THE ASSOCIATION BETWEEN STRATEGIC COST MANAGEMENT AND ENTERPRISE RISK MANAGEMENT: A CRITICAL LITERATURE REVIEW

MOHAMED ELSAYED*, ANANDA WICKRAMAINGHE**, MARWA ABDEL RAZIK*

Abstract

Reviewing literature and application of strategic cost management (SCM) and enterprise risk management (ERM) are critical and significant for corporate management to facilitate top management to employ appropriate SCM and ERM processes and systems especially in occurrence of constant and regular business turn around, crises and turbulence in recent time in world of business. This paper revisits and reviews the association between strategic cost management and enterprise risk management. Based on this review, the following propositions were developed; firm, which adopted SCM, is more likely to adopt ERM approach, there is a positive relationship between audit type and the association between ERM and SCM, and there is a positive relationship between company size and the association between ERM and SCM. The association between ERM and SCM differs from industry to another. The study also develops a framework for SCM composes of the following items: SWOT analysis, benchmarking, competitive advantage, value chain analysis, implement strategy that reduce cost during the value chain analysis by using target costing, accounting based-costing, accounting based-management, just in time, total quality management, life cycle, theory of constraints, and measure performance by using balanced scorecard.

Keywords: Strategic Cost Management, Enterprise Risk Management, SWOT Analysis, Benchmarking, Just in Time, Total Quality Management, Life Cycle, and Theory of Constraints

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*Central Queensland University, Australia
** School of Management and Marketing, Faculty of Arts, Business, informatics & Education, Central Queensland University, Bruce Highway, North Rockhampton, 4702 Queensland, Australia
Tel: (+61) 07 4930 6995
Fax: (+61) 7 4930 9700
Email: a.wickramasinghe@cqu.edu.au
***Sadat Academy, Egypt

1. Introduction

Effectively managing or controlling the factors that cause risk can result in market leadership, increasing a company's growth and investor confidence (Meier, 2000). Moreover, there is evidence in terms of theories that show how value can be created from the adoption and application of risk management and how risk can also destroy corporate value (Doherty, 2000). Risk management has indeed now become a global issue and is considered highly essential for all types of organizations in the world; however, risk management that began as a field in the early 1950s was limited in scope to pure loss exposures only where risks were managed through controlling and financing techniques. Insurance has been the most popular financing approach in managing corporate risk. It has been used to manage property, liability and related insurable risks. This approach is known as traditional risk management. In the traditional way of risk management, organizations manage risk by silos, or risk by risk. This has caused an overlapping and excessive cost in organizations and it does not provide an overall view of risk reporting to senior managers and boards of directors (Lam, 2003). Traditional risk managers also do not consider shareholder value and responsibilities to investors in their risk management decisions (Meier, 2000). In this regard, businesses and industries have realized the importance and necessity of managing risks on an enterprise-wide basis. DeLoach (2000, p.5) defines enterprise risk management (ERM) as:

> "A structured and disciplined approach that aligns strategy, processes, people, technology and knowledge with the purpose of evaluating and managing the uncertainties the enterprises faces as it creates value".

The definitions signify that ERM is a comprehensive approach of risk management by looking at a portfolio view of risks. A process that

aligns with the company's strategy; and involves employees at all levels of the organization. Its implementation is for the purpose of increasing shareholder value. The eight interrelated components of ERM are identified as follows: internal environment, objective setting, events identification, risk assessment, risk response, control activities, information and communication and monitor (Abdul Manab et al., 2010, pp. 240-241). Clearly these are significant departure from official views of internal control and they encompass the basic and operational management systems needed to plan and control the business enterprise. Many of the individual concepts encompassed by strategic cost management are often directly relevant in this context. A full supply – chain perspective brings into the analysis all the stages in the value – creation and value delivery model (Gunasekaran, 2003; Porter, 1985).

Economic value added (EVA) and value based management (VBM) are tools for assessing the overall ERM, however, value engineering (VE) and activity based costing (ABC) \ activity based management (ABM) assess the full costs at each stage of supply chain. Also, customer – value analysis is necessary to assess the end users in the supply chain and target cost can be necessary to reverse the logic flow and ensure that the firm converts the customer - value proposition into allowable time –value adjusted cost to the customer of the firm across all the process stages consistent with earning an adequate return on invested capital (Shank & Miguel 2009, p. 85).

This study aims to determine the association between strategic cost management (SCM) and enterprise risk management (ERM) factors, as there is no prior study investigated this relationship. The remaining of the paper is structured as follows. Section 2 discusses enterprise risk management theories and practice. Next section discusses strategic cost management. Section 4 provides propositions that are derived from association between SCM and ERM, and also types of audit, company and industry. These propositions are developed based on current literature in SCM and ERM practices and approaches in companies. The final section provides conclusions and suggestions for future research.

2. 2.Enterprise risk management (ERM)

2.1. What is enterprise risk management (ERM)?

According to the Committee of Sponsoring Organization of the Tread-way Commission, the enterprise risk management is a process affected by an entity's board of directors, management and other personnel applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity and manage risk to be with its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives (COSO, 2004, p. 3). Moreover, the Institute of Internal Audit (IIA) defines ERM as:

> "A rigorous coordinated to assess and respond to all risks that affect the achievement of an organization and financial objectives including all communication risks from an organization – wide perspective involve making strategic decisions (Kimbrough, 2006, p. 12)".

Gordon and Loeb (2009, p. 302) note that ERM refers to overall process of managing an organization's exposure to uncertainty with particular emphasis on identifying and managing the events that could potentially prevent the organization from achieving its objectives and it is an organization concept that applies to all levels of the organization. Furthermore, the Casualty Actuarial Society Committee (CASC) defines ERM as a discipline by which an organization in an industry assesses, controls, finances and monitors risk from all sources for the purpose of increasing the organization short and long term value to its stakeholders (Tseng, 2007, p. 49). Gupta (2004) establishes that ERM is rapidly emerging as a powerful tool that facilitates better decision making and organizations are now choosing to implement an ERM process to ensure that a uniform approach to risk identification measurement and treatment is utilized across the organization. Lam (2003) identifies the advantages of adoption ERM as follows: effectiveness, improvement in quality, reporting and business performance (Gupta 2011, p. 124).

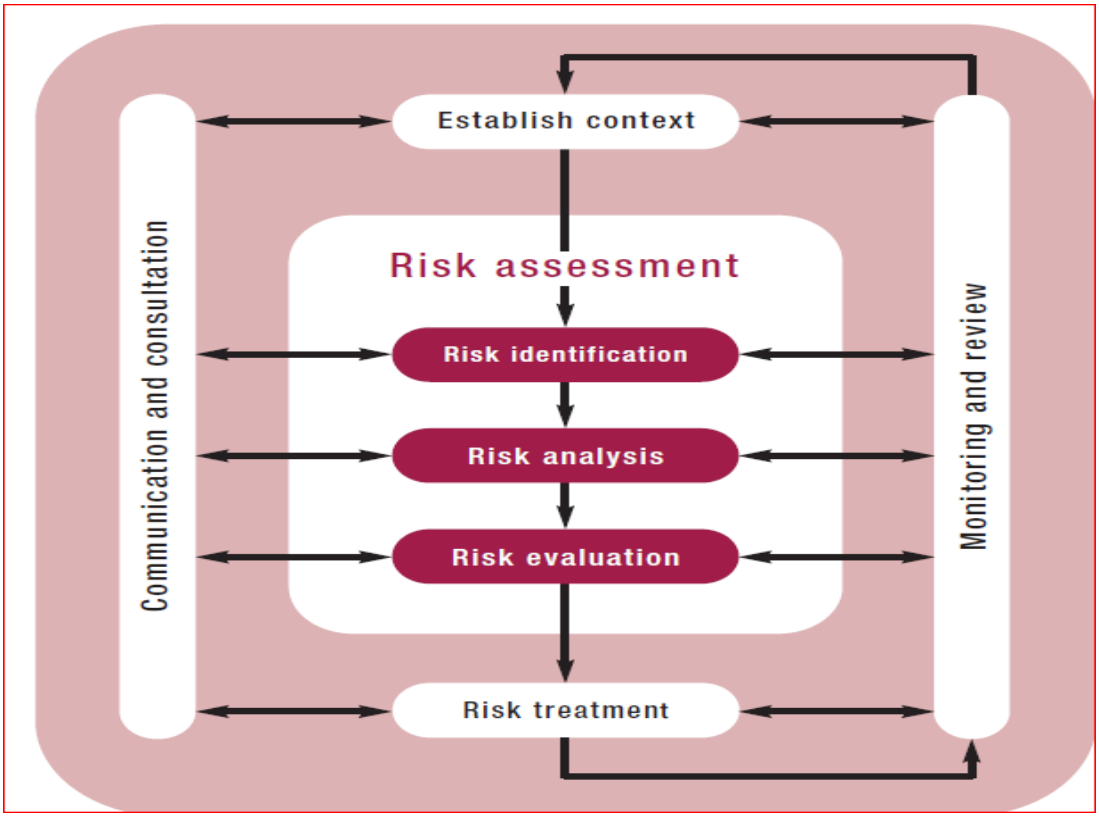
2.2. ERM process

Ackerman (2001) suggests seven steps to implement an effective ERM program for any organization, these steps are as follows: assemble and educate a cross functional learn representing each significant functional area of business, identify risks and opportunities, determine risk tolerance, identify correlations among risks and opportunities, prioritize risk and opportunities, determine appropriate actions for mitigating risk or exploiting opportunities as necessary, and put an ERM program system to monitor and respond to events and trends on a continual basis (Rao, 2007, p. 171).

Furthermore, Ackerman (2001) lists the following steps for ERM: identify the question, identify risks, risk measurement, formulate strategies to limit risk, implement strategies, and monitor (D'Arcy 2001, p. 20).

The International Organization for Standardization (ISO) provides a version of the risk management process as illustrated in Figure 1.

Figure 1. Risk management process



Source: ISO 31000, 2009.

The Committee of Sponsoring Organization of the Tread-way Commission (COSO) develops a framework that describes key risk management principal and concepts. The COSO framework describes risk management as an ongoing, enterprise-wide process that involves eight interrelated components to establish the foundation for effective enterprise risk management (Donnell, 2005, p. 178). (1) The organization must create an internal environment that fosters a commitment to competence, provides discipline, and articulates governance structures within the risk culture of the firm. (2) With a sound foundation in place, management can evaluate their objective setting procedures to be certain that, throughout the organization, business process performance objectives are linked to and support the strategic objectives of the enterprise. (3) Management must undertake an event identification phase to develop or update a list of specific events that, if they occur, could influence business process performance. (4) For each event, management performs a risk assessment by evaluating the likelihood that the event will occur and estimating the probable impact of the event if it does occur. (5) Management must select and implement an appropriate risk response for all events, based on the risk appetite of the firm and the cost/benefit relationships for the various response options. (6) Management must establish control activities to help ensure that those risk responses are properly executed. (7) To manage this network of processes, the organization must establish channels for information and communication that enable personnel to carry out their responsibilities that provide management with feedback about the extent to which the organization is achieving its objectives. (8) To govern the risk management process, the organization must establish a program for monitoring how well each component is functioning and for tracking performance over time (Dickinson, 2001).

Burnaby and Hass (2009) illustrate the following steps to implement ERM: mandate from the top, decide on control framework, determine all risks, assess risk, business unit objectives and performance measures, objectives and control summary, monthly ERM reporting system, analysis by ERM department, and continuously monitoring the process.

Finally, Muralidher (2010) proposes a framework for best practices of ERM in oil and gas companies. Muralidher (2010)'s framework includes the following steps. (1) establish an unequivocal oil governance framework, (2) adjust the CEO"s alters ago, (3) create a contagious committee to ERM for an effective risk management with an advocate pool, (4) instigate a paradigm shift in internal auditing process, (5) align the internal auditing process with ERM establish an audit charter that declare the alignment of the ERM in order to address the audit focus on critical business areas, (6) upload the corporate risk register across the business value chain, (7) manage the entity

risk quality with appropriate risk communication, (8) establish unequivocal risk preference across the board set out a common risk language conveying a threshold for material risk for process the upstream and downstream business value chain, (9) integrate a pragmatic bottom–up and top down approach to risk ownership, and (10) embed smart risk culture by integrating ERM strategy planning process exploit the natural links of ERM and strategy planning.

2.3. Determinants of ERM

Hoyt and Liebenberg (2011) find that ERM usage to be positively related to factors such as firm size and institutional ownership and negatively related to reinsurance use, leverage and assets value. By focusing on public traded insurers they estimate the effect of ERM on Tobin's standard and they also demonstrate that there is a positive relationship between firm value and ERM.

Pagach and Warr (2011) examine the characteristics of firm that adopt ERM by using the hiring of chief risk officer (CRO) as a proxy for ERM adoption, they find that firms that are larger, have more volatile operating cash follow and greater institutional ownership are more likely to initiate an ERM, in addition when the chief executive office has incentives to take risk, the firm is also more likely to hire CRO.

Beasley et al. (2005) examine factors associated with the stage of ERM implementation at a variety of US and international organization based on data collected from 123 organization, they find that the stage of ERM implementation is positively related to the presence of a chief risk officer, board independence, CEO, the presence of 4 big auditors, entity size and entities in the banking education and insurance industries, they also find US organization to have less developed ERM process than international organization.

Kleffner et al. (2003a) examine the use of enterprise risk management (ERM) by Canadian companies. They investigate the characteristics that are associated with the use of ERM, obstacles that companies face in implementing ERM, and what role, if any, corporate governance guidelines have played in the decision to adopt ERM. The results indicate that 31 percent of the sample had adopted ERM and that reasons for adopting ERM include the influence of the risk manager (61 percent), encouragement from the board of directors (51 percent), and compliance with Toronto Stock Exchange (TSE) guidelines (37 percent).

The major deterrents to ERM were an organizational structure that discourages ERM and an overall resistance to change. Although only about one-third of companies indicated that they had adopted an ERM approach, evidence was clear that a larger portion of the sample was moving in that direction, as indicated by what changes they had observed in their companies in the past three years. These include the development of company-wide guidelines for risk management (45 percent), an increased awareness of nonoperational risks by operational risk management personnel and an increased awareness of operational risks by non operational risk management personnel (49 percent), more coordination with different areas responsible for risk management (64 percent), and more involvement and interaction in the decision making of other departments. Contrary to what they expected, there was not a significant difference between firms that are listed on the TSE versus those that are not in terms of the propensity to use ERM. However, the fact that 37 percent of firms indicated that the TSE guidelines were influential in their decision to adopt ERM provides some evidence that the guidelines are influencing companies' risk management strategies.

Using data from 825 organizations, Paape and Spekle (2010) examine the extent of ERM implementation and the factors that are associated with cross-sectional differences in the level of ERM adoption, and also investigate specific ERM design choices and their effect on perceived ERM effectiveness. They find that the extent of ERM implementation is influenced by the regulatory environment, internal factors, ownership structure, and firm and industry-related characteristics. They find that organizations generally subscribe to a key premise of the COSO ERM framework (i.e. that ERM should address the full set of risks that affect the entity's strategic, operational, reporting, and compliance objectives). Their results also raise some concerns as to the COSO framework as they find no evidence that application of the COSO framework improves ERM effectiveness, neither do they find support for the mechanistic view on risk management that is implicit in COSO's recommendations on risk appetite and tolerance.

Smith (2009) studies the relationship between ERM and the complexity and board of directors monitoring by using a sample of 112 firms disclosing the implementation of ERM in their 2005 10k and 10q reports. The results show that for high performing firm: industry competition, firm complexity, firm size and board monitoring have a significant effect on the effectiveness of the ERM and there is no relationship between ERM and environmental uncertainty. While for the firms with low perform none of the contingency variable shows a significant effect on ERM. These results suggest high performing firms are taking contingency variable more seriously than the other firms in their implementation of ERM (Smith, 2009).

3. Strategic cost management (SCM)

3.1. What is SCM?

Cooper and Slagmulder (1998a, p. 14) argue that SCM is the application of cost management technique so they simultaneously improve the strategic position of a firm and reduce costs. Furthermore, Cooper (1995) argues that the strategic cost management needs to include all aspect of production and delivering the product: the supply of purchased parts, the design of product s and the manufacturing of these products, so strategic cost management should be inherent to each stage of a product's life cycle (i.e. during the development, manufacturing, distribution and during the service lifetime of a product).

According to Welfie and Keltyka (2000, p. 33), SCM is an area that holds exiting possibilities for accountants, they also emphasized that SCM attempts to improve the strategic position of an organization and reduces cost at the same time and it is important because global competition means that firms must be constantly aware of their strategic position. Therefore, an organization must compete in the area of cost, quality customer services and flexibility with any cost reduction effort contributing to an improved strategic position (Smith, 2009).

Horvath and Brokemper (1998, p. 58) reported that SCM has emerged as a key element to attain and sustain a strategic competitive advantage through long term anticipation and formation of cost level, cost structure and cost behavior pattern for product, process and resource, for this purpose, SCM must provide manager with different information about strategic cost, sees product process and resource themselves as creative advantage this goals may not be achieved based on traditional cost management, they must determine and analysis long term cost determinants and their influence on cost levels, cost structure and cost behavior pattern, finally SCM should begin with the participation during the R&D and design stage of the product in order to avoid the cost early in the product lifecycle (El-Kelety, 2006, pp. 61-64).

In addition Lorenzoni et al. (1999 p.13) define SCM as a view that cost management must be tackled broadly with explicit focus on the firm strategic positioning, its overall value chain and the full set of cost driven for the firm. Chivak (2007, p. 37) notes that SCM is the process of integrating cost management within the company's strategic plan in order to ensure that cost management is part of company's operating procedure aimed at the provision of the best possible product\service with the amount of financial resource available, he claims that in order to implement a strategic cost management approach effectively, companies should change the way they do business, in other words, implementing a SCM approach require change management that is underpinned by the following ways:

A process view rather than a function view of the organization.

A multi –functional team approach rather than individual approach.

A broader perspective that includes an external view and not simply an internal view of cost.

Shank (1989) argues that the emergence of SCM results from a blending of three underlying themes that are each taken from the strategic management literature, the three themes are: Value chain analysis, strategic positioning analysis, and cost driver analysis.

3.2. SCM framework

El-Dyasty (2007) establishes a framework to accomplish SCM which encompass four phase as follows: First, establish critical success factors by using strength, weakness, opportunities, threats analysis (SWOT). Second, competitive advantage by identify strategy, determine performance measure and design the balanced scorecards. Third, value chain analysis and implementing selected strategy in addition, measure costs during implementation of selected strategy through product life cycle, by using the following tools: target costing, just in time and total quality management. Finally, performance is measured according to the four dimensions comprised in balanced scorecard.

Previous research (for example, see Blocher et al., 2002; Dekker, 2003; Morse et al., 2003) uses many tools to accomplish SCM that include: value chain analysis, activity based costing (ABC), competitive advantage, target costing, total quality management, just in time, SWOT analysis (a strategic planning method used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or in a business venture), benchmarking, balanced scorecard, theory of constraints, and continuous improvement (El-Dyasty, 2007, p. 9). El-Kelety (2006) uses the following themes as instruments and key support: ABC, activity based management (ABM), target costing, life cycle costing, and benchmarking.

Therefore, our study develops a framework for SCM comprises of the following items (see Figure 2): SWOT analysis - Benchmarking - Competitive advantage - Value chain analysis - Implement strategy that reduce cost during the value chain analysis by using target costing, ABC, ABM - Just in time (JIT) - Total quality management (TQM) - Life cycle - Theory of constraints - Measure performance by using balanced scorecard (BSC).

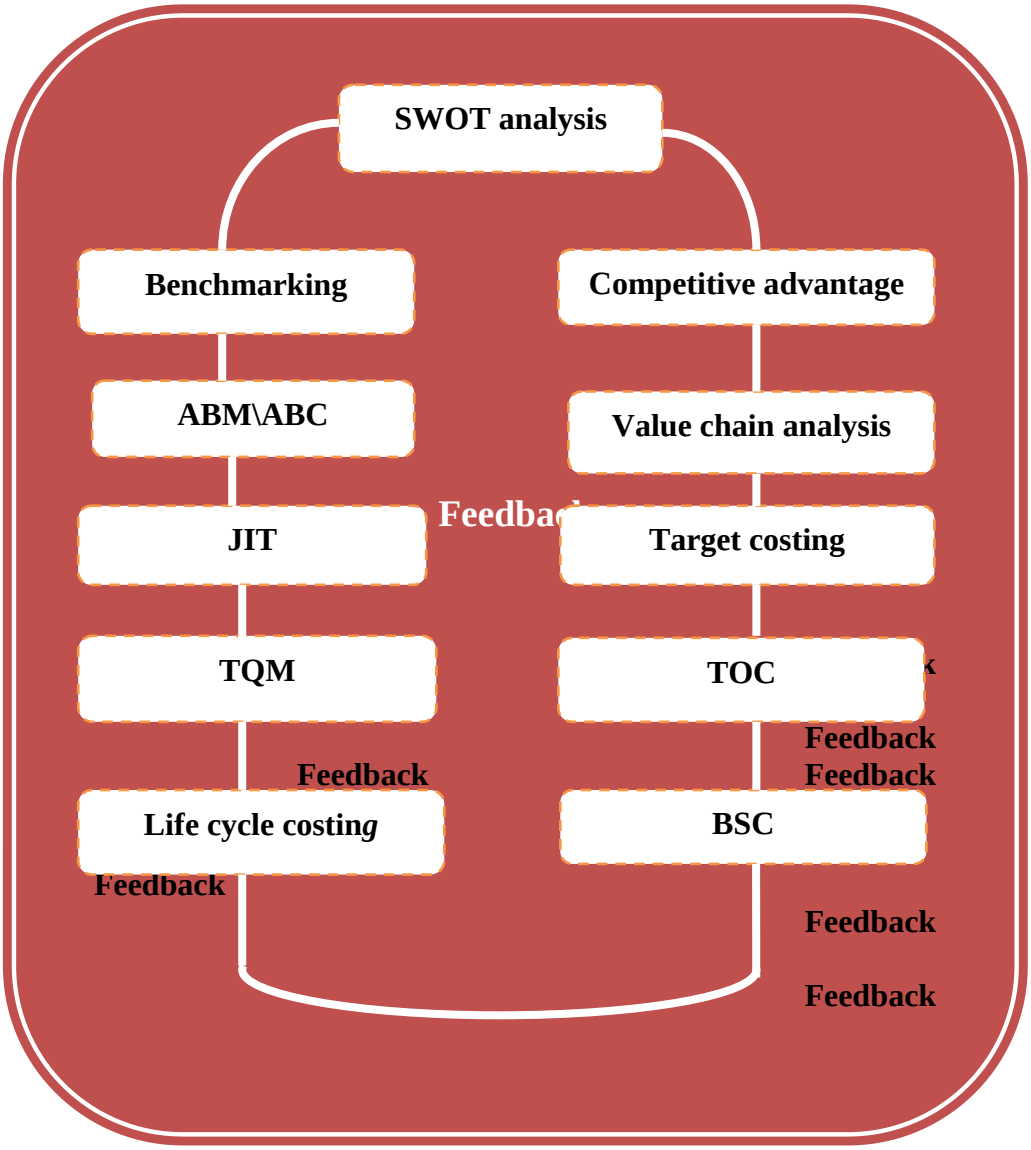
Table 1 provides more explanation of our framework items.

Table 1. SCM suggested framework

Term/concept	Definition
SWOT analysis	It is a systematic procedure for identifying a firm's critical success factors: its internal strength and weakness and its external opportunities and threats SWOT analysis guides the strategic analysis by focusing attention on the strength, weakness, opportunities and threats critical to the company ′success, it also serve as a means for obtaining greater understanding and perhaps consensus among managers regarding the factors that are critical to the firm success (Blocher et al., 2002, pp.37-39).
Benchmarking	Furey (1987, p. 30) defines benchmarking as an analytical process for rigorously measuring a company's operation against the best in class companies inside and outside its markets. According to Mittelstaedt (1992, p. 301), benchmarking is the process of measuring a company's current business operation and comparing them to those of best practices companies. Fitz-enz (1993, p. 28) defines benchmarking as an organized method for collecting data that can be used to improve internal administration, product manufacture, sales efficiency or services delivery. Benchmarking also is defined as the continuous of measuring our products, services and practice against those of our toughest competitors or companies renowned as leaders (Bernard, 2005; Jeffrey & Yasin, 1998; Camp, 1995). Wong and Wong (2008, p. 27) define benchmarking as a continuous, systematic process for evaluating the products, services and work processes of organization that are recognized as representing best practices for the purpose of organizational continuous improvement.
Competitive advantage	Porter (1985) has proposed two generic ways in which business can develop competitive advantage: • Low cost (leadership): the primary focus of this strategy is to achieve low cost relative to competitors, cost leadership can be achieved through approach such as economies of scale in production, learning curve effect, tight cost control and cost minimization in area such as R & D services, sales forces. • Differentiation: the primary focus of this strategy is to differentiate the product offering to create something that customer perceive as unique. Approaches product differentiation include: brand loyalty, superior customer services, dealer equipment, product design and product features or product technology (Govindarajan and Shank, 1992, p. 2).
Value chain analysis	Durisova (2010) defines value chain analysis as a strategic cost management method that involve the process of decomposing the firm activities from suppliers to final customer into strategically relevant activities as a way of managing costs, additionally segmenting the organization into activities allows the organization to identify the activities that are a sources of competitive. Karki (2008) identifies three steps for value chain analysis as follows. • Conduct the value chain analysis is to break down the key activities of the company according to the activities of the company entailed in the value chain framework. • Assess the potential for adding value through the means of cost advantage or differentiation. • It is imperative for the analyst to determine strategies that focus on those that would enable the company to attain sustainable competitive advantage.
Activity based management \ costing (ABM\ABC)	Activity based management (ABM) is a management tool for redesigning business process in order to obtain dramatic improvements in performance measure such as cost and quality. ABM consists of two primary viewpoints: a cost view and a process view. Under the cost view, ABM is a cost accounting system (called activity based costing), it is a system that is used to more accurately determine the full cost of services and products, this system allows for the cost analysis of services activities cost of core activities such as production process and cost of products, services and other cost objects. Under the process view, ABM is used to develop financial and non financial performance indicators for the output of each activity center (Trussel & Bitner, 1998, pp. 441- 442).
Target costing	Target costing begins with research into the attribute and quality customers want in a prospective product and the price they are willing to pay for these features. The next step involves subtracting the profitability required by the firm to manufacture a product from its market price to determine its target or allowable cost. All subsequent efforts of target costing are focused on achieving a product's allowable cost. If a product's cost can be achieved, it is produced, otherwise, the product is rejected as financially infeasible to manufacture. Early target costing researchers used survey methodology to examine the attributes of firms adopting target costing. In surveys of Japanese and Dutch firms, Tani et al. (1994), Tani (1995), and Dekker and Smidt (2003) respectively find that the primary reason cited for using target costing was cost reduction. Other reasons include improvement product quality, achieving timely introduction of new products and improving communication, analysis of target costing firms revealed that they were often in highly competitive market. Hibberts et al. (2003) find that firms with a strategy of product – differentiation and strong competition were likely to use target costing. Kee (2010, pp.204 - 205) notes that having a cost target for new product development led to lower cost without impairing design quality or development time.
Just in time (JIT)	Blocher et al. (2002, p. 100) define JIT as a comprehensive production and inventory management system that purchase or produce materials and parts only as needed and just in time to be used at each stage of the production process. JIT is a philosophy that can be applied to all aspects of business including purchasing, production and delivery. Its goals are to purchase materials and parts just in time to be placed into manufacturing process and to some of the benefits manufactures have realized from JIT implementation are elimination of waste, improved communication, reduced purchasing costs, reduced lead time, improved quality, improved productivity and improved customer responsiveness, within a manufacturing setting, the strategic deployment of such a philosophy works only if all of the organizational subsystems contribute to the implementation (Wafa & Yasin, 1997). Moss, (2002) finds that the more comprehensive JIT implementation, which is greater the array of JIT practice, used by a firm, the greater the returns.

Total quality management (TQM)	Kaynak (2003, p. 406) defines TQM as a holistic management philosophy that strive for continuous improvement in all functions of an organization and it can be achieved only if total quality concepts is utilized from the acquisition of resources to customer services after the sales, according to Antomaros (2010, pp. 28 - 30), TQM is a philosophy of continuous quality improvement that yields total customer satisfaction and therefore long term organizational viability, he added that delivers total customer satisfaction through enhanced quality when something is perceived to be of good quality, it has realized definable and distinguishable characteristics that are preferred or desired. These characteristics can be either physical or behavior in nature ensuring that these characteristics are present require control mechanisms and ultimately some sort of third party satisfaction.
Theory of constraints (TOC)	Goldratt and Cox (1986) popularize TOC whose primary performance measure is throughput per constraints unit. TOC focus on improving throughput by managing bottlenecks or constraints in the system. TOC philosophy is built on the premise that every organization faces at least one constraint (Fu, 2000, p. 68). TOC develops a set of methodologies is identify and optimize such constraints, this methodology has been used as a guideline for the application of TOC various area including product distribution, project scheduling and control (Campbell, 1995). According to Sheu et al. (2003, p. 434), the TOC methods suggest three operational measures including throughput, inventory, and operational measures. • Throughput is defined as the revenue generated by the system through the production of sold product. • Inventory is mean as any cost incurred for items retained in the organization including materials as well as fixed assets. • Operating expenses include direct labor and manufacturing overhead as well as selling and administrative cost.
Life cycle costing	It is a management technique used to identify and monitor the cost of a product throughout its life cycle. The life cycle consists of all steps from product design and purchase of raw materials to delivery and service of finished product. These steps include: research and development, product design including prototyping, target costing and testing, manufacturing, inspecting, packaging and warehousing, marketing, promotion and distribution and sales and services (Blocher, 2002, p. 17). Taylor (1981) and Woodward (1997) identify two distinct dimensions of life cycle costing: estimating cost on a whole life cycle basis and monitoring the occurred cost through a product's life cycle. Life cycle estimation is to understand the product's live cycle and the activities that are performed during its phases from the customer's point of view; the focus in life cycle costing is on the costs incurred through operation, maintenance, support and disposal of products. Life cycle costing is concerned with optimizing total costs in the long run, which require considering trade – off between different cost elements during the life phase of a product, for instance, the initial purchase cost may secure a reduction in the maintenance cost in the long run. An important feature of life cycle costing is that the effects of indirect costs are taken into consideration. To the estimation of future costs, an essential feature of live cycle costing during a product's life cycle (Taylor, 1981; Woodward, 1997). It is essential to know the cost incurred for a particular product or service and to understand the behavior of different cost element in the different phases of the life cycle. The aim is to monitor the actual costs against predicted life cycle costs and to determine the cumulative costs throughout a product's life cycle (Lindholm and Suomala, 2005).
The balanced scorecards (BSC)	Kaplan and Norton (1992) introduced and developed a new performance measurement and management system called the balanced scorecards, the BSC consists of measures in the following categories: financial, customer, internal business process and learning and growth perspectives. The majority of measures in the last three categories are non –financial measure, the four categories are linked by cause and effect relationship (Kang, 2008, p. 15). Prior literature has identified a number of purposes for which firms use the BSC (Beasley et al., 2006). Malmi (2001) finds two different types of BSC usages. Some firms used the scorecard as a management by objectives system, where targets were used and rewards were based on achieving those targets. In contrast, other firms used the BSC as an information system to provide their managers with a tool to improve performance. Speckbacher et al. (2003) develop classification of three different types of BSC usages that firms are going through sequentially. When firms develop a scorecard they often start with a strategic performance measurement system, which includes a set of financial and non-financial measures. Afterwards, the cause and effect relationships between the different (sets of) measures are developed further to translate the firm strategy to operational activities. This is the type II BSC. Finally, the most sophisticated type of use is a fully-developed scorecard that implements firm's strategy through communication, action plans, and incentives. Many firms never succeed in using the scorecard in this particular type III way. Of the 42 firms in the sample of Speckbacher et al. (2003) 21, 9 and 12 firms used the BSC in a type I, type II or type III fashion, respectively. In a sample of 92 Australian firms, Bedford et al. (2006) found that 43.5% don't use cause and effect logic in the design of BSCs, 7.6% use it only among perspectives, 14.1% only among measures and 34.8% between both measures and perspectives. 52% of the firms tied the BSC to incentives for higher level managers, whereas, this was 41% for staff employees. Wiersma (2009) argued that BSCs that are used at multiple levels are better able to create a common language in which the strategy developed at the top of the firm or business unit is operational led in performance metrics. Moreover, The scorecard was used most often at the corporate level (96% of users) and at the business unit level (91%). Only 62% used it at the individual level (Wiersma, 2009, p. 241).

Figure 2. SCM suggested framework



4. The Association between SCM and ERM

4.1. SCM and ERM approaches

Strategic cost management demands a risk management perspective to manage risk and see the future risk before it arrives. Recent examples include fuel price surges that have disrupted airline profits, reduced stock market valuations that have affected pension costs for firms in industries that employ defined contribution plans, and disruptive technologies (e.g., digital cameras) that make earlier generation technologies obsolete. In sum, when risks are defined as internal and external events that may materially affect profits, modern finance theory on risk management demands that we also consider uncertainty surrounding costs as part of strategic cost management.

Womack and Jones (1994) examine how risk activities are implicated in firm's cost structure for example in the area of operations and services management, the concepts of reducing process variability and enhancing process flexibility themes of lean manufacturing, these strategies offer cost savings from eliminating safety stocks and work in process inventories that support process variability rather than exogenous demands variability. Following prepositions have been derived based on research, practice and or literature in SCM and ERM approaches, audit type, company size, and industry type, we develop.

Therefore, there is a proposition that Firm, which adopted strategic cost management, is more likely to adopt ERM approach.

4.2. Audit type

There is an extensive academic literature that examines audit quality. Despite presenting some limitations; most of those studies classify the largest

international accounting firms, now known as the Big Four firms, as high quality auditors. It is possible that organizations committed to engaging such high quality auditors also are more committed to risk management (Beasley et al. 2005, p.524).

Hence, there is a positive relationship between audit type and the association between ERM and SCM.

4.3. Company size

There is evidence that large firms are more likely to have ERM programs in place (Colquitt et al., 1999; Liebenberg and Hoyt, 2003; Beasley et al., 2005). As a result, there is a positive relationship between company size and the association between ERM and SCM.

4.4. Industry type

Beasley et al. (2005) find more extensive ERM implementation in the banking, education, and insurance industries. Financial institutions face significant regulation and financial reporting risks (Beasley et al., 1999). Banks regulated industries) and to invest more heavily in the internal audit function (Carcello et al., 2005). Banks have been leaders in ERM adoption due to the emphasis on risk management in global regulation (Basel II, 2004) as a way to reduce a bank's minimum capital requirements.

The U.S. Federal Reserve Board has recently announced expectations for expanded ERM processes in U.S. financial institutions (Bies, 2004). Educational institutions also face significant regulation and have been strongly encouraged to adopt ERM. The higher education community is not unlike the business world regarding risks it faces, and institution wide risk management makes good business sense for institutions of higher learning (Whitfield, 2004; Beasley et al., 2006, p. 7-8).

Consequently, the association between ERM and SCM differs from industry to another.

5. Conclusion and future research

This paper investigates the relationship between strategic cost management and enterprise risk management. Therefore the following propositions were developed: firm, which adopted SCM, is more likely to adopt ERM approach, there is a positive relationship between audit type and the association between ERM and SCM, also there is a positive relationship between company size and the association between ERM and SCM. Finally, the association between ERM and SCM differs from industry to another. Moreover, the study develops a framework for SCM composes of the following items: SWOT analysis - Benchmarking - Competitive advantage - Value chain analysis - Implement strategy that reduce cost during the value chain analysis by using target costing, ABC, ABM - Just in time (JIT) - Total quality management (TQM) - Life cycle - Theory of constraints - Measure performance by using balanced scorecard (BSC).

It concludes that the primary drivers of ERM are said to be corporate governance and other regulatory requirements and pressures, and management and investor demand for greater understanding of strategic and operating risks (Abdul Manab et al., 2010). The benefits of full ERM implementation are increased corporate management governance accountability and better governance practices, greater managerial understanding of and consensus about corporate strategy and strategic cost management. In addition, in some cases, higher credit ratings and hence a lower cost of capital. Depending on the stage of ERM and SCM implementation, the tools and techniques to measure the impact of strategic risks appear to be differed. For companies that employ advanced ERM and SCM systems and processes for their strategic risk management and decisions, the most frequently used tools and techniques are combination of tools and techniques such as TQM, JIT, value chain analysis, ABC, TOC, BSC, key risk indicators, self-assessments, and scenario analysis.

There are several implications of the study's findings for both academics and/or practitioners. The study contributes to the accounting literature and more specifically to the literature on SCM and ERM. The findings of this study will advance our understanding of relationship between SCM and ERM by demonstrating how company's characteristics and other factors could influence the level of a company's SCM and ERM implementation. The association between ERM and SCM differs from industry to another. Moreover, companies committed to engaging high quality auditors are more committed to risk management (Beasley et al. 2005, p.524).

While communication and information technology is paramount in any informed decision making processes, it is evident that fairly little attention has been given to information and communication technologies as to measure its impact upon SCM and ERM design and capability, lack of much literature on SCM and ERM, and sustainability (Burnaby & Hass (2009).

Furthermore, there has been relatively little research on SCM and ERM upon control and culture (Muralidher, 2010). Therefore, it seems essential to place more emphasis on research which attends to the relationship of SCM and ERM practices and theory which will require more embedded and collaborative research processes (Berry et al. 2009). Further research could be undertaken to examine company's characteristics and other factors that might affect the relationship between SCM and ERM. It might be of interest to study the effect of internal control, the existence of internal auditor on SCM and ERM implementation. It might also be important to

examine the effect of corporate governance internal and external mechanisms on the association between SCM and ERM.

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