

December 2005

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Recommended Citation

Heng, Michael; Fiedler, Brenton; and Kandunais, Chris, "Implications of Supply Chain Management for Accounting Information Systems" (2005). *PACIS 2005 Proceedings*. 86.
<http://aisel.aisnet.org/pacis2005/86>

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Implications of Supply Chain Management for Accounting Information Systems

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Abstract

Utilisation of Supply Chain Management (SCM) practice by businesses has a number of consequences for internal management information systems, many of which have been dealt with in the literature. Accountants and managers need to manage their supply chain carefully by working closely with the counterparts of their business entity's suppliers in numerous areas including cost accounting, cost and inventory management, budgeting, risk assessment, management information systems, and management of strategic issues. Accordingly, the proper strategic management of the supply chain and the appurtenant risks is critical to the operational efficiency and financial well being of a business entity (Thomas, 1999). The ability of business entities to provide information to reassure external users of the business's continued survival is critical in a global e-business environment where business failures continue to be all too common, despite the best efforts of regulators to foster corporate governance and improve the quality of assurance services. This paper contributes to discussion concerning the desirability of improving external reporting and audit assurance by identifying and reporting internally generated qualitative SCM information that is critical to achievement of business objectives. Strategic management processes in place in almost all businesses already produce vital strategic information related to continuous analysis and monitoring of environmental issues including those relevant to SCM. If SCM data is critical to business survival, why should it not be reported to external users, and on a continual basis? The discussion suggests that traditional definitions involving information needs of external users of financial information should be revisited by extending the accounting criterion of the 'economic entity' into a concept which is referred to in this paper as the 'network business entity' (NBE). While further research is required into clarifying the full nature and practical implementation of critical SCM data into external audited external financial reports, the paper concludes that externalising the value of internal SCM data will undoubtedly improve the decision making of the users of those financial reports.

Keywords: supply chain management, economic dependence, accounting, e-Business.

1 INTRODUCTION

This is an opinion paper written in the style of a working paper. It is intended to motivate further research into theory of accounting in order to cope with the changes and challenges associated with eBusiness. As part of this endeavour, we propose to expand traditional accounting thought about the nature of business entities for accounting and reporting purposes.

Imagine you are entrusted with the task of looking after the visiting King of Thailand and you are to arrange for a dinner for His Majesty and his entourage in a five star restaurant. You inspect the premises and ask to see the kitchen. To your surprise there is no kitchen;

there are no cooking utensils; there are no waiters; and there are no tables and chairs. Reading your surprised look, the manager politely informs you that the restaurant operates on the principles of best practice in e-Business, similar to Dell or Cisco. All the necessary furniture and eating utensils will be leased just before the dinner party, food will be cooked to order by some of the best chefs in town, and all necessary supplies to ensure a successful social event will be managed through the supply chain. You are assured that the business model has been working fine without any complaint from the 'customers', the management, the suppliers and so on. Indeed, customer satisfaction is high, the use of space is optimal, human resources and financial capital are put to their maximum use.

The above fictive example is typical of those companies which have successfully re-invented themselves into so-called virtual organisations by embracing supply chain management. Adding to the efficiency and effectiveness of supply chain management is the availability of web-based resources, communications and information systems, increasing the resource interdependence of entities in the supply chain, and suggesting a redefinition of the 'traditional' business entity. While the legal boundaries of business entities exist, the economic, logical and physical boundaries are becoming blurred.

Translate the above situation into the task of an outsider trying to make sense of the accounting reports of a company which outsources its major traditional business activities. There are no inventories; and therefore no holding costs nor inventory overheads nor uncertainties arising from price fluctuations of the inventories. You have just-in time orders only for the next few days. There are no outstanding bills. The cash flow is good. Based on historical financial information, this is a profitable firm, with a sound return on investment. However, a key question still remains: How to explain the high market evaluation of the company? When this question was raised with an accounting professor, his answer was short and quick: "Look, the cash flow is excellent." Unfortunately, the reply does not really answer the question. The retail store in a busy street corner could also exhibit such cash flow pattern, but it is unlikely to be valued that highly in the financial market. The key here is that though the two businesses may exhibit same pattern of cash flow, their business models are very different. These profound differences are not adequately captured in the accounting reports as we currently know them. Another crucial point with SCM business practices is that in the study of business competition, firm-to-firm competition is no longer very useful (or one may say, relevant). It makes more sense to talk about supply chain versus supply chain competition (Kalakota and Robinson 2001). The nature of competence is also changed. From the idea of achieving excellence by making quality products, a firm is judged on its ability as a brand owner *cum* manager, its ability to manage its relationships with its suppliers and buyers.

From an academic perspective, these three points (assessment of business models, supply chain as unit of competition, and nature of a firm's competence) would be strong enough for serious rethinking about current accounting theory and practice. A recent piece of research by Ramos (2004) reflects this mood. The task is made more urgent by the tremendous growth in value of businesses transacted with SCM (Raskob 2000). A major driving force is the trend in a very competitive business world. "In the 1960s and '70s manufacturers competed on the basis of cost efficiency. In the 1980s quality was the rage. Today much of the focus is on speed. (CFO 2003)" Given this acceleration of eBusiness relevant reliable accounting information should recognise the extent of the company's dependence (and therefore future viability) on its existing systems and sources of supply, and the communication of its risk exposures in the current and evolving eBusiness environment. As an indication of the risk, there has been a call for having some independent parties to offer assurance services for B2B electronic commerce (Khazanchi and Sutton 2001).

We propose the concept of Network Business Entity which takes account of the interdependence of business firms in a supply chain. In other words, it aims to be in line with the business reality that a member in a supply chain is part and parcel of the whole system of suppliers, and that the products of a brand owner (e.g. Toyota cars) are good because its suppliers are good. Thinking along this line can find support among some research findings in organization research literature e.g. Moore(1996) and Parolini (1999).

We submit that the concept of NBE provides a promising way to evaluate a firm that is actively involved in e-business. Accounting and information systems as well as the design of reports communicating financial, operational, and social performance must pay special attention to the robustness and health of the supply chain and its business's customers. Here we are facing the difficult question that current accounting rules are focused on a firm as the accounting entity rather than (more realistically) the whole supply chain, where there exist dependencies on the resources of key suppliers in the chain. How this can be resolved by the accounting profession is in itself another major research question. This problem is also related to the legal entity concept and various statutory and other reporting requirements embodied in legislation around the world that requires financial reports to be prepared for the ultimate legal owners of an organisation. These reports however do not recognise the existence and interdependence of related entities that comprise a NBE, irrespective of legal ownership.

The rest of the paper is structured as follows. In the next section, Section 2, we briefly go through the challenges posed by the practice of SCM to conventional wisdom about accounting. In Section 3, we propose the concept of Network Business Entity to address some of these challenges. The final section is Section 4 which concludes the paper.

2 SUPPLY CHAIN MANAGEMENT AND ITS CHALLENGES

There are many definitions of supply chain, with different emphasis and details. For example, SCM refers to all the events associated with the flow and transformation of goods from raw material stage to end user customers (Awad 2004). Another slightly different view sees supply chain management as the coordination of all activities of a business organisation from its suppliers and manufacturers, transporters, warehouses, retailers to customers (Chaffey 2004; Chopra and Meindl 2004). Because it holds the potential to improve a firm's efficiency and effectiveness(Samson 2003), SCM may therefore be seen as a resource for competitive advantage (Kathawala and Abdou 2003). A supply chain is a very complex system involving many business entities, often operating at various locations across state boundaries, involving different processes, incorporating the organisational competencies of financial firms, logistics firms, production firms, etc. With this in mind, we adopt as a working definition the following: "A supply chain refers to the flow of materials, information, payment, and services from raw material suppliers, through factories and warehouses, to the end customers. A supply chain also includes the organisations and processes that create and deliver products, information, and services to the end customers. It includes many tasks such as purchasing, payment flow, materials handing, production planning and control, logistics and warehousing inventory control, and distribution and delivery (Turban et al 2001: p,242)."

It is quite evident from the foregoing passage that supply chains characteristically engage a number of separate business entities rather than just one business entity. When skilfully used, supply chain management allows a firm to outsource all its production, leaving it to concentrate on design backed up by research and development, quality control,

marketing and brand name management, and the pursuit of shareholder satisfaction. The key competencies of the firm are in these few areas and managing its relationships with its suppliers. In the extreme case, it may even choose to outsource its R & D and design activities, leaving it with only a board of directors supported by a staff of marketeers, financial controllers, public relations functionaries and office administrators. In other words, the firm is a so-called *virtual organisation*, relying on its layered networks of hundreds of manufacturers, logistics firms and service providers all over the world. The network business model is rapidly becoming the predominant form of organisation in the IT industry, with Nokia, Hewlett Packard, IBM, Sun Microsystems, and Oracle being the most advanced in organising their production and processes around the Internet (Castells 2001).

Though the network business model is something radically new, it has evolved out of something we have known for a long time. For example, business entities have been known to operate with the co-operation and collaboration of their business partners. However, until the advent of e-business, suppliers, intermediaries and customers all act independently, sometimes to the detriment of the supply chain as a whole (Samson 2003). Under such circumstances, it is quite natural that their focus is internally directed. They tend to take a single entity based accounting and management approach that does not recognise explicitly the interdependencies of business firms. This might not be a major issue when a business firm does not integrate its business operations and processes with other firms. However, it is certainly a major issue when the business processes and operations are *tightly coupled using IT systems* with those of its suppliers. We are talking about information sharing, joint planning, integrated technology and shared benefits with the aim to improve the speed, precision and efficiency (Samson 2003). Holding on to the view of a business firm in a supply firm as a stand alone business entity is not longer consistent with reality in e-Business and it is not appropriate as a guiding thinking for business management. Writings dealing with supply chain management and e-business written for accountants (e.g. Bragg 1996; Brewer et al 2000; Lysons 2001) read like pages from information systems textbooks for a general business course. An exception is a recent research note by Ramos (2004). Though author suggests seven management accounting techniques¹ for supply chain management, he does not go into depth how these techniques individually or in an integrated fashion can solve the problem. At present, we still do not have an adequate set of tools to assess the value and other accounting aspects of an e-Business deeply involved in SCM.

SCM and other e-business practices have shifted the focus of business firms more and more to integrating their internal business processes and activities with those of their suppliers and buyers. The result is that the distinct boundary that we knew in the past is fast disappearing. Sometimes it is hard to locate where firm A ends and firm B begins. The new situation has a few implications for the theory and practice of accounting. To begin with, users of external reports should be made aware of the dependence of core activities on the resources of supplier entities and the environmental factors that may impact on the viability (or continued stability/growth) of a business. It is the authors' view that accounting reports must also evolve to continuously communicate information which is critical to the operations of a business. Because of the dynamic nature of the global business environment – continuous availability of supply chain data is important for user decision making.

¹ They are Open-book accounting, Target costing, Kaizen costing, Activity-based costing, Balanced scorecard, Value chain analysis, and Total cost of ownership.

3 THE CONCEPT OF NETWORK BUSINESS ENTITY

The authors support the network perspective of interrelationships with other business entities which states that individual firms are dependent on resources controlled by other firms (Skjoett-Larsen, 1999, as cited in Kathawala et al, 2003). Recent empirical study has provided us with more insights into how IT-based supply chain management systems can contribute to the strategic assets of the parties involved (Subramani 2004). In the sense of traditional accounting this broadly implies an existence of economic dependency that requires disclosure in financial reports.

It must be acknowledged that the values of supply chain competencies and interdependence are difficult to capture in external accounting information presently prepared or disclosed by business entities, particularly in quantitative form. In the fictitious restaurant in the Introduction, the firm may have no physical assets except cash and investments, operating from leased premises with all major operational functions being outsourced. Under traditional and regulatory accounting disclosures the value of the organisation and its exposure to supply chain and other business risks is generally not required to be shown, unless there is (often) subjective disclosure required of economic dependence, going concern issues, or contractual or other commitments that have a financial impact on the truth and fairness of the financial statements prepared in the traditional accounting sense. Put differently, the global (or local) networking business practices of these companies represent challenges to the theory and practice of the accounting profession. This challenge is represented by a notion that seeks to expand the concept of a legal business entity across the boundaries of business ownership into a “network business entity” (NBE) that is integrated, is resource interdependent and has its own power in the business market-place.

We believe that the concept of NBE’s as a collaborative business entity for accounting purposes, the desirability of expanded supply chain qualitative disclosures to users of financial reports, and explores the suggestion of opening new horizons of thinking of research into financial reporting of business status. This also has implications for accounting firms that provide assurance services, as any disclosures of this nature would need to audited.

Discussion of the concept of a ‘Network Business Entity’ for accountants

“It is quite obvious, without any initial consideration of social bonds or trust, that accounting analyses for alliances have to capture effects through at least two organisations, rather than one. For example, where two or more firms manufacture products collaboratively, problems in understanding product costs might arise over inconsistent bases of overhead allocation. In fact overheads in one organisation might drive overhead expenditure in another such that activity based or feature costing exercises could become more complex. In principle, cost behaviour analyses and target costing exercises will also have to take these cross-firm effects into account. (Tomkins 2001:162).”

Given that there is an economic interdependency among firms involved in a supply chain, the management of such interdependent relationships can be improved if there is collaboration and co-operation in the accumulation of accounting data from information systems that integrate all organisations involved in the manufacturing process. In accounting terms, the principle nearest the concept of an over-riding business entity is the ‘economic entity’ concept in Australian accounting standards (AASB 1024, para 9). An entity is defined as “...any legal, administrative, or fiduciary arrangement, organisational structure or other party (including a person) having the capacity to deploy scarce resources in order to achieve objectives.” An economic entity is “...a group of entities comprising the parent entity and each of its subsidiaries...”, where a subsidiary is defined as “an entity which is controlled by a parent entity.” When the new accounting standard on Consolidated Accounts (AASB 1024) was introduced in 1992, it challenged the tradition of accounting. This standard introduced

the criterion of 'control' as the basis of determining those organisations related to a parent entity that collectively constituted an economic entity, in preference to the previously adopted criterion of ownership. This was a first step in recognising that reporting based on legal ownership provided information that did not recognise the substantive interrelationships between organisations in a true economic business entity. The authors suggest that accountants should consider taking the next step and extending the definition of an economic entity to those organisations which are economically interdependent in a network business entity. This is not inconsistent with the concept of a network perspective of an economic entity (as espoused by Skjoett-Larsen, 1999, as cited in Kathawala et al, 2003) which might extend its accounting definition to 'an entity where the component firms are dependent on resources controlled by other firms, and gain access to those resources through interaction with other business entities'.

Reporting issues

Identification of supply chain data relevant to users of financial statements may be a complicated issue, due to the complex nature of many global businesses. We are suggesting that each business should identify its core business segments (similar to those required for accounting disclosures), and for each segment provide qualitative data that we have broadly categorized as follows:

- Data critical to the long term survival of the entity (including the nature of strategic alliances);
- Information that provides assurance to financial statement users about the continuity and alternatives of supply, and the constancy of quality;
- Continual strategic information concerning the strategic environmental business risks in the each core segment;
- Published financial data about the financial security of the principal supplier(s) in the supply chain.

It is most likely that the data should only be concerned with the supply chain level immediately below each core business segment. We anticipate data collection problems and complexities if this were extended into suppliers of the NBE supplier. Direct resource dependence, in our view is relevant to the immediate suppliers rather than those lower on the supply chain, and any information regarding general supply risks would be revealed in the environmental data made available in the categories referred to above.

Because of the dynamic nature of the e-business environment this data should not merely be published in a business entity's annual or half yearly financial reports. NBE data could be made available on the business entity's website and constantly updated to reflect the changing conditions in the external business environment. If this were undertaken by business entity personnel, an independent expert would need to be engaged to provide assurance about the reliability or otherwise of the information published on the Internet. It would seem appropriate that this assurance should be provided and reported on by the independent auditors who should be familiar with the business and its operational risks. A framework for doing this has been proposed by Khazanchi and Sutton (2001).

The assurance report would dovetail with the auditor's usual responsibility to assess a business entity's ability to continue as a going concern, and to identify and report pertinent conditions and their possible effects that threaten this condition. Alternatively this information could be prepared and monitored by an expert independent from the business entity. This business practice is not really new. As we all know, the money market often relies on the services of independent rating agencies to assess the credit worthiness of a borrowing party. Another example is the second hand car market where the judgment of an

independent expert is appreciated. Given the current state of business legislature which restricts a firm from collecting and disclosing vital business data from its closely related suppliers, the service of independent rating agencies is all the more appropriate and urgent. This is especially so when one considers the fact that the supply chains of transnational companies are global. We would need some competent agency to interpret these data in a way that is meaningful to readers in different business environment. A similar idea has been suggested by Heng (2001) for B2C electronic commerce. He argues that “there is a demand for rating agencies whose main function is to monitor and grade, on a regular basis, the quality of goods and services, as well as to rate the ability of buyers and sellers to meet their commitment (Heng 2001: p.322).” This indicates a new business opportunity in the eBusiness.

Some Remarks

As part of the research into the concept of NBE's we believe in-depth studies should be undertaken of the accounting practices and information systems of firms that have a successful history as business network organisations to ascertain the supply chain information critical to management in ensuring the survival of the firm and the extent to which that information is disclosed in financial reports. In this regard we are suggesting research into the identification of qualitative rather than quantitative strategic data to ascertain the extent of disclosures pertaining to supply chain management issues, for indications of the evolution of the business entity and its relationships with other entities. We would like to learn from the practitioners how they place a value on commercial associations or relationships as little has yet been written on it (Tomkins 2001). Observing an evolving current event is often difficult. Here we need the input of business leaders, social commentators, business scholars and social scientists. In the study we may revisit the central concepts of accounting. We shall document how these concepts are affected by e-business, e.g. are they rendered obsolete, either potentially or effectively already in practice. At the same time, emerging concepts will be studied, with a critical assessment of their contributions.

Investigation of failed entities may also provide an insight into whether users of financial statements are adequately warned of the impending failure, and whether NBE data may have assisted user decision making processes for those external users. This approach has distinct limitations however as accounting disclosures tend to follow the minimal requirements of regulation. Such a study would revisit the central concepts of accounting and how these concepts are affected by e-business, e.g. are they rendered obsolete, either potentially or effectively already in practice. At the same time, emerging concepts will be studied, with a critical assessment of their contributions.

4 CONCLUSION

This paper is expected to raise more questions than it provides answers. It is exploratory in nature, and aimed at creating discussion and research. Clearly it is focusing on motivating research into an area of business that is accelerating at a pace much faster than that with which traditional accounting can reasonably cope. There is evidence in the literature to support the notion that, in the current competitive business environment, there is exceptional growth in business firms that are resorting to outsourcing a good share of what they traditionally did in-house, and employing supply chain management principles to handle these new arrangements. This has given rise to the concept of the “virtual business”. Through this outsourcing, the nature and dependence on outside supply has become even more critical to the virtual business. From the accountants' viewpoint, the explosion of e-business technology and the interdependence of entities in a supply chain has changed the face of the traditional “economic entity” suggesting that users of financial information can no longer be

satisfied with information restricted to legal ownership or control (as defined in accounting standards). Research is required into the existence of this shift in the definition of a firm (i.e. an economic entity in accounting terms), whose products and services are defined largely by its ability to organise and maintain a network of business relationships.

The alarming effects of business failures all around the world suggests strongly the need for improved financial reporting, and improvements in the assessment of business entities as going concerns. While the use of a network business entity concept (suggested in this paper) in preference to the current economic entity definition for accounting purposes may not be a panacea, the authors believe it provides a more realistic picture of the true economic interdependencies and business risks facing e-business entities that are critically engaged in outsourcing and the application of supply chain management principles. The authors believe that research into continuous disclosure of environmental and risk information may provide answers that may improve the decision making of financial statement users. The evolution of these complex global businesses in the knowledge economy suggests urgent research into some of the conceptual cornerstones of accounting.

Finally, we wish to say that we do not pretend to examine all the issues related to accounting aspects and value assessment of eBusiness in this paper. For example, the paper does not dwell on the issue of assessing the merits and demerits of a business model. The issue of business models is certainly one of the most important issues of the new business environment, amply illustrated by how a wrong assessment of the new models has contributed to the dot.com euphoria and its subsequent bust. One of our aims is to identify opportunities for further research, and we believe that the paper raises more questions than it gives answers.

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