Management accounting in a digital and global economy: the interface of strategy, technology, and cost information

Book section

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Management Accounting in a Digital and Global Economy: the Interface of Strategy, Technology and Cost Information

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INTRODUCTION

This chapter discusses aspects of the digital economy and globalization and their influence on management accounting. Strategy, technology and costs, it is argued, are increasingly co-mingled in globalized and digitized organisational contexts. Conceiving ways of doing things has traditionally been regarded as a necessarily disctinct process from the actual execution of activities. This notion is embedded across the majority of established enterprise management approaches. But managerial intentions and actions are becoming intertwined in many enterprises. Decision-based thinking does not necessarily always precede managerial action. The chapter discusses how digitization and globalization are altering decision making processes and organisational action. It does so by considering virtual organization based issues and some wider possible implications for strategic management accounting. A case study of a firm tackling digitization and globalization issues is discussed before presenting some brief conclusions.

THE DIGITAL AND GLOBAL ECONOMY

Gutenberg's printing press was, in the fifteenth century, an information technology (IT) revolution. In this past century, this revolution has continued – IT has become faster, cheaper, easier to use, more versatile and more

extensively impacts enterprise processes. IT is today effectively ubiquitous across organisations and central to economic activities. So much so that many regard modern times as being a "digital economy" represented by:

> …the pervasive use of IT (hardware, software, application and telecommunication) in all aspects of the economy, including internal operations of organizations (business, government and non-profit); and transactions between individuals, acting both as consumers and citizens, and organizations (Atkinson and McKay, 2007, p.7).

Communication technologies including telephony, radio and television have over much of the past century evolved very rapidly in terms of functionality, capacity and features but have only partially engaged computer technologies in doing so. Some of the most important developments in telephony have been the introduction of optic fibre networks in the late 1980s, greatly increasing storage and processing capacity, the enormous growth in mobile phones providing much flexibility in communication and the introduction of broadband in the early 1990s.

Computers have since their invention in the 1940s, also developed at an extremely rapid pace. The vast majority of managers and administrative employees today access or influence others through a desktop or mainframe computer. Another industry which has seen extensive continuous improvement over the twentieth century is that of media and entertainment. As distinct industries, what has been achieved by computer technologies alongside the transformation of telephony, media and entertainment as well

as the software industry during the twentieth century has been wide reaching and transformational. But the digital economy could only emerge from the convergence of these different industries.

It is now incongruous to think of these industries outside the context of their merged potential. The internet achieved its large scale impact given the wide level availability of computers and network technologies. This then paved the way for media and commerce to become electronically interconnected. The ready availability of software applications and content was in turn enabled by connectivity. The large scale availability and effective commoditization of digital cameras, handsets, mobile telephones, flat-screen high definition TVs and MP3's has been fuelled by networked IT systems enabling greater coordination. In other words, digital convergence is at the heart of creating an irreversibly connected environment which has brought previously distinct industries together. The result is that it is rapidly becoming inconceivable for traditionally independent machines, software systems, PCs and communication products to be regarded as not networkable.The digital age is an enmeshed world of interpenetrating digital devices affecting very many areas of social and economic activity.

This chapter argues that the convergence of the technologies described above and their economic, managerial and social impacts raise important issues for the premise upon which management accounting is now founded.

Financial control and management accounting activities as part of the digital economy are at a turning point facing the likelyhood of extensive alterations. They are having to cofront a much closer integration of decision making and action in supporting the co-mingling of strategy, technology and cost information.

GLOBALIZATION

The challenge to accountants to respond to the digital economy arises not just given the above discussed shift, but also in terms of other dimensions of globalization. There are many definitions of globalisation. One is:

> Globalisation is about the changing influence of space and time in our lives. With the advent of the communications revolution distance has a different relationship to self-immediacy and experience than it used to have. Distance isn't simply wiped out, but when you have a world where the value of the money in your pocket is affected immediately by ongoing electronic transactions happening many miles away, it's simply a different situation from how the world was in the past (Giddens, 1999).

.Another:

> Almost all contemporary social theorists endorse the view that globalization refers to fundamental changes in the spatial and temporal contours of social existence, according to which the significance of space or territory undergoes shifts in the face of a no less dramatic acceleration in the temporal structure of crucial forms of human activity (Stanford Encyclopedia of Philosophy, 2002).

Globalization in every day language refers to the diminished distance and time between countries, organisations and people. In industry and services, firms are seeking to supply globally, they are establishing a presence

across the globe and are outsourcing throughout the world. The digital economy and globalization are leading organisations to base their strategies on the opportunities and challenges of these environmental influences.

Figure 1 shows some of the areas held to be highly important in globalisation for a manufacturing or service organisation. The broad arrows indicate that organisations can establish strategies in these areas. Thus, strategy identification is seen as fundamental to effective globalisation. The thin arrows indicate that the digital economy is viewed as enabling or facilitating globalisation in each of these areas. The arrow from accounting indicates that accounting is seen as having a role in strategic choice. The globalisation opportunities in most of the areas listed are well known. Thus, in seeking to raise capital , the choice is to fund locally or from international markets. The latter opportunity is becoming extensively dependent on the digital economy. Similarly, consumer supply choices reflect whether to supply locally, to a number of countries or for some product or services, to supply globally. These choices also require decisions on the mode of supply including between joint ventures and direct investment overseas. Again, the digital economy facilitates such endeavours, not just with regard to initial set up but also in reporting and monitoring progress.

Similar considerations apply to the supply chain. Here, accountants in

addition to reporting and monitoring may be involved in investment appraisal and in make or/and buy decisions and performance measurement. In some firms, planning departments may be closer to strategy than accounting departments and may play the lead role in appraising investments and analysing outsourcing decisions. All these roles reflect aspects of the digital economy. The broad arrow to government in Figure 1 reflects the ability of governments to inhibit or encourage globalisation and to facilitate or hinder the adoption of elements of the digital economy.

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To bring out some of the cost and learning relationships in a digital economy allowing cross-organisational and global exchanges, the next part of the chapter discusses changing enterprise structures. Collaborative firm linkages and pure trading relationships are explained and how pure trading links between firms can be restructured by virtual enterprise forms enabled by IT innovations is explored. Associated cost and strategic issues are subsequently identified. The possible implications of this shift for management accounting are carved out drawing on the above arguments.

EMERGING ENTERPRISE STRUCTURES

FROM VIRTUAL LINKS TO ALLIANCES

The "make-or-buy" option for a firm requiring subcomponents or input

material has been extensively discussed in the management accounting literature. Conceptually, the costs and benefits accruing to a firm producing required parts or subcomponents internally are weighed against the financial and managerial consequences of outsourcing via competitive bidding by suppliers of the products (Callioni et al, 2005; Dekker, 2004; Groot and Merchant, 2000; Meer-Kooistra, 1994; Quinn and Hilmer, 1994; Speklé, 2001;Vining and Globerman, 1999). Economic theorising on transaction costs has shaped accounting thought on firm structure over a long period. Incremental cost analysis has been advocated as an appropriate approach to assessing the financial consequences of buy/make managerial decisions.

The virtual firm enabled by digitization can be regarded as an agglomeration of multiple "buy" transactions weaved together by extensively structured coordination. Cost analyses are likely to entail a variety of factors reflective of the complexities of such an agglomeration. Ultimately, the "make-or-buy" decision can in some virtual contexts become a "make-or/and-buy" series of decisions. These decisions may themselves be grounded in the implementation of the decisions.

Over the past two decades, much has been written about alterations to buyer-supplier links enabling firms to consider an alternative to the make or buy option: the collaborative relationship (CR) which is in effect a "quasi-

vertical" form of integration (Das and Teng, 2000; Richardson, 1993; Tomkins, 2001). CRs play an increasingly prevalent role among many enterprises today (Handfield et al, 2000; Helper and Sako, 1995; Lambert and Cooper, 2000; Leiblein and Miller, 2003; Liker and Choi, 2004; Sako, 2008; Trent and Monczka, 1998). Sheth and Sharma (1997, p.91) note that

> ...organizational buying is dramatically shifting from the transaction oriented to the relational oriented philosophy and will shift from a buying process to a supplier relationship process.

Management accounting scholars have commented on the control implications of this shift (Anderson and Sedatole, 2003; Dekker, 2004; Hakansson and Lind, 2007; Kamminga and Van der Meer – Kooistra, 2007; Kraus and Lind, 2007) but have not formally addressed its implications for cost management processes. These relate to product development input, price rebates, after sales warranties, supplier inspection policies and information systems integration. Many scholars recognise that strategic and contractual issues between buyers and sellers are gaining relevance, particularly in new product development contexts (Arnold, 2000; Axelson et al, 2000; Cousins, 1999; Gadde and Snehota, 2000; Narayanan and Raman, 2004; Reyniers and Tapiero, 1995).

The development of relationships-based or collaboration-oriented purchasing behaviour is influenced by many factors including similarities between the industry and technologies of buyers and suppliers (Buvik and Halskan, 2001;

Dalmin and Mininno, 2003; Gadde and Häkansson, 2001); prior experiences of change among suppliers (Frey and Schlosser, 1993, Hahn et al, 1990); effective communications between buyer and suppliers (Hoberman and Mailick, 1992; Lascelles and Dale, 1989; Mohrman and Mohrman, 1993; Van Weele, 2000); the creation of cost information exchange relationships (Ellram, 1996), and the consideration of purchase leverage factors and volume of initial business (Billington and Ellram, 2001; Kulmala, 2004). The importance of experiential learning is a major characteristic of customer supplier links and of living in a digital and global economy (Bessant et al., 2003; Dyer and Singh, 1998; Krapfel et al, 1991; Langfield-Smith and Greenwood, 1998; Stjernstrom and Bengtsson, 2004).

In practice, two options generally exist for a company wishing to purchase a subcomponent or a service-based product from an external supplier. On the one hand, the buyer can put out a bid tender and choose the most competitive quote for a certain number of parts over a period of time. Benefits from past performance are limited; exchanges tend to be at arm's length and product specifications; and prices are well defined. In contrast to this transaction-based competitive bidding approach, the buyer can establish a collaborative relationship with a supplier. Such a relationship would entail sharing of technical and financial information, managerial interaction and liaison and a more flexible buyer-supplier link as to time/volume variables and product specification. The costs involved in identifying the right supplier

for a collaborative relationship and operationalising such a link differ from those in a bidding situation. Firms regard one or the other approach as a strategic issue.

Traditional competitive purchasing entails the assessment of certain economic transactions whose terms are made explicit prior to the commencement of trading. Agreements (contracts) with recourse options for faltering on the terms of the contract and the buyer-supplier link is designed within attempts to minimize each party's dependence on the other. In contrast, collaborative subcontracting relationships are founded on trust and transactional dependence with specific supply undertakings (often made orally) extending over only part of the overall trading relationship. The obligations of such long-term relationships are diffuse and guide the resolution of specific transaction problems on a case-by-case basis usually through informal channels. The collaborative link exhibits mutual indebtedness that can extend over long periods of time with a loose principle of give and take. The usual pure buy situation is characterised by narrow and formal channels of communication between the buyer's purchasing department and the supplier's sales department whereas a CR tends to have extensive and multiple channels of communication between a variety of functional managers and departments within the two companies.

The most significant difference between a pure purchase and a collaborative

linkage is that the latter establishes non-specific terms of trade as to supply quantity, timing of supply, product specifications and product price at the time of establishing the trading relationship. In contrast, in pure purchase contexts, the economic exposure can be calculated with a high degree of accuracy prior to the commencement of trading. Table 1 identifies some contrasting characteristics of collaborative alliances and pure trading.

Buyer-Supplier Link Characteristics	Pure Trading	Collaborative Relationship
Knowledge	Proprietary	Operational knowledge flows between each party and there is sharing of information between competing suppliers.
Price	Lowest bidder usually obtains contract	Immediate price competitiveness is often secondary
Timing terms	Strictly stipulated penalties for deviations from contractual terms. Commitments tend to be short-term.	Option exists to delay and even abandon purchases either temporarily or permanently without relinquishing buyer-supplier link over long term.
Contract specificity	Product specifications usually predetermined	Limitless product specification changes may be made
Communication channels	Narrow and formal	Multiple channels, information exchange is less formal and more frequent

Contrasting Characteristics of Pure Trading versus Collaborative Relationships

TABLE 1

The absence of a contractual predetermination of quantity, price and timing of supply makes it difficult to assess the financial consequences of creating a CR trading link. The buyer's ability to alter quantities purchased from the supplier and the buyer's, and sometimes the supplier's, power to change product specifications confers operational flexibility. There may be a variety product life cycle considerations that affect strategically desirable time frames relating to market entry (Dunk, 2004). Additionally, both parties learn from producing, transacting and cooperating with one another which brings about cost consequences and interdependencies. An alliance creates the possibility of rapid expansion and growth in ways not anticipated at the outset (Child, 2005).

The initial subcomponent cost or service offering cost of a supplier able to engage in a CR may be greater than that in a pure trade with a supplier but this needs to be evaluated in terms of foregoing the payoffs from a CR. In particular, the transfer of knowledge and the availability of flexibilities say between a supplier and assembler may over time contribute to value advantages exceeding those of pure initial subcomponent price differentials between a competitive bid purchase based on a contract and a CR (Gietzmann and Larsen, 1998).

Some firms will opt for both CR and pure trades depending on their

purchasing portfolio mix (Axelson et al., 2000). If there are learning effects, costs will possibly decrease with output. Process improvement, product standardisation, economies of scale and other elements can all offer learning. The extent to which economies which emerge out of learning varies across and within industries and is conditioned by differences in R&D expenditure and capital intensity as well as team effects (Dyer, 1997; Dutton and Thomas, 1984; Gruber, 1992; Lieberman, 1984). In practice, learning effects are higher under CR links than in trading links.

In broad terms, the decision to enter into a collaborative relationship with a supplier as opposed to engaging in transaction focused pure purchase for required products entails a variety of organisational consequences with cost-benefit implications that stem from the various options affordable by the alliance. Learning and knowledge transfer play a key role. This is so for collaborative alliances where the nature of interactions facilitates information exchange both formal and informal as well leaving loose certain terms of trade including the length of the relationship. Conversely, pure purchase situations and particularly those enabled electronically within virtual firms, allow little room for collaboration or for learning which is not a primary objective of the virtual firm set-up.

The features of CRs have control issues relating to the flexibilities offered vis-à-vis the resource implications of establishing CRs. Creating an alliance

can be time consuming with resources being required to set up a workable trading infrastructure. There has to be an infrastructure and a willingness to share operational information including accounting information between the trading entities (Dyer and Singh, 1998; Handfield et al., 2000; Vining and Globerman, 1999).

Learning effects affect the economic viability of engaging in a supplier alliance. Cost reductions can flow from a subcomponent supplier to the partner firm as part of a CR. It may be possible for the firm to earn superior returns through learning rate differentials from a CR which may not be acceptable via virtually structured coordination. As elaborated below, virtual firms are not designed to tap into organisational learning. Whilst the accounting literature recognises learning related costs effects, the strategic implications of establishing both collaborative and virtual relationships are complex and have not been investigated to any great degree. The next part of the paper considers the virtual organisation as a rapidly emerging form.

THE VIRTUAL ENTERPRISE

This section explains the basis upon which "virtual" enterprises operate and provides an illustration of the governance and control mechanisms in place which, to a degree, pre-empt the dissociation between thinking and acting and planning and control.

A virtual enterprise has been considered to be:

> … a temporary network of independent companies-suppliers, customers and even rivals-linked by information technology to share skills, costs and access to one another's markets. This corporate model is fluid and flexible (Byrne et al, 1993,p36).

Stress has been placed on bringing together resources and goal achievements via the view of a virtual enterprise being a goal-orientated arrangement between several firms or a unit within a firm which temporarily assembles dispersed competencies and capabilities. Virtuality has been taken to suggest transient connections between otherwise independent entities via appropriate IT structures:

> A virtual company is created by selecting organizational resources from different companies and synthesizing them into a single electronic business entity (Nagel and Dove,1991).

Of particular note is that the creation of this organisational form raises the question of the goal realization path:

> The essence of the virtual organization is the management of goal-orientated activity in a way that is independent of the means for its realization. This implies a logical separation between the conception and planning of an activity on the one hand, and its implementation on the other (Moshowitz,1994, p279).

Implementation necessitates the planning of certain decisions to be achieved during implementation action rather than a priori. One characterizing feature

of virtual organisations is the commoditization of information to enhance flexibility and "infinite switching capacity" so that "by reducing dependency on the human being as the bearer of knowledge and skill, it is possible to increase the flexibility of decision-making and control to unprecedented levels" (Mowshowitz, 1994, p281). A second feature is the standardization of interaction whereby enterprises can be readily coupled and decoupled as the need for altered supply arises. This is enabled by the codification of information (Boisot, 1998) which provides a basis for enhancing information's control potential.

A virtual enterprise is likely to have overhead costs largely tied to running its information systems infrastructures and carrying out coordination processes. Additionally, overhead costs will reflect personnel costs with employees likely being rewarded on some measure of coordination effectiveness. Virtual corporations may find the achievement of scale and scope economies difficult and will have to seek value creation through coordination structures and flow mechanisms rather than by reducing costs of material input, processing or packaging for physical products. This is because virtual flows are set up with quite specific pre-determined objectives for suppliers followed by disengagement. Proprietary information leakage can be a risk with precaution against opportunistic behaviour also being essential.

Within virtual corporations, little room exists for tapping into organisational

learning. A virtual organisation is effectively "a repertoire of variable connectable modules built on an electronic information network" (Child et al, 2005, p168,) with each linked firm's function being to deliver a specific standardization output before decoupling. The intent is to create a flexible organisation of companies whereby each undertakes one or more functions rather than to provide a structure for enabling information exchange with a view to learning.

Managerial emphasis within virtual enterprises is placed on sound information processing as well as on the coordination of individuals and connecting firms, and on guidance via the clear articulation of the organisation's vision. Managerial focus is on the management of people, coordination activities and technology. If carried out effectively, the benefits to the corporation will be the sound management of integral supply chains, desired response to competitors' actions, and shorter time to market. Such consequences can come about in the face of very low face-to-face contacts (Fritz and Manheim,1998).

Significantly, virtual organisations are less focused on controlling how work is undertaken and more on outcomes of work. A firm which has its own hierarchy to carry out activities will be highly integrated. Its insourcing activities will need close operational controls. It will retain high involvement with physical processes. At an opposite extreme, an organisation may

structure itself as a virtual trading firm with arm's length transactions enabling short term exchange between electronically linked organisations. The focus here will be on coordination rather than ownership of physical assets and on operating as an "intellectual holding company" (Straub,2004, p. 300).

Traditionally, individual firms carrying out operational activities will invest in process controls via standard costing analysis and budgetary controls based on operating plans and activities. They will be aware of and be able to act on performance monitors of their output. Conversely, the virtual trading firm will focus on outcome controls. In virtualizing, firms become less operationally management control orientated and instead, evaluate performance by monitoring outcomes. The ability to monitor outsourced processes via outcome controls becomes a relevant core competency for virtual corporations. Where a firm has integrated activities, it will control its processes via some equity in production activities providing legitimacy for monitoring those processes. A virtual firm by contrast will likely not hold an equity position vis-as-vis the purchase or trading partners it engages with and its core resource for effective coordination and service delivery will lean toward outcome-based performance controls.

Focusing on the control of outcomes without an equity stake engages a shift in the balance and focus of costs for an enterprise. Typically, disengagement

from owning resources and emphasizing coordination can be accompanied by a tilt towards variable costs and a lesser fixed cost base. However, if the scope and scale economies hurdle which virtual firms typically face can be overcome, reduction in both fixed and variable costs can accrue. Such a position gives rise to network effect like benefits. Larger virtual firms become bigger because of their ability to tap into scale benefits as they enlarge. The chapter next discusses some of the possible accounting effects of these influences and, more generally, those arising from globalization.

THE END OF LINEARITY

In a digitized and globalized complex enterprise, people can act whilst thinking about desirable actions. Actions subsume or include objectives. That is, objectives become defined simultaneously with actions and are embedded in actions. Processes therefore become concomitant with intentions. However, management thinkers in the past have mostly regarded decision-making activities and managerial action as being sequential. The notion that some organisational actors think whilst others engage in action became a characterizing feature of industrial management at the turn of the last century. Management accounting is archetypical of this approach when historically characterized as providing only information for decision making. Conceiving ways of doing things is mostly still regarded as an activity that is

distinct from the actual execution of desired activities. This is embedded across the majority of prescribed approaches to enterprise management. Managers however often think of strategic processes and related organisational activities as being closely intertwined.

Given the extent to which professional management accountancy bodies are embracing a more strategic posture for the field, strategic thinking in the practice of financial and cost management is an increasingly important issue. Financial managers and accountants are encouraged to be more strategic (Nyamori et al, 2001,p.65). Strategic control and cost management frameworks define approaches to strategic decisions as distinct from their implementation and from operationalising separately derived intentions.Retaining the traditional staff instead of line role for accountants in organisations makes it difficult for strategic thinking not to be viewed as dissociated from operational action. Many cost management approaches, including activity-based management, product life-cycle costing, target cost management, customer profitability analyses and strategic investment appraisal among others, have been predicated on the idea that strategic thinking should guide managerial action (see Langfield-Smith,2008). Essentially, it is still believed that conceptions of intent should be formulated prior to the implementation of decisions.

Within emerging organisational structures, the notion that strategic decisions

should uniformly be dissociated from action may be a partial view. In the digital economy, businesses cannot separate all technological or operational activities from their strategic decision-making processes. The meshing of strategic, technological and operational factors suggests a need to reformulate management accounting precepts across at least some areas whereby reported management accounting information is used within emerging organisational forms.

Industrial enterprises may have been regarded as being able to predefine a strategy in order to modernize production processes. Decision-makers would then have been presented with technological improvement investment options. Supporting accounting and financial information on the likely economic implications would subsequently have been collated and supplied to the decision-makers so that managerial action would rest on financial analyses of possible technological options stemming from the strategy being pursued.

But the co-mingling of strategic, technological and operational decisions within many new organisations implies that managerially useful information can no longer be purely financial whereby strategic intent and technological options are regarded as distinct elements that are separable from one another and which follow a sequential path. What comprises relevant information and the presumed sequence of its deployment vis-à-vis

management accounting action in the organisationally networked world has to be reconsidered.

Just as convergence among previously distinct and independent industries has integrated desire and action,so is management becoming integrated in terms of decision making and action. Consider for instance emerging enterprise software applications. A leading player in the Enterprise Resources Planning (ERP) market is SAP. SAP is seeking to link Business Intelligence (BI) solutions to its existing ERP-based approaches. This is being undertaken on the argument that the distance between analysis and execution is being eliminated in enterprises – to create a "closed loop" of performance management. The Strategic Marketing Director for Business Objects at SAP notes that: "…when BI and ERP are integrated, business processes can automatically be redirected on the basis of analytics, removing the need for explicit decision making" (T. Elliott in Information Age, June 2008, p. 41). Separating thinking from action is not seen as an essential step for some organisational systems designers and decision makers. Coca-Cola's Innovation Specialist in the German Customer and Business Strategy Department notes that there is the potential within enterprises to "close the gap between modeling and executing and so the gap between IT and business" (A. Grobe in ibid.). Management accounting information systems may follow suit.

Without being partners in the strategic integration of decisions and actions, management accountants are limited in the roles they can play in helping firms to adjust to the digital economy and to globalization. In contemporary organisations, accountants are not seen as "owning" either the foundational disciplines of the digital economy or being responsible for the major elements that underlie globalization. Taken to an extreme, this view would restrict management accountants to their traditional roles of aiding investment and other management decisions and reporting on and monitoring the plans of others. Admittedly, these are more difficult tasks in digitized and global organizations, especially in devising appropriate reporting platforms and performance measurement systems.

Financial information relevance is increasingly about the effective representation of strategic and technological interdependencies enabling managerial decisions to align with present day organisational action. In some situations, the coupling of strategy, technology and process are coordinated by informational intensity. Enterprises which depart from the industrial structural model couple strategic and financial considerations. The interrelationships make it difficult for management accounting activities as they exist to rest within specific predefined entry points. Financial information is potentially becoming integral to and immanent within assessments of operational, strategic and cost considerations.

Identifying how new organisational forms bring about new informational dimensions that can impact organisational action with consequences for costs is relevant to consider. In particular, although accepted technical wisdom proposes that traditional incremental cost analysis can be applied to internal production versus outsourcing decisions, modern enterprises operating in digitized and globalized environments indicate the need to problematise this notion. The structure within which organisational transactions take place have altered the extent and consequences of strategic thinking as well as associated cost/revenue impacts.

MANAGEMENT ACCOUNTING AND STRATEGY

The above perspective on the digital economy suggests that management accounting thinking may likely witness changes given the interdependencies between strategy, technology and financial control. Similarly, the effects of globalization highlight altered conceptions of strategy's role in relation to the finance function. Strategic decisions as has been argued are co-mingled with technical and control issues (Bromwich, 1990, Bhimani, 2008, Rayport and Jaworski, 2003). Historically, management accountants have played a relatively indirect role in strategy determination- providing information seen as having strategic implications (Fern and Tipgos, 1988, Bhimani and Keshvarz, 1999). Anecdotal evidence suggests that many managers either have or would welcome accountants

taking a more proactive role in strategy formulation if not also implementation. This is to possibly avert those involved in strategic decisions entirely favouring strategies reflecting their own personal and professional interests with a lesser concern for the cost-based aspects of accepted strategies. This points to the need for accountants to understand the organisation's changing nature and its dependence on the technologies underlying the digital economy and the globalization process. But there is evidence that the management accounting discipline including more recent and avant guarde ideas related to strategic management accounting are slow to change.

There is very scant empirical literature concerning the accountant's role in strategy except a few studies concerning the applications of what is sometimes called strategic management accounting (SMA) which is briefly discussed below (see also Bhimani and Langfield-Smith, 2007). Two recent UK studies of what management accountants do are Burns et al, 2003 and Burns and Yazdifar, 2000 which both surveyed a small sample of UK members of the Chartered Institute of Management Accountants , the first in 1997 and the second in 2000. These studies focused on why management accounting systems seem to be slow to change. The 1997 study suggested the then new techniques were taken up by accountants but in a relatively moderate way but the 2000 sample expected their usage to grow substantially. New methods of aiding strategy were used by 27 percent of

the sample in 1997 but the 2000 sample, perhaps, optimistically, expected the take up rate to be 65 percent by 2005. More studies are needed to monitor these developments. A recent study of 41 UK manufacturing companies (Dugdale et al, 2006) suggests that management accounting systems were basically traditional, featuring budgeting , standard costing and incentive systems based on accounting numbers. An interview based survey of 16 manufacturing companies in Ireland found that accountants in the early and mid 2000s in their decision making role were seen by other managers not as decision partners but as information providers and that in the main modern accounting techniques were not implemented (Byrne and Pierce, forthcoming). However, the strong emphasis on contribution reporting and reporting non-financial performance measures found by Dugdale et al (2006) suggests some response to strategy matters. There is also evidence from case studies of the emergence of what are called hybrid accountants who combine the skills of business managers and accountants working very closely with process managers (Burns et al 2003). Such accountants may be more willing to reshape management accounting design and processes around the digital economy and globalization issues.

STRATEGIC MANAGEMENT ACCOUNTING

Rather than accountants getting fully involved in strategy formulation, some commentators have suggested they should seek to provide more

information specifically tailored to strategy (Simmonds, 1981 and Shank, 2006). What has often been called strategic management accounting (SMA) refers to a variable portfolio of financial techniques geared towards aiding strategic decision making rather than dealing with the tactical and operational issues which are focused on in traditional management accounting. SMA usually encompasses two types of information (Langfield-Smith, 2008). The first concerns providing information and future estimates concerning consumer markets, especially customer characteristics, and competitors, especially their cost structure, both currently and in the future (Bromwich, 1990). The second type focuses on the industry value chain and the company's position in this chain leading to reconfiguring the enterprise's value chain (Shank and Govindarajan, 1993). This information would seem to help in those strategic decisions prevalent in in a digital and global environment. Both field studies of SMA and the survey literature on SMA are sparse. Generally, SMA adopts prescriptive rather descriptive views of strategy (Bhimani, 2008). Two field studies are Lord, 1996 and Dixon, 1998 which both suggest that SMA practices are used in highly specific ways and that accountants were not involved in these implementations of SMA. A more recent study of a large multinational German company did find evidence of the use of SMA and the strong involvement of controllers using and developing SMA ideas (Tillmann and Goddard, 2008).

Although the term SMA seems only to be recognized sporadically in practice, many of the techniques that are generally recognized as elements of SMA are found to be used in practice. However, these may be performed either entirely by non-accountants or in combination with hybrid accountants even though SMA implicitly claims these techniques for management accounting.

Researchers especially those undertaking surveys include different techniques as comprising SMA. Such lists include the costing of product attributes, brand value accounting, competitive positioning, pricing relative to competitors, life cycle costing, quality costing, strategic costing relative rivals, target costing and value chain costing (Guilding et al, 2000). Other techniques that could be added are activity based costing geared towards costing strategies, benchmarking and accounting for servicing groups of similar customers (Cinquini and Tenucci, 2007).

A leading survey article in this area is Guilding et al (2000), which surveyed the use of what are usually called SMA techniques in the largest companies in New Zealand, the United Kingdom and the United States of America. The response rates were 51%, 38% and 13% respectively. The study asked about the usage of 12 SMA practices measured on a 7 point Likert scale with 7 indicating use to a great extent[1]. The usage of only two practices

1 These 12 practices were classified into three groups: those concerned with strategic costing and pricing made up of attribute, life cycle,

in the set of techniques labeled costing and pricing scored above the mid point on the scale or around the mid point in both the full sample and for individual countries samples. The rankings for the perceived merit of these practices yielded much higher scores on a scale: not at all helpful/ to a large extent helpful. All but one of the practices scored at mid point or better in the full sample with strategic pricing and costing getting scores of well over 5 and nearly 5 respectively. This does suggest that further development of these techniques which may be deemed germane to decision making in the digital and global economy are likely.

The second set of techniques were concerned with competitive position and performance and competitor cost assessment generally scored between 4 and 5 for usage and nearly 6 on their merit. This is encouraging as these practices seem very relevant to assessing the organisation's competitive adaption to the digital economy and globalization.

The results of this study with regard to the first set of techniques have been used to suggest that SMA has not really shown the promise its advocates have claimed. The sample included companies likely to exhibit very different characteristics not captured by adjusting for company size. Possibly the usage of SMA techniques may depend on organisational

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quality, target, value chain costing and strategic costing and strategic pricing, the second comprised of competitive accounting made up of competitive position monitoring and cost assessment and competitor performance based on published financial statements and the third was a

characteristics. For instance a cost leader organisation may use different SMA practices to those used by a differentiator company or, differ in the intensity to which they are used. Using average scores over the samples may not capture this.

A more recent study of the largest Italian manufacturing firms attempted to incorporate the contingent factors likely to affect the usage of SMA techniques (Cinquini and Tenucci, 2007). The final sample was 93 organisations and 14 SMA techniques were employed in the questionnaire. These practices built on Guilding et al, (2000) (see also Guilding and McManus, 2002) , with activity costing, customer accounting, intergrative performance measurement (balanced score card) and benchmarking added and brand value measures deleted. The respondents were asked to rank these practices on a 5 point Likert scale related to usage where 1 equals "never" and 5 "always". Here the scores were substantially higher than in the Guilding study. Attribute costing ranked the highest and the scores for only two measures fell below the mid-point of the scale. It is shown that relatively few organisations use all the techniques but that most use up to 10 of these practices. Most of the contingency variables investigated did not explain organisational use of SMA measures except for parial support being found for differentiators using SMA techniques more than cost leaders, though as might be suspected cost leaders do use the relevant cost

group of two measures relative to brand values.

measures. Firm size was not found to be important but this may reflect the narrow base of the sample. Given the earlier suggestion that an important role for accountants in the global and digital economy was project appraisal, It is surprising that neither of the surveys considered this from a strategic perspective in terms of, at least asking about the use of what has come to be called strategic investment appraisal (Bromwich and Bhimani, 1994; Shank, 1996).

Even given the concerns that have expressed about SMA, the arguments here suggest that organisations seeking to adapt to the digital and global economy should consider experimentation with and the use of these techniques where appropriate. The next section considers a brief case study of a firm experimenting with collaborative alliances to bring out some of the accounting implications. It points to the co-mingling of strategy, technology and cost management as well as to the impact of globalization and digitization on possible organisational processes and opportunities.

LI AND FUNG: A VIRTUAL ENTERPRISE WITH COLLABORATIVE ALLIANCES

The Li and Fung group was founded in Guangzhou, China, in 1906. Li & Fung was one of the first companies financed solely by Chinese capital to engage directly in exports from China. It initially traded largely in porcelain and silk before diversifying into bamboo and rattan ware, jade, ivory, handicrafts and

fireworks. From 1996 to 2007, Li & Fung's annual turnover rose nearly seven fold and its profits grew nearly six fold (McFarlan et al; 2007).

The group has today activities in export sourcing, distribution and retailing with 26,000 employees across 40 countries and with revenues of almost US$14 billion in 2007 (Liandfung.com). It is the world's largest outsourcer (supplier) in the garment industry. Li & Fung is a now a virtual company with collaborative links, acting as a value chain coordinator. It does not own any manufacturing capability but rather, coordinates a network of over 10,000 suppliers. Li & Fung "does not own a stitch when it comes to making garments. No factories, no machines, no fabrics. Instead, Li & Fung deal only with information." (Lee-Young and Barnett 2001, p. 77).

The core business of the firm is to serve as a "one-stop shop" for Western retailers by delivering a "global value-added package," including "product design and development, raw material and factory sourcing, production planning and management, quality assurance, shipping consolidation." (Ibid). Li & Fung illustrates a key present trend of the textile and garment industry which is that processes and exchanges have become increasingly fast and globalised while remaining embedded in local milieus from the viewpoint of customers.

The company is organised across over 90 autonomous subsidiaries, located

close to major markets, which is considered critical in a fashion-orientated industry. The Hong Kong-based headquarters provides the centralised IT system and financial and administrative support (McFarlan and Young, 2000). An important factor in the company's success is that it allows small and medium-sized manufacturers in developing countries, to meet together for doing business, while benefiting from scale economies which derive from its large purchasing and sales volume.

Li & Fung has offices in nearly all the global regions significant in textile and apparel manufacturing. The company's philosophy rests on a continuous search for low costs and utmost flexibility. Li & Fung-led manufacturing operations illustrate relevant aspects of the much finer spatial division of labour that characterizes the digital economy (Bhimani, 2003). The dispersion, density and diversity of the network of suppliers allows Li & Fung to switch easily from one manufacturer to another. If a part of the supply chain-manufacturing or shipping collapses for technical, social or political reasons, Li & Fung can readily switch to another supplier elsewhere in the world. The profit possibilities of electronic operations in terms of flexibility and time-to-market capabilities are extensive. Prior to the fabric being dyed, the client can alter the colour and size prior to cutting (McFarlan and Young, 2000). This level of agility has been referred to as the "power of postponement" harnessable for mass customization requirements (Feitzinger and Lee, 1997).

The tradition of retail stores was in the past to rotate their inventory through the four primary seasons, so that goods where shipped four times a year. Currently, the trend has moved to getting fashions in and out more quickly with lower life cycles and a greater variety to customers on a more regular basis. Zara uses a similar strategy in its retail operations (Guemawat and Nueno, 2003).

Li & Fung's investments in information technology helps it manage the logistics of the supply chain process similar to Zara. Li & Fung focuses on connecting and sharing information across the customers, sourcing, offices and factories. Its operating groups adopt each specific customer's in-house system software systems from logistics to billing. In this manner, collaborative relationship potential is created. Victor Fung, the company's Chairman, explains:

> Say we get an order from a European retailer to produce 10,000 garments. We determine that, because of quotas and labor conditions, the best place to make the garments is Thailand. So we ship everything from there. And because the customer needs quick delivery, we may divide the order across five factories in Thailand. Effectively we are customizing the value chain to best meet the customer's needs. Five weeks after we received the order, 10,000 garments arrive on the shelves in Europe, all looking like they came from one factory (Victor Fung cited in Magreta, 1998).

Li & Fung clients benefit in several ways: supply-chain customization shortens order fulfilment to weeks instead of months. This faster turnaround

allows clients to reduce inventory costs. But also, main customers create longer term collaborative relationships with Li and Fung whereas the suppliers are coordinated virtually. According to Victor Fung, "Li & Fung manage and orchestrate it from above. The creation of value is based on a holistic conception of the value chain."

William Fung, the company's Managing Director, points out that:

> Because of our old-economy history and our network, we can inspect suppliers' goods much easier. Buyers don't have confidence to buy from anonymous suppliers that they don't know. We think we can bring the two together within the Li & Fung network, we can build a business using the Internet to aggregate suppliers on their stock positions (William Fung cited in Lee-Young and Barnett 2001, p. 77).

Opportunities to learn from agglomerating with both pure trading firms as well as collaborative partners has important consequences:

> If you can shorten your buying cycle from three months to five weeks, for example, what you are gaining is eight weeks to develop a better sense of where the market is heading. And so you will end with a substantial savings in inventory markdowns at the end of the selling season (Ibid).

Strategy, IT-based links and cost information are integrated in the company to achieve this balance. The value of an organisational design which brings together firms for the provision of standardised inputs over time phases and from which learning benefits are minimal alongside longer term collaborations on the design side is extensive and an aid to competitiveness tied to organisational structure, technology, strategy and cost information thus:

> Our customers have become more fashion driven, working six or seven seasons a year instead of just two or three. Once you move to shorter product cycles, the problem of obsolete inventory increases dramatically. Other businesses are facing the same kind of pressure. With customer tastes changing rapidly and markets segmenting into narrower niches, it's not just fashion products that are becoming increasingly time sensitive…We need flexibility… And we also benefit from their exposure to their customers (Victor Fung cited in Magreta, 1998).

Li and Fung is an example of a new organisational firm poised to couple both traditional trading links and collaborative relationships. The cost effects of such structuring allows the firm to minimise fixed cost investments via extensive outsourcing and to minimise variable costs by having standardised products and using its IT based infrastructure to render visible minimum cost providers. Cost management acquires new meaning in such contexts because it integrates strategic choices, technological input and cost control (Bhimani, 2008). The process of identifying one or more of many suppliers for satisfying the needs of a specific customer with a defined strategy-technology- cost balance subsumes the firm's operational premise. Thus, Li and Fung's enterprise processes focus on a highly rationalised cost management philosophy of tight cost management and revenue generation via a total focus on customer needs. This also illustrates a turning point in the visualisation of strategic input within the firm's *modus operandi.*

The management accounting implications of such highly refined organisational structuring and activities are extensive. Here, form

subsumes strategy which co-integrates both IT inputs and cost control. Organisational action simultaneously creates and implements strategy. A transaction dictates thinking about and operationalising in a specific way via both traditional trading processes and collaborations. Each transaction may differ in the mix of pure trade and collaboration deployed. Each transaction thereby creates high strategy-technology-cost control specificity. Management accounting in such contexts may serve to facilitate the enabling of such organisational potential by focusing on the exclusive information needs of that specificity.

CONCLUSIONS

Whilst traditional management accounting techniques continue to play a role in terms of cost-benefit and incremental costing based impact, the complexities of fast changing markets point to the managerial adaptation of coupled decision making thinking and action. Standardised and electronic enabled transactions embed both decisions and actions and globalization undescores this type combined decision making and action. But a wide set of organisational activities still presume action consequent to decision making. Yet such decisions are themselves only partially formalised and partly loose and flexible and collaboratively grounded. Moreover, managers increasingly take action when planning and deciding on organisational action rather than after formal strategic plans are settled. Thus,

organisational complexities do not allow clear distinctions between decisions and actions and the formalised and informal control of operations. The traditional duality of decisions such as make or buy or insource/outsource is not clearly distinguishable in a globaling and digitizing environment. There is increased ambiguity of organisational engagement where both competitive bidding and collaborative relationships coexist and operations are coupled together. Information systems themselves do not have clear boundaries coinciding with rigid organisational structures or precepts especially where the boundaries themselves are becoming blurred between organisations. Systems have to span enterprises with information being accessible to competing and cooperating partners, suppliers, assemblers, designers and developers and other organisational players as well as customers.

Organisations are increasingly adopting "fluid" structures. Globalization and the digital economy mean that industrial value chains have altered in structure over the past decade. Convergence across industries has created new organisational missions and novel business models. Products are often now co-conceived and co-produced by enterprises, their suppliers and their customers. Customer groups themselves have altered products, enhanced features and deleted functions. Indeed, customers determine prices and costs, in vogue and out of style product content and create the nature of business platforms for trading (Bhimani, 2008).

In a digitised, global and fluid economic environment within which firms must compete, financial management and cost control face important challenges. This applies to both large and small enterprises with the presumed conceptual linkage between firm size and control no longer remaining unproblematic. Management accounting has always encountered calls for change. Sometimes these have often been premature and at times reflective of consultancy linked interests. This essay is not intended to be a forecast of doom for management accounting. Rather, the concerns presented here are meant to be indicative of some of the pressures which the field and organisations will have to tackle progressively on a scale not, perhaps, previously witnessed. Management accountants themselves may wish to question whether in the face of these pressures, they should either retain or retreat to their familiar character of costing the firm's existing operational activites, reporting on past managerial performance, acting as the organisation's financial police force and running what other managers see as a separate, independent and expertise focused functions.

As has been noted here the digital and global economy compress together strategy formulation and actions. To help in such a combined generation of objectives and actions, accountants may become more part of the decision making process both by becoming hybrid accountants and becoming more grounded members of management teams. Digital and global

influences are bringing to bear within firms both consumer and supply markets characteristics and wider strategic concerns

A number of approaches have been discussed in the management accounting literature. In accounting, portfolios of these techniques have sometimes been called strategic management accounting. At least, for some of these practices, management accountants have comparative advantages. However, the danger for accountants is that organisations in the midst of a global and digital environmental change will use these techniques whether accountants are involved or not. Further, the possibility exists that strategic management accounting, as it has been conceived, may not continue to address emerging organisational challenges if it retains a static form. Management accounting is not immune to continuous reinvention and interpretation. Thus, like organisations, the management accounting field itself must address issues raised by modern day globalization and digitization forces.

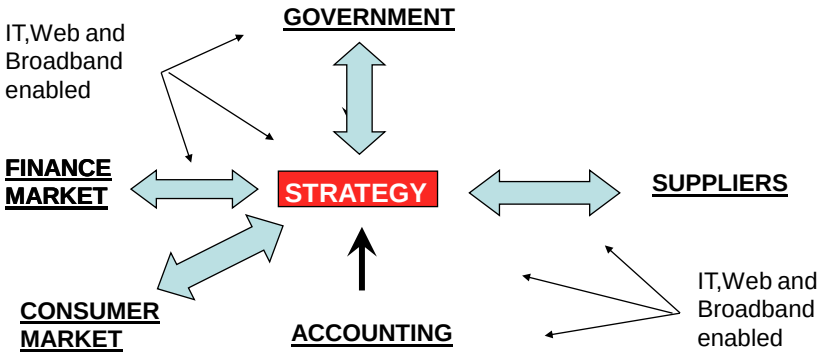

Diagram 1 **Strategy and Corporate Performance in a Digital and Global Economy**

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