strategic decision making: this category comprises strategic costing, strategic pricing and brand valuation; three distinct tools addressing matters highly relevant to decision making. In contrast to conventional techniques that only focus on internal cost reduction, strategic costing aims to expand the cost analysis to take into account the strategic position of the firm and its long-term competitive advantages (Cooper and Slagmulder, 2003;

Cravens and Guilding, 2001). Broadly, strategic pricing can be defined as the assessment and study of strategic factors (such as competitor price reaction, elasticity, market growth, economies of scale and experience) when establishing prices of products and services (Cinquini and Tenucci, 2007; Simmonds, 1982). Finally, the objective of brand valuation is to estimate the financial value of a brand by evaluating its strength factors, such as leadership, stability, market share, internationality, trend, support and past profits (Cadez and Guilding, 2008).

Competitor accounting: this proposes the utilization of several particular techniques associated with competitors, such as competitor cost assessment, competitive position monitoring and competitor performance appraisal. The first is intended to regularly provide updated information about unit costs of competitors (Guilding, 1999), be it through direct physical observation or indirect sources of data, such as suppliers and customers in common with and former employees of such competitors (Ward, 1992). Competitive position monitoring represents a more comprehensive approach than competitor cost assessment given that, besides considering their costs, it incorporates other competitors' variables into the analysis, such as their sales, market share, production volumes and profits (Simmonds, 1981, 1986). The last competitor-related practice is known as competitor performance appraisal and differs from the other two above in that it specifically centers on the examination and interpretation of competitors' published financial statements so as to identify their sources of competitive advantages (Guilding, 1999; Moon and Bates, 1993).

Customer accounting: this category concentrates on several aspects of customers from an accounting perspective, including customer profitability analysis, lifetime customer profitability analysis and valuation of customers as assets. Being a practice developed in both marketing and accounting literature (Niraj *et al.*, 2001), customer profitability analysis entails the calculation of profits generated from sales to particular customers (Guilding and McManus, 2002), through the application of activity-based costing principles (Roslender and Hart, 2010). As can be inferred, lifetime customer profitability analysis stretches the time frame of customer profitability analysis to include future periods (Guilding and McManus, 2002), given that information about past profits might not be enough to judge the importance of a customer to the firm (Van Raaij *et al.*, 2003). In turn, valuation of customers as assets is a further extension of the two previous practices, as it only requires determining the present value of expected earnings streams attributable to each customer, through discounted cash flow analysis (Gupta *et al.*, 2004; Gupta and Lehmann, 2003).

2.2 *Spread and decline of SMA*

During the first years after its emergence, SMA generated considerable interest from accounting practitioners and researchers and, therefore, there were high levels of expectation about its subsequent development. At the beginning of the 1980s, Simmonds (1981) stated that management accountants were already using strategic practices related to competitors and, for that reason, was optimistic about their further dissemination. Despite the fact that major surveys conducted in the late 1980s and early 1990s indicated a limited level of adoption of SMA tools, there were clear indications that their use would increase in the immediate future (see Bromwich and Bhimani, 1994). At the same time, there was a similar impression among management accounting specialists about SCM in the USA. In this regard, Shank (2006) recalls that, at that time, he believed that "[...] Strategic Accounting would gradually supplant Management Accounting, just as the latter had gradually supplanted Cost Accounting" (p. 356). In other words "[...] in the 1980s, SMA started with great promise and for many years there was much enthusiasm from the professional and academic accounting communities" (Langfield-Smith, 2008, p. 220).

Notwithstanding its continuous academic development and its early growth prospects, SMA has been scarcely adopted since its first introduction (Bromwich, 1999; Cravens and Guilding, 2001; Guilding *et al.*, 2000; Lord, 1996; Nixon and Burns, 2012; Roslender and Hart, 2003; Shank, 2006). Through an exploratory field study comprising a group of companies, Roslender and Hart (2003) demonstrate that this new branch of accounting has had little impact on practice in the UK. A similar conclusion is drawn by Shank (2006) about firms from the USA, emphasizing the fact that most of the examples of SCM applied to business have been mere pilot projects without adequate support and continuity. Moreover, in a survey research addressing both the relative usage rates and the perceived usefulness scores of SMA practices, it was determined that the former was significantly lower than the latter (Cravens and Guilding, 2001). However, the degree of acceptance has not been the same for all SMA tools, with life-cycle costing and attribute costing among the least (Cravens and Guilding, 2001; Roslender and Hart, 2003), and competitor accounting and strategic pricing among the most (Guilding *et al.*, 2000) effectively implemented in organizations.

Despite the overall low level of adoption of strategic accounting in practice, some articles have reported successful implementations of such techniques in particular regions (Cinquini and Tenucci, 2007) and branches of industry (Collier and Gregory, 1995). Nevertheless, the sporadic practical cases found in literature have not been enough to grant SMA as high a degree of recognition as other management accounting tools (such as activity-based costing or the balanced scorecard) have achieved. One important reason for this is that several of the techniques identified as SMA tools are often within the domain of other disciplines, such as marketing and operations management and, therefore, not managed by accountants (Lord, 1996). In fact, some authors claim that there is still little agreement on the meaning and contents of SMA (Guilding *et al.*, 2000; Roslender and Hart, 2003), whereas some others suggest that this term is not always well understood and, in some cases, not even recognized (see Langfield-Smith, 2008).

In summary, it may be asserted that this new strategic field of study, which arose three decades ago to help management accounting regain its relevance, has fallen short of its purpose so far. In spite of its significant theoretical development and the strong academic support it initially received, SMA has not produced the expected effects on organizations around the world. Nonetheless, several of the methods this discipline proposes have proven to be successful when applied separately by professionals of other fields such as marketing or operations management. Consequently, the causes of the failure of SMA seem to be associated with the lack of a coherent, comprehensive framework that provides guidelines for the systematic, simultaneous and coordinated use of the individual tools this discipline comprises. This point of view is endorsed by Otley (2006, p. 304), when he states that “the strategic management accounting movement [...] has been more concerned to develop new techniques than to design overall control systems.”

3. The ISO 9000 quality management system (QMS)

3.1 Requirements and guidelines for ISO 9000 implementation

The standards included in the ISO 9000 series are issued by the International Organization for Standardization (ISO), a global institution composed of representatives of several national standards bodies. The primary purpose of these guidelines is to assist organizations of every kind and size to implement and operate QMSs in an effective fashion (Hoyle, 2001). It is worth clarifying that, as opposed to popular belief, ISO 9000 is not centered on guaranteeing quality of products but on managing and improving quality-related processes (Briscoe *et al.*, 2005). This worldwide recognized quality management model currently comprises three main documents: the ISO 9000 standard, which presents its principles and defines the main concepts associated with it (ISO, 2015a); the ISO 9001 standard, which lists and explains its implementation requirements (ISO, 2015b); and the ISO 9004 standard, which goes beyond the

basic requisites introducing further recommendations for the sustainable growth of organizations (ISO, 2009).

The QMS model is based on a group of fundamental principles which derive from and resemble those supporting the general total quality management movement (TQM). These tenets are presented by the ISO 9000 standard (ISO, 2015a) as follows:

- Customer focus: every member of the organization should understand the importance of customers and thus work to satisfy their needs and expectations.
- Leadership: within every team or group, there should be a leader who is able to provide the appropriate guidance to achieve the organization's goals.
- Engagement of people: management should be able to make employees use their skills and abilities to contribute to attaining the organization's objectives.
- Process approach: activities should be managed as interrelated processes; identifying their respective inputs, resources, outputs and value added.
- Improvement: everyone in the organization should be constantly assessing his/her past performance against standards, and looking for ways to improve on it.
- Evidence-based decision making: decisions should be made on the basis of objective data and information, rather than guesses or subjective opinions.
- Relationship management: the organization should manage and develop its relationships with suppliers, partners and other interested parties.

The guidelines to implement these seven fundamental principles in practice are provided by the ISO 9001 standard (ISO, 2015b). After introducing some basic notions in the first three chapters, this document enumerates and describes the requirements that an organization must fulfill to be deemed ISO-compliant. The first three clauses of Chapter 4 stress the need for analyzing the organization and its context (Clause 4.1), taking into account the expectations of interested parties (C.4.2), and defining the scope of the QMS (C.4.3), whereas the fourth and last one (C.4.4) provides guidelines for the adoption of the process approach. Chapter 5 emphasizes the importance of top management commitment to the QMS (Clause 5.1.1), which must be demonstrated through the focus on customers (C.5.1.2), the establishment of appropriate policies (C.5.2), and the assignment of roles, responsibilities and authorities (C.5.3). Subsequently, Chapter 6 provides some guidelines for the planning stage of the QMS, including the consideration of risks and opportunities (Clause 6.1) and the setting of quality objectives (C.6.2). The requisites related to support processes are detailed in Chapter 7, which is broken down into several sections, such as people (Clause 7.1.2), infrastructure (C.7.1.3), work environment (C.7.1.4), competence (C.7.2), awareness (C.7.3), communication (C.7.4) and documented information (C.7.5). Chapter 8 covers the requirements that must be met during the whole product realization or service provision macro-process, which encompasses various activities, including operational planning and control (Clause 8.1), communication with customers (C.8.2), design and development (C.8.3), purchasing (C.8.4), fabrication or provision (C.8.5), release of products and services (C.8.6) and treatment of non-conformities (C.8.7). In Chapter 9, the ISO 9001 standard mentions and explains certain measurement and analysis activities that organizations must perform in order to run the QMS efficiently, being the most relevant the follow up and assessment of customer satisfaction (Clause 9.1.2), the monitoring and measurement of processes and products (C.9.1.3), the conduction of internal audits (C.9.2) and the execution of periodic management reviews (C.9.3). Finally, Chapter 10 highlights the importance of harnessing opportunities for improvement (Clause 10.1) with special focus on the implementation and management of corrective actions (C.10.2). A representation of the ISO QMS and its requirements is shown in Figure 1.

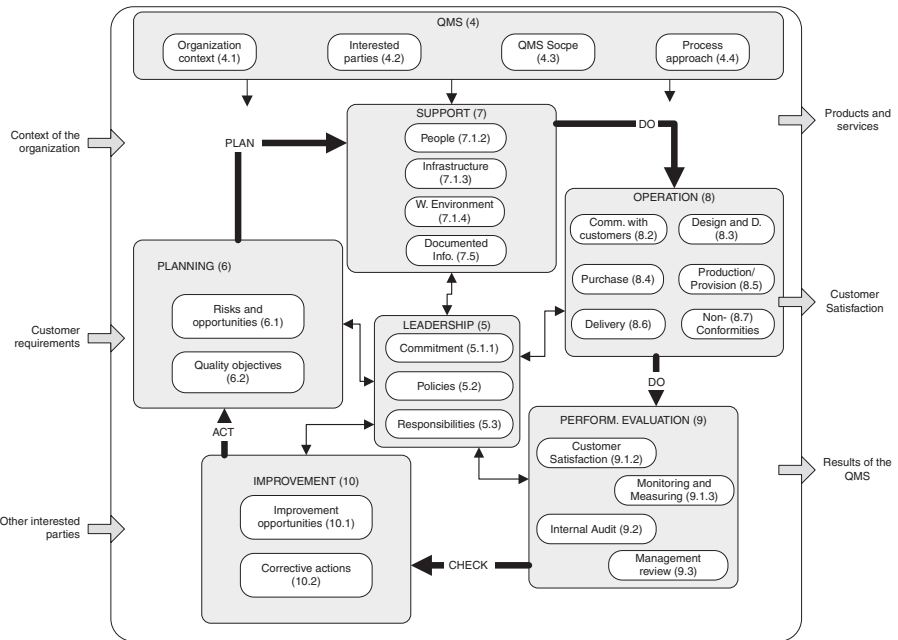


Figure 1.
Model of a quality management system

Source: Adapted from ISO (2015a)

3.2 The limited exploitation of ISO 9000 QMSs

The objective of the ISO 9000 model is to support the sustainable growth of organizations, through meeting the needs and expectations of all their interested parties (Hoyle, 2001; ISO, 2009; Senlle, 2001). For this reason, this family of standards provides guidance for improving effectiveness and customer satisfaction, without disregarding efficiency and productivity issues. Over the last few years, there has been abundant empirical evidence on the positive impact this model can have on the overall performance of those companies that adopt it (e.g. Buttle, 1997; Feng *et al.*, 2008; Gotzamani and Tsiotras, 2001; Rao *et al.*, 1997). In fact, some studies have gone even further, demonstrating the explicit correlation between the use of QMSs and increased profits (see Chow-Chua *et al.*, 2003; Corbett *et al.*, 2005; Huarng *et al.*, 1999; Sharma, 2005). That is to say, it has been verified that, if properly used, the ISO 9000 model helps organizations attain continual improvement.

Despite its proven potential benefits, the ISO 9000 framework has been harshly criticized due to its excessively certificate-driven approach. According to Hoyle (2001, p. 1), whereas some believe that ISO 9000 “[...] has improved the efficiency and effectiveness of organizations,” there are others who think that “[...] it has done tremendous damage to industry,” as many organizations adopting this model only pursue the “[...] badge on the wall [...]” that allows them to gain access to markets. The current bad reputation of ISO 9000 can be better understood going back to its origins. This family of standards was launched in 1987 with the principal purpose of facilitating international trade and, for that reason, a bigger emphasis was put on the external certification system than on spreading genuine quality culture (Blanton Godfrey, 1998; Marquardt, 1998; Sandholm, 1998). At that time, a myriad of small and medium firms regarded the ISO certification as “[...] some kind of magic key which will open doors to export markets for their products” (Sandholm, 1998, p. 37.17). During the 1990s the unfavorable comments about the ISO 9000 series were endorsed by research

findings suggesting that, in numerous cases, the dominant reasons for working under this model were related to external pressure rather than internal functioning (Lee and Palmer, 1999; Van der Wiele and Brown, 1997). This restricted managers' view about QMSs prevented many ISO-compliant companies from applying the underlying TQM principles and, therefore, from actually enhancing business performance (Brown *et al.*, 1998; Dick, 2000).

The 2000s began with the launch of a revised edition of the ISO 9000 family of standards, which incorporated some TQM dimensions that were not present in previous versions (Bhuiyan and Alam, 2006; Gotzamani and Tsiotras, 2001; Martinez-Lorente and Martinez-Costa, 2004; Senlle, 2001) by the introduction of the fundamental principles described above (see ISO, 2015a). Even though these changes were well received by firms and had a positive effect on the general understanding of the actual aim of the ISO framework (Boulter and Bendell, 2002; Van der Wiele *et al.*, 2005), the trend of adopting QMS almost exclusively because of external reasons continued during the following years, above all among small and medium companies (Briscoe *et al.*, 2005; Sun and Cheng, 2002; Terziowski *et al.*, 2003). Consequently, additional research has been conducted in order to further analyze the links between the motivations for and the benefits obtained from the implementation of the ISO 9000 scheme. The results of these studies confirm that, as had been suggested before the appearance of the new version of the standards in 2000, the impact of achieving the ISO certification on overall performance is, even today, highly influenced by the ultimate reasons for the implementation of the QMS (Jang and Lin, 2008; Martinez-Costa *et al.*, 2008; Nair and Prajogo, 2009; Sampaio *et al.*, 2010). Put differently, institutions whose motivations to follow the ISO 9000 guidelines are internal, such as increasing productivity, improving internal communications and raising employee satisfaction, are more likely to attain sustained success than those only pursuing external goals, such as promoting their products, fulfilling specific customer demands and enlarging market share. That being the case, were companies able to transform their typical external motivations into internal ones, they would be in a better position to take full advantage of the TQM philosophy, thereby enhancing their business performance (Heras-Saizarbitoria, 2011; Jang and Lin, 2008; Nair and Prajogo, 2009). According to recent literature, this internalization of the ISO 9000 principles "[...] entails an active use of underlying practices to modify behavior" (Nair and Prajogo, 2009, p. 4546), such as permanent employee participation and training in TQM, continuous updating of quality documentation, issuance of a clear process map and user-friendly procedures, regular reassignment of responsibilities, and presence of improvement groups (Heras-Saizarbitoria, 2011).

In brief, it has been demonstrated that QMSs are not being completely exploited, due to the predominantly external focus adopted by most ISO-compliant firms. In other words, if these companies paid proper attention to "soft" internal factors as well, they would be able to harness the full potential of the ISO 9000 standards. Nonetheless, the internalization of quality principles requires a shift in top management attitude (Jang and Lin, 2008), which might be difficult to achieve relying only on the general empirical findings obtained so far. Namely, in order for managers to change their motivations and concentrate on these internal, more intangible quality practices that do not directly contribute to obtaining the certification, they should have available additional measurement tools that allow them to verify in practice the actual benefits that their own QMSs, if comprehensively applied, may bring about. With more concrete and timely information about the real effects of quality management actions, the corporate commitment to the implementation and maintenance of QMSs would increase and, therefore, organizations could take better advantage of their ISO 9000 certificates.

4. Reasons for combining SMA and QMSs

4.1 Potential benefits of the combination of SMA and QMSs

It may be argued that SMA and the ISO 9000 QMS have some positive factors in common: they are both relatively new formulations, aiming to improve organizational performance

through a strategic approach, and supported by solid theoretical frameworks. Unfortunately, as previously explained, they also share a negative aspect: they both remain unexploited to some degree. As regards SMA, its actual level of acceptance is much lower than expected as, despite its initial academic support and the high interest some of its individual tools created, it has not been widely adopted in practice (see Bromwich, 1999; Cravens and Guilding, 2001; Guilding *et al.*, 2000; Langfield-Smith, 2008; Lord, 1996; Roslender and Hart, 2003; Shank, 2006). As suggested above, in order for this new field of study to gain recognition among practitioners, it may be necessary to regard SMA tools as parts of a broader management control system instead of as individual techniques. As for the ISO 9000 model, it is almost exclusively being used to maintain or raise market share rather than to embed the TQM principles in the culture of organizations (Briscoe *et al.*, 2005; Sun and Cheng, 2002; Terziovski *et al.*, 2003) and, as a result, its capacity is not being fully harnessed (Jang and Lin, 2008; Martinez-Costa *et al.*, 2008; Sampaio *et al.*, 2010). Therefore, it seems essential to increase the amount and quality of information generated by the measurement processes of QMSs in order for managers to be able to recognize the potential and actual benefits of following the ISO 9000 standards.

One of the purposes of this paper is to propose a management framework that combines SMA tools with QMSs, in order to take full advantage of the inherent capacity of each of these two techniques. It is hypothesized here that, even though these innovations are considered to belong to different disciplines (SMA to management accounting and QMS to quality management) they are compatible in theory and might complement each other in practice. First, the ISO 9000 model seems to meet all the requirements to be used in support of SMA, as it provides a consistent, integral management approach that can facilitate the systematic application of the various individual tools this new accounting field proposes (e.g. quality costing, value-chain Costing, strategic pricing, customer profitability analysis) and help managers understand the relationships existing between such tools and corporate strategy. If this were the case, organizations working under the ISO 9000 guidelines (which are countless all around the world) might become interested in utilizing these accounting techniques in conjunction with their QMS and, thus, SMA could acquire practical relevance. Furthermore, SMA practices appear as an ideal complement to the ISO 9000 framework, as they are able to provide specific indicators about the potential and actual effects of quality actions. Hence, even if most firms' initial motivations for adopting ISO 9000 systems continued to be predominantly external (such as market share enlargement or product advertisement), the fact of having available this additional, highly precise accounting information on quality-related benefits might encourage managers to gradually internalize the framework through turning its focus toward quality management underlying principles (such as productivity increase, communication improvement and employee satisfaction).

4.2 Background on the links between management accounting and quality management

Apart from assessing their reciprocal effects, the analysis of the joint utilization of SMA and QMS would additionally contribute to the identification and exploration of more general links between management accounting and quality management. These two disciplines are seldom combined in literature, given that they are two distinct fields of study normally addressed separately by professionals with different backgrounds and expertise. Nevertheless, because of some limitations observed when their respective tools are implemented individually, specialists from both areas have started to recognize some potential benefits in their joint consideration.

In the 1980s, management accounting had begun to lose significance due to its inability to support modern manufacturing technologies, its disregard for non-financial information and its scarce attention to strategic issues (see Cooper and Kaplan, 1988; Johnson and Kaplan, 1987;

Kaplan and Norton, 1996; Shank, 1989). In spite of the emergence of revolutionary practices (such as activity-based costing, balanced scorecard, and SMA) as a reaction to this criticism, the necessity for broadening even further the scope of management accounting continued over the following years (Otley, 1999; 2001). Thus, management accountants have lately been developing some non-traditional measures specifically related to various organizational processes, such as marketing, manufacturing and human resources (Chenhall, 2006). The widening range of management accounting tools is analyzed by Mouritsen and Hansen (2006), who highlight the growing practical interactions between this discipline and operations management.

As a consequence of the expansion of management accounting to include other organizational functions, several books and articles began to address its links with TQM. Among the first authors to explicitly recognize such connections are Kaplan (1983) and Johnson (1994), who stressed the importance for management accounting professionals to focus on TQM in order to help their discipline recover its relevance. This point of view was advocated by Shank and Govindarajan, who regarded TQM as an “executional” cost driver, and therefore as a subject of analysis by accountants (1995); and asserted that “quality has become such an important strategic variable that Management Accounting can no longer ignore it” (1994, p. 5). A similar opinion has more recently been expressed by Hilton (2005), who affirms that managerial accountants are becoming increasingly involved in TQM programs; and believes that, in the future, they will play a relevant role in the implementation of ISO 9000 standards. It is worthwhile mentioning that, although the integration of quality management issues into management accounting techniques only began a couple of decades ago in western companies, such mixed approaches had previously been applied for many years in their Japanese counterparts (see Hiromoto, 1988; Scarbrough *et al.*, 1991).

In the same way that management accounting experts have been showing increased concern for TQM, quality management literature has started to incorporate accounting and financial topics. The main reason justifying the extension of the scope of quality management in this direction is the growing evidence supporting the correlation between its principles and profits. In this regard, Juran (1998a) indicates that quality initiatives have a double effect on financial performance: income increase and cost reduction. The former is achieved through improving customer satisfaction, enlarging market share, winning and retaining clients and, if possible, selling at premium prices (Blanton Godfrey, 1998; Juran, 1998b), whereas the latter is attained by diminishing the number of errors, reducing rework, and decreasing non-value-added time (Blanton Godfrey, 1998; Gryna, 1998). The economic benefits of applying TQM principles and practices in organizations have been empirically corroborated in numerous studies conducted during the decade of the 1990s (Anderson *et al.*, 1994; Easton and Jarrell, 1998; Handfield *et al.*, 1998; Maani *et al.*, 1994; Mohrman *et al.*, 1995; Powell, 1995).

Despite the proven capacity of quality programs to generate net income, they do not usually include accounting measures to discover the magnitude of such additional earnings. According to Mouritsen and Hansen (2006), there is a significant survey-based literature suggesting that in advanced manufacturing environments (such as those adopting quality management principles) financial information is commonly considered of less value and, therefore, accounting calculations are regarded as lagging indicators that lead nowhere. Consequently, some specialists in the field have come to believe that it would be essential that quality management frameworks integrate some financial data to support decision making (Gryna, 1998; Rodchua, 2006; Schiffauerova and Thomson, 2006; Sower *et al.*, 2007; Tye *et al.*, 2011). F. Gryna (1998), for instance, maintains that, because money is the basic language of upper managers, the absence of information expressed in monetary terms makes communication with them slower and less effective. Put another way, given that

when quality issues are presented in financial language top managers are better prepared to identify opportunities for cost reduction (Rodchua, 2006), the dearth of estimates on the expected economic benefits of a quality program may limit its positive impact (Schiffauerova and Thomson, 2006). In short, “reporting quality system activities and effectiveness in financial terms is an increasingly important approach to linking continual improvement of the quality system to performance improvement of the organization [...]” (Sower *et al.*, 2007, p. 122). This perspective is further endorsed by the ISO through the ISO 9004 standard (ISO, 2009), which promotes the utilization of financial information to monitor the effects of quality actions.

A few cases of the joint utilization of quality management and management accounting innovations have been reported in literature. Notable among them are the work of Hoque and Alam (1999), which analyses the relationships between a TQM program and a management accounting system in a construction company; and an article by Modell (2009) describes the integration of the TQM principles and the balanced scorecard in a governmental agency. Moreover, Sedevich-Fons (2011, 2012, 2013, 2014) proposes practical methodologies to integrate accounting information into ISO 9000 QMSs, including examples of their application. Although the findings of all these studies shed some light on the topic, their authors agree on the necessity of additional research in order to draw further conclusions about the applicability and effectiveness of such mixed models.

5. Integration of SMA and QMSs

5.1 Theoretical compatibility between SMA and QMSs

As has been previously argued, the simultaneous application of SMA techniques and QMS principles might bring about benefits for individual organizations and, as a result, contribute to spreading the utilization and proper exploitation of both management models. However, in order to make this integration feasible in practice, it is mandatory to detect and understand the theoretical bonds existing between such distinct approaches.

From the exploration of their respective theoretical frameworks, it may be inferred that SMA and QMSs are complementary. First, the general requirements established by the ISO 9000 family of standards, such as the utilization of the process approach and the issuance of written procedures, provide an appropriate basis for the incorporation and systematic use of other individual tools, such as those embraced by SMA. Additionally, the abundant data generated in the different organizational processes because of the rigorous adoption of the ISO 9001 specific requisites serve as a valuable input for SMA techniques. Reciprocally, all the indicators obtained and conclusions drawn from the application of such SMA tools are a relevant source of information for the decision-making process of the QMS, as they usually disclose reasons for or consequences of implementing improvement actions. The theoretical links between QMS and SMA are portrayed in Figure 2.

Some examples illustrating each of the theoretical relationships between these two management practices depicted in Figure 2 (Links I–III), are presented in Figures 3–5.

5.2 Strategic accounting QMS

Having analyzed the theoretical compatibility between SMA and QMSs, it is possible to put forward a management framework to guide their joint implementation in practice. This new model consists in incorporating into the traditional ISO 9000 QMS (which was previously described in Figure 1) all the processes, procedures, records and functions that are necessary to systematically apply SMA techniques. In this way, those organizations that resolve to adopt this novel approach will still be able to comply with the basic requirements to obtain the ISO certification and, in addition, will presumably be in a better position to fully exploit their QMS. A graphic representing this mixed scheme is displayed in Figure 6.

Management accounting and quality management

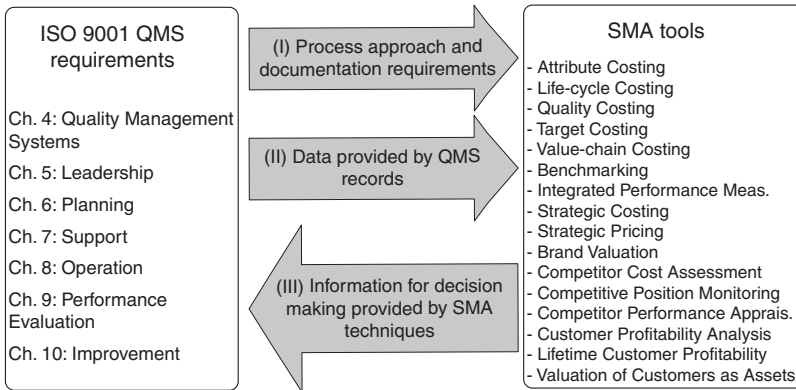


Figure 2.
Theoretical links between QMS and SMA

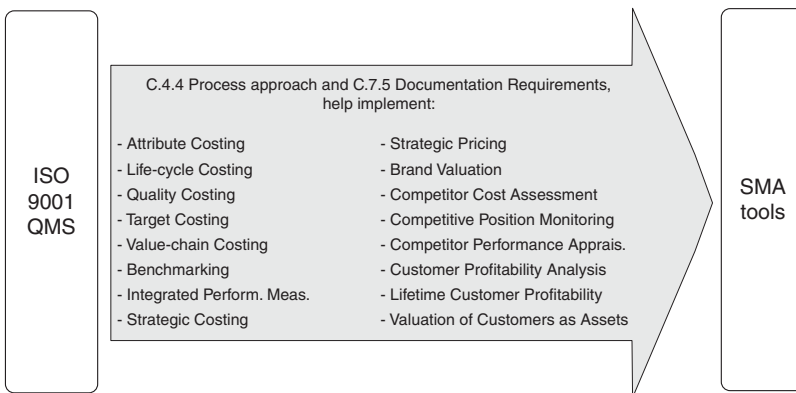


Figure 3.
Link I: process approach and documentation requirements

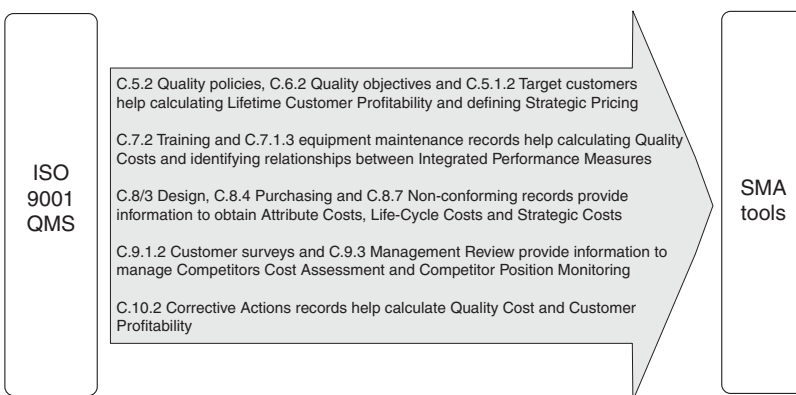


Figure 4.
Link II: data provided by QMS records

As illustrated in Figure 6, the Strategic Accounting QMS presents several modifications to the traditional QMS depicted in Figure 1. These changes consisted of the introduction of new processes (gray-shaded shapes) and relationships (dotted arrows) and the relocation of some existing processes (dotted-line shapes). The model herein proposed offers a higher

Figure 5.
Link III: Information for decision making provided by SMA techniques

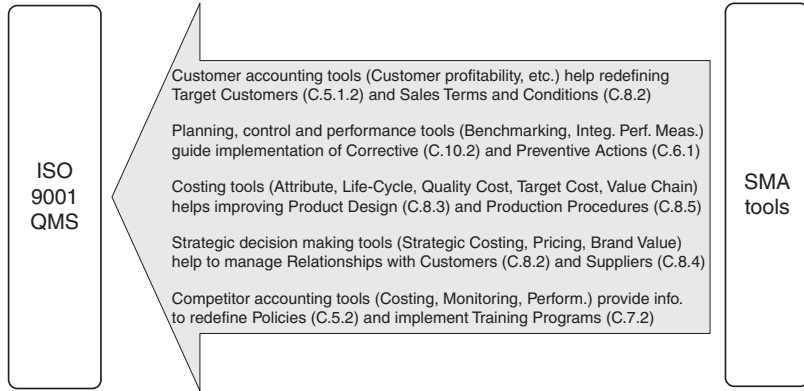
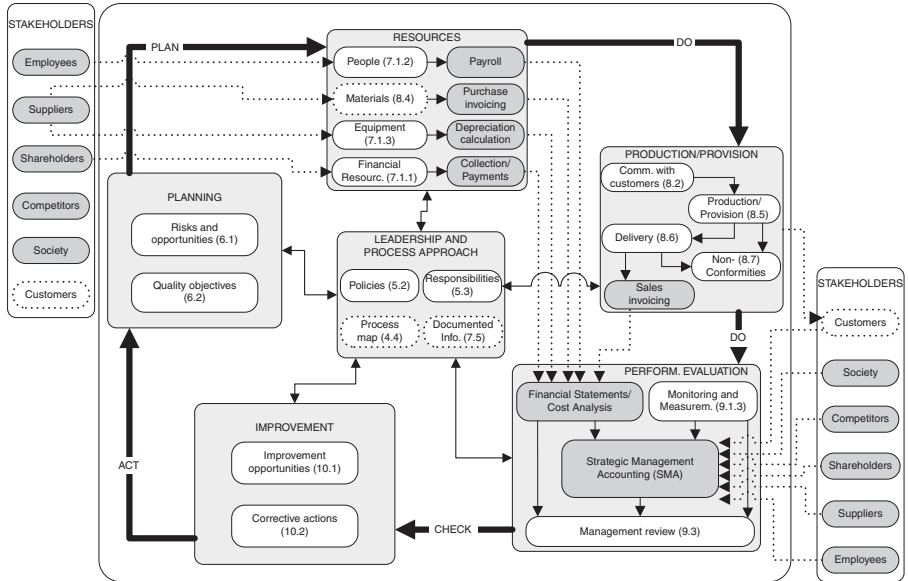


Figure 6.
Strategic accounting quality management system



degree of detail in the description of stakeholders, as the adoption of a strategic focus demands a closer attention to competitors, employees, suppliers, shareholders and society (see ISO, 2009). The central macro-process of this new framework, which is called “Leadership and Process Approach,” merges requirements included in Chapters 4, 5 and 7 of the ISO 9001 standard, emphasizing the importance of establishing quality policies, assigning responsibilities, designing an appropriate process map, and launching work procedures. As for the “Resources” macro-process, which is addressed in Chapters 7 and 8 of ISO 9001, the proposed scheme classifies the resources into different categories, such as people (human resources), materials, equipment and financial resources. Then, it identifies the links between these categories and the accounting processes that interact with them, such as payroll, purchase invoicing, depreciation calculation, collection and payments. For instance, the human resource records provide information on employment terms and

conditions as well as about employee performance, which are relevant inputs for the payroll process. As regards the requisites established by the ISO 9001 standard in Chapter 8 concerning product realization or service provision, this novel approach suggests grouping the related activities into different clusters, in order to separate the functions that are directly connected to accounting processes (such as delivery) from those which are not (such as communication with customers or production). In doing so, the bonds between operations and accounting, such as the one linking product delivery and sales invoicing, may be explicitly identified. The guidelines for performance evaluation contained in Chapter 9 of ISO 9001 are also complemented in this new framework by the incorporation of two interrelated processes: "Financial statement issuance and cost analysis" and "Strategic management accounting reporting." On the one hand, the purpose of the first one is to collect data from other specific accounting processes and transform it into traditional financial information, on the other hand, the objective of the second one is to use such financial information, in conjunction with other internal and external indicators provided by the QMS, in order to generate SMA measures. In turn, these SMA measures are, together with conventional key performance indicators, useful inputs for the management review. The contents proposed by the strategic accounting QMS for the "Planning" and "Improvement" macro-processes (Chapters 6 and 10, respectively) are the same as those in the original ISO 9000 document.

6. Summary and conclusions

It can be claimed that, although rather superficially, the association between management accounting and quality management has lately begun to be addressed in literature. During the last few decades, several management accounting scholars have stressed the importance of considering the implications of TQM principles when developing new management control models (see Hilton, 2005; Johnson, 1994; Kaplan, 1983; Shank and Govindarajan, 1995). Coincidentally, quality management specialists have started to acknowledge the advantages of incorporating accounting and financial components into quality programs (see Gryna, 1998; Rodchua, 2006; Schiffauerova and Thomson, 2006; Sower *et al.*, 2007; Tye *et al.*, 2011). Furthermore, some general findings about the reciprocal effects of these two disciplines when applied in conjunction have been reported in international journals (Fullerton *et al.*, 2014; Hoque and Alam, 1999; Modell, 2009). The aim of this paper is to contribute to this integrative trend through the exploration of the relationships between two specific frameworks: SMA and QMS

Since its promising emergence in the last years of the past century, SMA has not achieved significant levels of adoption among organizations (Bromwich, 1999; Guilding *et al.*, 2000; Lord, 1996; Nixon and Burns, 2012; Roslender and Hart, 2003; Shank, 2006). Nevertheless, the reasons for this state of affairs seem to be related to certain lack of understanding of the SMA theory as a whole (Guilding *et al.*, 2000; Langfield-Smith, 2008) and the blurred limits of its scope (Lord, 1996), rather than to the ineffectiveness of the individual tools it comprises (see Cinquini and Tenucci, 2007; Collier and Gregory, 1995). Therefore, it is suggested that, if such valuable strategic tools were framed by a comprehensive management system that provided precise guidance for their systematic and coordinated use and highlighted their usefulness for achieving collective strategic goals, managers would be more prone to utilize them. The model proposed by the ISO 9000 family of standards, also known as QMS, appears as a proper overall management structure to support the implementation and running of SMA techniques for two different reasons: first, the adoption of the process approach and written procedures, which are basic requirements established in the ISO 9001 standard, facilitates the harmonious integration into the management system of new associated practices such as, for example, attribute costing, brand valuation, lifetime customer profitability analysis and strategic costing.

Second, when working under the QMS model, organizations are permanently collecting and recording information about the performance of their processes and the needs of their interested parties, which serves as an essential input for SMA procedures.

The ultimate purpose of an ISO 9000 QMS is to guide organizations toward incorporating the TQM philosophy and thereby help them enhance their overall performance (see Buttle, 1997; Feng *et al.*, 2008; Gotzamani and Tsiotras, 2001); which, in turn, may result in additional profits (see Chow-Chua *et al.*, 2003; Corbett *et al.*, 2005; Sharma, 2005). However, these positive effects are contingent on the underlying reasons for adopting such a quality program; with companies focusing on improving internal variables such as productivity, internal communications and employee satisfaction achieving better results than those centering only on external factors, such as sales volumes or market share (Jang and Lin, 2008; Martinez-Costa *et al.*, 2008; Nair and Prajogo, 2009; Sampaio *et al.*, 2010). The internalization of the ISO 9000 standards requires a strong commitment of top management (Jang and Lin, 2008) given that, besides a stricter compliance with quality requisites, it involves a deep change in the attitude and behavior of employees (Heras-Saizarbitoria, 2011; Nair and Prajogo, 2009). Hence, it is argued here that, in order for top managers to become more supportive of their QMS, they need to have more tangible information available about the potential and actual benefits of quality actions. Among other options, SMA tools arise as a suitable complement for the ISO 9000 framework, as they are able to supply data on the impacts brought about by the QMS but expressed in financial terms.

Taking into consideration the scarce utilization of SMA tools and the limited exploitation of QMSs, as well as their mutual theoretical compatibility, the main principles and practices of both models have been consolidated into a single framework (see Section 5). The proposed scheme is based on the fundamental requirements to obtain the ISO 9001 certification, but also incorporates a group of processes, procedures and records specifically aimed to generate strategic accounting information.

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