

## **MANAGEMENT ACCOUNTANTS' ROLE IN THE INNOVATIVE APPLICATION OF IT FOR SUSTAINING COMPETITIVE ADVANTAGE**

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### **INTRODUCTION**

Today, it is almost impossible for an organization to run effectively and efficiently without information technology (IT). From a traditional cost benefit analysis, a task could be more efficient with the application of IT (Parker and Benson, 1987). For example, the preparation of invoices by computer and transmitting it electronically by means of data network. IT creates value linking within an organization such that it is possible to achieve accurate billing and get immediate comments from the customers. All these are attributable to the better co-ordination of task brought about by IT. IT enhances value acceleration due to speedier processing and a decrease in time dependency between departments. The application of IT has also resulted in value restructuring. Organization need to restructure because of the change in job roles initiated by downsizing of management (Strassman , 1985).

IT provides opportunities for further innovative enhancement. This includes transforming the physical processing component of activities (Porter & Miller, 1985). Computer controlled machine tools are faster, more accurate and more flexible in manufacturing than older manually operated machines.

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Schumberger, for example, successfully developed an electronic device that measures various variables while drilling oil wells and managed to reduce drilling time. In other situations, the application of IT resulted in easier access to markets. For example, the use of a computerized system introduced by American Hospital Supply Corporation (AHSC) to track and manage hospital supplies. Thus, IT is not just computers. It encompasses the information that business creates and includes a wide spectrum of linked technology that process the information. With such benefits, exploitation of IT could lead to a competitive advantage.

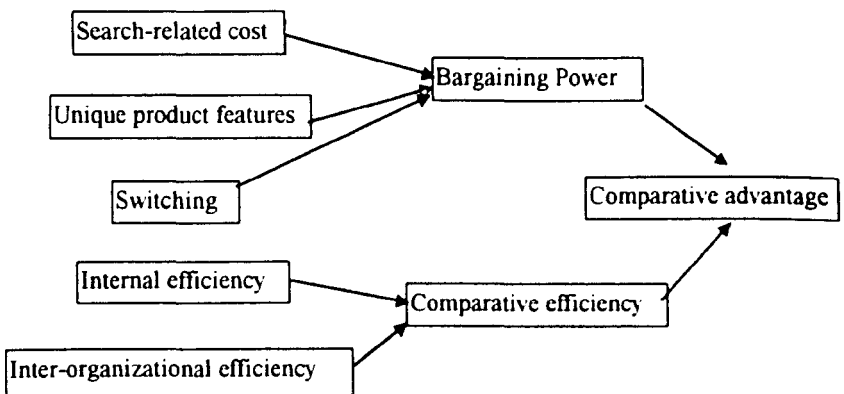
Surveys in New Zealand (1993) report the functions benefiting from IT are mainly management reporting and budgeting. The level of decision support management accountants provided in their companies are cash management and financial planning in which management accountants were most involved. The increasing use of IT, dispersion of computer competence and integrated management information or operating control system has led to a greater use of online information and decentralization of accounting knowledge and the responsibility for producing information. As the information processors of an organization, accountants must keep in touch with users to find out their information needs and to collect data to produce the needed information. Thus, there is a need for management accountants to be more proactive and visionary through the emphasis on managerial and strategic aspect of the IT applications.

## **COMPETITIVE ADVANTAGE FROM IT**

Competitive advantage in IT stems from two factors which are comparative efficiency and bargaining power as in Figure 1 (Johnston & Vitale, 1988). Comparative efficiency relates to the capability of an organization to reduce its overall cost internally from speedier production through IT. For example Computer Aided Design (CAD) could reduce the cost of designing new

products and simultaneously the cost of modifying or adding features to existing product. With IT, the time involved in capturing and analyzing data has been tremendously shortened, enabling a firm to achieve economy of scale. Comparative efficiency could also be achieved through better networking across organizational boundaries through linking an organization to its suppliers, distributors or customers.

Bargaining power is a situation that provides the power to lock in customers by raising switching costs, having unique product features or providing cost-saving methods of shopping to tie customers down. AHSC is a classic case where they offered a package of multi-vendor services. This entails bulk purchases and hence reduces the customer's overhead cost (Short & Venkatraman, 1992). With such convenience and cost-saving, customers were reluctant to switch to other suppliers. Thus, conferring competitive advantage over other hospital suppliers. Therefore, in order to gain competitive advantage, management accountants or managers must consider whether or not IT can be used to raise the entry cost of competitors into our market, to differentiate our products and services, to gain leverage over our suppliers through IT or to increase a customer's switching cost by making it difficult to change suppliers.



*Source: Bakos and Treacy, 1986*

**Figure 1: A Causal Model Of Competitive Advantage**

Undoubtedly, IT is capable of acting as a weapon to build competitive advantage. One example where IT creates a new product, hence differentiating itself from its competitors was the introduction of a Cash Management Account (CMA) by Merrill Lynch (Laudon & Laudon, 1988). Merrill Lynch, a retail brokerage firm subsequently moved into the banking industry preceding the introduction of CMA. CMA provided three services to investors; credit through a standard margin account, cash withdrawal by cheque or Visa Card and automatic investment by permitting customers to transfer money freely from stock to bonds to money market funds. This computerized program was sold to investors through its brokers. Merrill experienced a dramatic exponential growth in account from 180,000 in 1980 to over 900,000 in 1982. This enables them to reap over \$60 million fees within a year (Rackoff & Wiseman, 1985), Merrill's preemptive moves enable the company to command a monopolistic position for four years. However, its position eroded when banks and other financial services organization started developing similar products and the information system technology needed to develop them.

It is noteworthy that although IT provides the platform to be innovative, it may not necessarily sustain competitive advantage. The copying firm often enjoys the advantages of newer and better technology, learns the experience of the innovator and could even offer comparable services at lower costs. Clemons (1986) argued that many applications of IT are in fact strategic necessities. When competitors are able to imitate them, these systems seldom confer competitive advantage. Another similar example was that faced by American Airlines (AA) as analyzed by Hopper (1990). AA developed the world's leading computerized reservation system called Semi Automatic Business Research Environment (SABRE). It provides the technology to monitor inventory of available seats, generate flight plans, schedule its crew and control inventory of the airline's spare parts. However, AA faced the threat of other similar system that could undermine SABRE. Today, SABRE is considered an electronic travel supermarket and is not a proprietary competitive weapon for any airline. Thus, to sustain competitive advantage, IT must be a component of overall business strategy. The application of IT depends on the unique business opportunities rather than just its competitive benefits.

## **SUSTAINING COMPETITIVE ADVANTAGE**

Sustaining competitive advantage to realize long term performance gain, whether with profitability, return on investment or market share, is affected by the environmental factors, foundation factors and action strategies (Ketinger et. al, 1994). The environmental factors involves environmental characteristics that may be unique to sustain competitive advantage, for example, government intervention, patents or any regulatory factors. However, it could be difficult to sustain competitive advantage through patents, trade secrets or having propriety use of technology because the evolution of IT is so rapid and everybody has access to it. The foundation factors are the unique qualities of a firm that include its assets, alliances,

expertise and infrastructure that gives the firm a competitive edge above others. Basically, it encompasses the firm's size, its geographic scope, product scope, vertical scope, organizational base, learning curve, technological resources and information resources. In order to create sustainable competitive advantage, firms must initiate actions or strategies that would exploit IT opportunities fully. This would involve preemptive moves to create barrier to entry, create high switching costs to customers, offering flexibility, developing response strategies and managing risk.

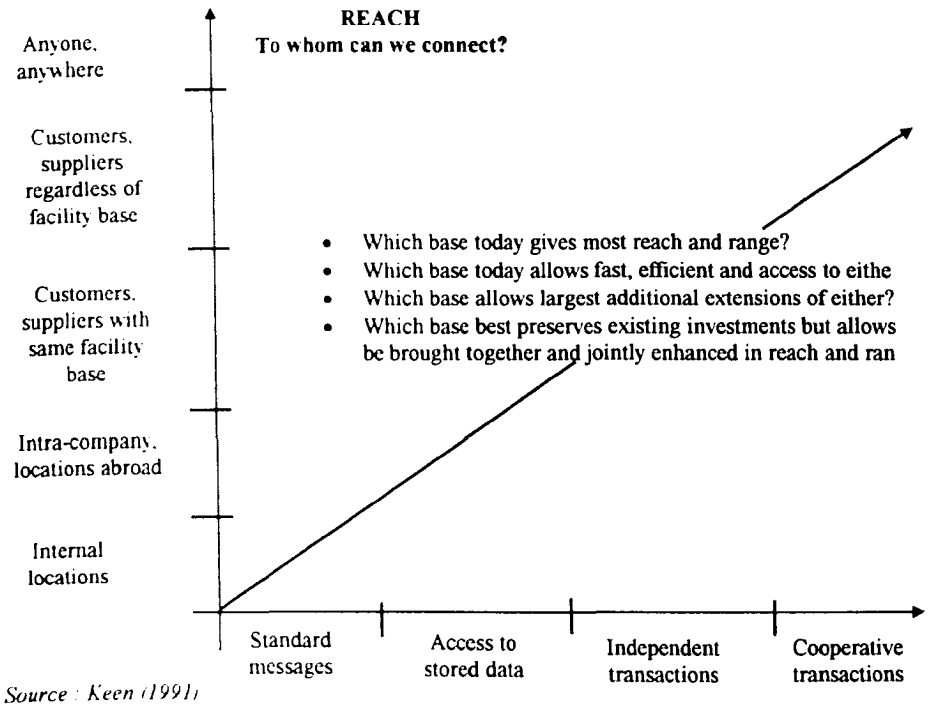
Keen (1991) mentioned that with IT platform ( defined as a shared information services delivery base), a firm is able to link to anyone, everywhere. This is termed the IT 'reach'. IT platform also enables a firm to offer a 'range' of services in the form of shared information done directly and automatically across various systems (refer to figure 2). The outstanding problem related to establishing an IT platform is the incompatibility of IT between vendors and suppliers; different hardware and software. Despite of this, information partnering provides a competitive edge under various circumstances, namely, joint marketing partnership, intra-industry partnership, customer-supplier partnership and finally IT vendor-driven partnership (Konsynski & McFarlan, 1990).

Joint marketing partnership offers avenues to bigger markets, hence, enabling firms to extend their 'reach'. Companies sharing information could gain economy of scale that would have been impossible when performing individually and without having to merge related business sectors. Simultaneously, it is exposed to new customers and regions. An example of a joint marketing partnership in IT is the alliance between IBM and Sears (Konsynski & McFarlan, 1990) Sears is a customer retailer that also offer customer financial services. Together, the companies market prodigy, an electronic data service which allow customers to do their shopping and banking from home. With such strategy, both companies were able to reach a wider customer base that

would have been unlikely without joint efforts. At the same time, the companies managed to not only increase their market share and sales but also sustain their competitiveness.

In another situation, intra-industry partnership made it possible for 18 mid-size paper companies to jointly invest on a global electronic information system to link them to customers on an international scale. Note that sustaining competitive advantage need not necessarily involve one firm dominating the market share or sales. It could incorporate a group of firms joining forces to gain competitive edge. A similar condition as discussed by Short & Venkatraman (1992) occurred with American Hospital Supply Corporation (AHSC) in its customer-supplier partnership where it was possible for AHSC to 'reach' their suppliers and customers using Analytical Systems Automatic Purchasing (ASAP). ASAP facilitates the customers in ordering, tracking and managing supplies, thus, enabling AHSC to maintain customer loyalty and sustain their competitive advantage.

When an IT vendor provides an IT platform for data-interchange, companies could benefit by making use of this information to rationalize their business. This happened to ESAB, a large European welding supplies and equipment company, that managed to triple its size within six years after acquiring this technology when others in similar industry were experiencing a big slash down in their sales (Konsynski & McFarlan, 1990). The key to that company's growth has been an alliance with a large independent network vendor. It used that third party's information services to facilitate acquiring and rationalizing failing companies all over Europe while providing old customers an on-line order-entry service.



**Figure 2: The Reach And Range Of The IT Platform**



Thus, the concept of sharing information across system and services is what Keen (1991) referred to as 'range'. Hence, the innovative application of IT enables a firm to share information and broaden its 'range' of services whilst extending its 'reach' for new customers and territories in the process of gaining a sustainable competitive advantage. Organizational base is viewed as the firm's capability in exploiting IT opportunities. Therefore, top management involvement and commitment are crucial for the success of exploiting IT to sustain competitive advantage especially with the high investment involved in IT. Top management must be prepared to redesign its organizational structure to get the best out of IT opportunities.

The decline of average cost with accumulated production experience is termed the 'learning curve' (Kotler, 1992). When companies are able to reduce cost through the effective use of workers, profitability would simultaneously increase. Thus, the pace and effectiveness of business innovation through IT depends on people rather than technology. There is a wealth of literature on resistance to change, the impact of IT on workers' job satisfaction, techniques for creating user involvement and many human sides of IT. In order to sustain competitive advantage, it is ultimately important for firms to ensure its workforce acquire as much knowledge in IT and be receptive to it.

Generally firms that continually devote expenditures on technological development are able to sustain competitive advantage through the uniqueness of their IT services and applications. Firms that fall into these categories were able to sustain competitive advantage on the basis of their technological superiority, providing barriers to entry in the sector concerned. A firm that possesses a wealth of knowledge would be at an added advantage to those that lack it. A firm's capability of analyzing its rich database to enhance its service is a source of competitive advantage. However, to sustain competitive advantage on this basis require company secret to be contained within the organization.

Strategic management studies propounded that an early preemptive strategy to move ahead of its opponents to secure an advantageous position could be a source of sustaining competitive advantage. Preemptive strategies could be in the form of controlling the link in the supply chain where there is lack of participation as that done by AHSC. However, sustainability could only be achieved if the IT user interface could be maintained. The notion behind the switching cost is to tie down customers, making it expensive or inconvenient for customers to change suppliers. IT provides the flexibility for firms to respond immediately to market demand. With the appropriate IT platform, a firm has the capability to extend its geographical 'reach' and offer the range of services on a shared information basis. A firm could in fact achieve flexibility in diversifying its product range as illustrated under 'shared information'.

A firm would be able to sustain its competitiveness if the lead time is kept longer. Lead time refers to the moment the firm launches its strategy until a competitor responded substantively. AHSC for example, maintain a strategy of continually changing the rule of the game by enhancing its computer systems. Thus, enabling the competitors to copy its strategic moves. Sustainability is also dependent on the manager's ability to take risk since not all IT investment promises a positive return or result in increased productivity. This technology payoff paradox has been observed to occur in various organizations despite heavy IT investment. This indicated that there is a calculated risk attached to IT. It may sometimes be cheaper not to pioneer an idea but instead be a follower and avoid the risks involved. Probably, the best method of reducing risk but yet keeping up with technology is through cooperation between firms in the development of costly information systems or through shared information as mentioned earlier.

## **ACCOUNTANTS AND IT**

It may take a combination of a few of the factors discussed above to enable a firm to sustain competitive advantage. However, another fundamental consideration is to be aware of the business transformation brought about by IT and the need to refigure a firm's business network and scope to sustain competitiveness.

Computer technology effects the usefulness of information to strategic and competitive decisions. Accountants need to use their information expertise to play larger role in developing system applications. Accountants can participate in information system designs by helping determine what information is distributed, system delivery methods, the impact of information technology on decision making, database design and system analysis. Accountants should change their emphasis from Accounting Information System (AIS) to Accounting Management Information Systems (A/MIS). Using A/MIS, the focus will be on the economies of business operations, strategic management and information system development as well as on the definition of strategic, management and task or operational systems (Brecht and Martin 1996).

According to the contingency view of organizational design, the accounting control system should be consistent with the business strategy of the organization (Otley, 1980). In addition, the organizational theory and strategy literature provides some indirect evidence that differences in the extent to which accountants are involved in systems development may be related to the organizations' strategies. For example, Miller (1988) and Miller and Friesen (1982) suggest that differences in a firm's corporate strategy and the nature of the environment in which it operates may affect the firm's concern for being cost effective. It is argued that firms that are more concerned about cost effectiveness will be more likely to involve accountants in system involvement because it leads to reductions in system costs through early detection of errors and omissions in the design and through reductions in post-implementation maintenance costs.

Two levels of corporate strategy that have been associated with the development of strategic information systems that may be relevant to accountants' involvement are: (1) the internal strategy level, which focuses on the development of efficient and effective organization structures and processes, and (2) the competitive strategy level, which is concerned with customer and competitor forces within the organization's industry (King and Sabherwal 1992).

According to Morton (1991), to exploit the potential benefit of IT, an organization would need to consider five levels of business transformation. First level is localized exploitation whereby an organization should utilize IT to improve the efficiency of its service and subsequently reduce its cost. This stage involves restructuring its internal operation to gain high savings in certain identified areas of the business. Second level is internal integration which involves integration of all the technical systems and applications to achieve an IT platform. An organization must also consider the integration of the different roles and responsibilities brought about by IT to enhance the effectiveness and efficiency of using IT. Third level is business process redesign. This relates to the redesigning of the business process to accommodate the constraints caused by IT infrastructure. In order to succeed, a firm needs to realign the IT infrastructure with the business process rather than superimposing the IT platform on the existing business. Fourth level is the business network redesign. This involves reconfiguration of the business scope and tasks to link with its external constituents that would require establishing key partners and communicating its electronic systems to gain a competitive edge. The last level is business scope redefinition. This stage requires identifying new business scope and be proactive to potential threats.

## **SUMMARY**

In order to gain competitive advantage, management accountants or managers must consider whether or not IT can be used to

raise the entry cost of competitors into our market, to differentiate our products and services, to gain leverage over our suppliers through IT or to increase a customer's switching cost by making it difficult to change suppliers. Accountants can participate in information systems designs by helping determine what information is distributed, system delivery methods, the impact of information technology on decision making, database design and system analysis.

In order to sustain competitive advantage, IT must be a component of overall business strategy. The application of IT depends on the unique business opportunities rather than just its competitive benefits. The innovative application of IT enables a firm to share information and broaden its 'range' of services whilst extending its 'reach' for new customers and territories in the process of gaining a sustainable competitive advantage. Therefore, top management as well as accountants involvement and commitment are crucial for the success of exploiting IT to sustain competitive advantage especially with the high investment involved in IT. Top management must be prepared to redesign its organizational structure to get the best out of IT opportunities.

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