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Cost Management in the Digital Age

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Introduction

Cost management is on the brink of immense change. This is not the first time the field has faced upheaval. During the 1980's, management commentators, accounting scholars and prominent accounting practitioners called for radical changes in cost management practices (see Bromwich and Bhimani, 1989). Many finance executives heeded these calls, and large numbers of enterprises adopted new approaches to managing costs. These included activity based management, throughput accounting, life cycle costing, target cost management and the balanced scorecard among others. Within many companies, understandings of the role, impact and dimensions of cost management was transformed following the implementation of new accounting applications(see Bromwich and Bhimani, 1994). Today, enterprises are again facing significant challenges that will prove very disruptive. There are three main developments which will lead companies to rethink their cost management practices: The rise of internet technologies, the emergence of novel organisational forms and the advent of new approaches to using, accessing and analysing information. This essay considers their impact. First, some background on how and why these forces of change are now present.

Current forces Reshaping Cost Management

Significant events and developments in the recent past have triggered changes in cost management thinking and practices and have started to alter the finance function in some firms. One key factor which has driven this alteration is the dotcom crash at the turn of the millennium and the subsequent transformative impact of the internet on organisational activities. The rapid pace of digitisation is forcing deep changes in the modus operandi of management structures, decisions and strategies. It is giving birth to novel business models with concomitant accounting repercussions. Since 2008, enterprises have also been affected by the deepest worldwide recession since the Great Depression, accompanied by the most extensive government bail out initiatives of modern times. The now tighter corporate governance regulatory requirements facing firms in developed and emerging economies has altered their management controls and management practices. This is tied to the global financial crisis and attendant economic measures put into place by governments, oversight bodies and financial institutions which directly impact cost management and financial control systems across many enterprises. For instance, readily available finance and the achievability of high leverage for very many business organisations until early 2007 enabled specific cost structures as intentional strategies to have been pursued. Such leverage was at times achieved because of the utilisation of legitimate financial innovations. But also, it often was the result of undesirably lax financial practices and poor controls.

The ready access of funding which produced high cost infrastructures is no longer today easy to attain for most firms let alone to sustain. The sourcing of fixed costs within enterprises is likely to continue to be subject to much more demanding assessments of their rationales and sustainability. Investors and stakeholders are now

more prone to closely monitoring investment activities and enterprise performance to ensure the achievement of expected yields and anticipated returns on equity. It is certain that the regulatory demands on organisations will further expand going forward in most economies. Requirements for more transparency, accountability, watchful governance and greater levels of disclosure will make further demands on enterprise information systems. More regulatory hurdles and firmer monitoring of operational achievement and effectiveness will continue to affect financial controls.

Aside from technological advances and the rise of regulatory constraints on firms, industries are being reshaped by new organisational forms which are emerging. Rather than being temporary these new entities are gaining permanency as creators of corporate value. Examples of new organisational forms are global strategic alliances, virtual companies and joint ventures which are discussed below. It is unsurprising that managers regard the swift pace of change they face in their organisations as the only constant. What used to be seen as 'normal' until now is rapidly being transformed. A 'new normal' is emerging (Davis, 2009). As novel disruptions, challenges and deep financial alterations at the macroeconomic level make their presence felt, there will in the near term be a sustained and ongoing impact of these economic forces of change on the structuring, strategies and managerial control mechanisms deployed by enterprises.

Certainly, modes of information access, analysis and reporting by cost management professionals will alter. These change are considered below.

The digital economy and costing concerns

Computers have shaped business activities for over four decades. But it was only during the mid-1990s that a profound second wave digital revolution took place. At that time, three effects became interlinked: the spread of user-friendly operating systems and interfaces; the rapid diffusion of the internet and the worldwide web and; the convergence of four formerly distinct industries – computers, software, communications and media and entertainment. These three factors led to the creation of a huge worldwide value network with attendant new business models and novel ways for enterprise architectures to form and enable the generation of wealth and the creation of value. Coinciding with this was the effect in many enterprises, of business intelligence crowding out different sources of information. What consumers do which results in economic transactions has always shaped what enterprise executives derive from accounting information systems. Given this, enterprises have in the past designed information systems to produce formal information which system users purposefully deploy based on economic transactions reflecting consumer purchases or resources mobilised by managers.

But a shift in information design structures is currently taking place. There is now a realisation that the information which information systems have traditionally discarded can of immense relevance and usefulness as a source of business intelligence for companies. A customer buying online will often leave a trail of information disclosures prior to making the purchase. This 'data exhaust', if effectively captured and analysed,

can help organisations determine how and what individuals rationalise and the path they take before they take before making a purchase or a decision. Google.com for instance learns from every search process carried out. Amazon.com gathers information from online customer behaviour irrespective of whether a purchase is made. EBay monitors buyer and seller activities even where no purchase transactions take place. These companies analyse data exhaust in the provision of important financial intelligence which can shape cost management, pricing decisions and operational controls.

Drawing business intelligence from information produced in the absence of economic flows such as from searching behaviour, website visitations and browsing sequence has, for many companies, become a forte in the configuration and internal reporting of information for internal executive purposes. The significance of this is growing apace. As 'transaction agnostic' information grows, data volume and information management will expand and place important challenges on financial systems.

Globally produced data grows more than 10-fold every five years. The pace is partly reflective of the increase of media, entertainment and social networking possibilities online. And while much of the information is unstructured, a significant proportion is amenable to structuring in an economically purposeful sense. This growth of information alongside the possibilities presented by data exhaust enables useful analysis and managerial assessment by businesses. For instance, purchases made via Amazon are often tied to purchases made previously. Probabilities can be established about the likelihood of particular subsequent purchases being made based on data collected about macro-level buying behaviour, non-purchases and prior online interactive searches. EBay likewise continuously alters its listings based on prior listing activity, bidding behaviour, pricing trends, search terms used and purchase frequency. Google searches become more and more relevant because search results are based on what users with prior similar searches eventually stayed with. In this sense, data trails left by surfers invite scientific data analysis and mining whose results can point to altered pricing policy, cost containment prioritisation and cash and working capital management strategies.

While data mining increasingly shapes financial control and management decisions relating to revenue generation, cost containment and economic flows in enterprises, traditionally the finance function has been structured around information collection about products by information systems overseeing production processes. But the collection of information can also take place from within products and processes themselves. For instance, real time data collection can be

achieved without separate information systems being in place through the use of for instance pill-shaped micro-cameras; precision agricultural and industrial sensors; and radio frequencies identification tags.

Continuous information collection tied to product purchase pathways and cost incursions in the value chain well as dynamic pricing strategies and working capital management choices can be achieved with products and processes themselves acting as collectors and transformers of information. This presents novel possibilities for financial management whereby the finance function can become a receptor and assessor of information for real time analysis and decisions.

The next part of this essay discusses altered organizational structures that are reshaping economic markets and value creation. In particular, collaborative firm linkages and pure trading relationships are considered followed by a discussion of how pure trading links between firms can be reshaped by virtual enterprise structures resting on information technology innovations. The implications of this shift for cost management are drawn out.

NOVEL FIRM STRUCTURES AND COST MANAGEMENT

For management accountants, incremental cost analysis has been regarded as a useful approach to help assess certain economic decisions executives have to make. For instance managers may need to determine the financial consequences of whether to “make-or-buy” a subcomponent used in production or simply a service which adds or supports a product offering. Conceptually, the costs and benefits accruing to a firm producing required parts, services or subcomponents internally are weighed against the financial and managerial consequences of outsourcing via competitive bidding to subcomponent suppliers or service providers (Callioni et al, 2005; Dekker, 2004; Groot

and Merchant, 2000; Meer-Kooistra, 1994; Quinn and Hilmer, 1994; Speklé, 2001).

Collaborative relationship (CR) firms exhibit 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; Lambert and Cooper, 2000; Leiblein and Miller, 2003; Liker and Choi, 2004; Sako, 2008). Sheth and Sharma (1997, p.91) remarked long ago 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”. This shift is now deeply engrained within many firms. Management accounting scholars have extensively assessed 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). Many commentators recognise that strategic and contractual issues between buyers and sellers are gaining relevance, particularly in new product development contexts (Gadde and Snehota, 2000; Narayanan and Raman, 2004). The implications for cost management are extensive in terms of product development input, price rebates, after sales warranties, supplier inspection policies and information systems integration.

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. CRs tend to have extensive and multiple channels of communication between a variety of functional managers and departments within linked up companies. They establish non-specific terms of trade as to supply quantity, timing of supply, product specifications and product price at the time of setting up the trading relationship.

Given that there is an absence of contractual predetermination of quantity, price and timing of supply, the assessment of the financial consequences of transacting via a CR trading link is very difficult. The buyer's ability to alter quantities purchased from the supplier and to change product specifications provides operational flexibility. There will also be product life cycle considerations that will affect the viability of close relationships and it will be likely that both parties learn from producing, transacting and cooperating with one another which will have cost advantages aside from interdependencies. A close alliance will create the possibility of rapid expansion and growth in ways not anticipated at the outset (Child, 2005).

The initial subcomponent or service offering cost of a supplier able to engage in a CR may exceed that of a pure trade with a supplier but this higher cost could 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 purchase and CR. Competitive purchasing entails the assessment of certain economic transactions whose terms are made explicit prior to the

commencement of trading. Agreements are put into place to cover 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. Thus little learning is passed on between the parties.

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 processes will vary across and within industries and be conditioned by differences in R&D expenditure and capital intensity as well as team effects. In practice, learning effect transfers will be higher in CR links relative to pure trading links.

Many firms opt for a form within a model of total outsourcing to producers, service providers and assemblers. Their only function is the coordination of activities, the connecting of inputs and outputs and the orchestration of movements between entities in a resource efficient manner. Effectively such a firm need not be capitalised along traditional lines of engagement with factors of production such as land, labour and capital. It need not be concerned with investments in the means of creating flows but only in their coordination. A firm can remain virtual retaining control only over the direction, magnitude and nature of electronic interfaces. The virtual firm can be regarded as an agglomeration of multiple “buy” transactions weaved together by extensive coordination and structuring of flows. 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).

Cost management for a virtual firm will entail the consideration of many factors tied to coordination rather than actual production. The verification of outputs by suppliers and the extent to which they meet specifications and required standards rather than the monitoring of ongoing operational efficiencies during production will form the primary focus of virtual firm control systems.

Virtual firms create extremely high levels of interconnectedness between a large number of entities involved in the production of value. This influences virtual firm controls such that they are forced to implement very rigorous risk management strategies. This is because an high degrees of interconnections between producers, service providers and assemblers engages a high level of systemic risk. The correct response to this is to develop an extensive set of standards for suppliers to observe and the standardisation of specifications across enterprises and their information systems. What is essential for information professionals to grasp is that cost management is not simply a matter of assessing individual costs but also of developing a strong awareness of interconnections between firms which interface and to understand the threats and risks this poses and their possible impact on costs.

A virtual enterprise is likely to have overhead costs being 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. Proprietary information leakage can be a risk with precaution against opportunistic behaviour also being essential.

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 organizational consequences with cost-benefit implications that stem from the various options affordable by the alliance. For instance, a CR can offer the possibility to alter product specifications mid-stream depending on the volatility of market demands or competitive actions. To a degree this is also possible in virtual organisational set-ups if quantities for processing are contractually kept very low and continuously redefined. Unplanned purchase volume changes, including temporary suspension of purchases, can be made throughout the term of the buying relationship. 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.

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 between CR which may not accrue via virtually structured firms. Whilst accounting systems may pick up on learning related costs effects, the implications and consequences of having both collaborative and virtual relationships are complex but will be assessed by firms seeking the most cost and managerially effective structuring of operations.

Information Flow Changes and Analysis

Cross-national comparisons of management styles and organisational practices are indicative of differences which suggest country-based specificities. But just as some characteristics seem to be more prevalent among organisations in particular countries, so there is evidence that clusters with cultural commonalities exist which overarch country-specific characteristics. Cultures which make high use of information communication technologies (ICT) tend to exhibit polychronic work styles – performing multiple activities in parallel – as opposed to bending toward monochronic functions. There is growing evidence that the availability of constant access to computers, networks and technologies enhances the tendency toward polychronic behaviour. Often senior managers operating in high tech contexts and overseeing the activities of more junior tech-savvy managers complain about the very extensive polychronic behaviour of subordinates. In a global context, where work is outsourced to destinations such as Eastern Europe, the Far East, and many places in between which are populated by educated primarily via mobile technologies and web-based educational material, it is likely that polychronicity will grow as a preferred work style. Consequently, the finance professional will wish to – and will – exhibit a need for information that is continuously derived and streamed from different sources with attention being divided across a multitude of information windows.

Aside from preferring increased diversity in information communication platforms, managers operating in a highly digitised environment tend to be more receptive to collaborative working approaches rather than command and control work styles. Trust and visibility are given a high

degree of significance aside from a predilection for multiplatform interaction and interfacing. Consequently managers are increasingly revealing a need for constant real time feedback about their activities. Performance evaluation systems, including accounting and financial metrics based indicators, will emerge to reflect this. Information systems that produce output which is qualitative, quantitative, graphical, interactive, text based and which shows varying degrees of structure will be increasingly be invested into. The impact on both the work content and work style of finance specialists is likely to be extensive.

Conclusion

The finance function is today confronted with novel ways of capturing, communicating and integrating sources of information. It is responding to altered platforms, sources and architectures of information output, channels, structures and modes of assessment. The sources of change are as multifaceted as are the effects. The global economy is affected by macro and micro level changes. Institutional changes at a wider level are influencing the manner in which enterprises access finance, make use of it, report on it and monitor it. As the risks of their economic activities grow so do their information systems change. Individual information users are themselves also changing the types of information they assess and access and are adopting novel ways of acting on this information.

The body of cost management expertise which has over the past two decades undergone significant change, is again on the brink of immense shifts in content, structure, delivery approach and mode of usage. Cost management is becoming today what was a distant murmur of things to come.

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