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Rethinking the Role of the IS Function :
Trading Visible Betterment for Valuable Benefits

Abstract

This paper proposes that IS managers need to review what they regard as their core competencies if they are to be a valuable asset to organisations in the 1990s. The authors start by questioning whether the IS function has strayed away from information management in support of organisational functioning and become too occupied by strategic management, organisational design and competitive positioning. They compare the concerns of IS managers in western countries with those of their counterparts in developing countries and conclude that, even though they both face generally similar organisational conditions within the global economy, that they are focusing on different IS support mechanisms. IS managers in western countries are striving for strategic information systems and the redesign of business processes, while their developing counterparts are focusing on more infrastructure based issues that were important to western IS managers in the past. The authors examine a number of these western concerns and conclude that while they provide western IS functions with good organisational visibility they may not be of most benefit to the main organisation.

The authors propose that IS managers need to be aware that changes in organisational environments require that organisations be more flexible, fleet of foot entities. They also note that strategy makers are now more concerned with emergent strategies than with traditional mechanistic strategy formulation. They believe that what such entities require is a more invisible IS function that proves to be strategic, not because it proactively chases competitive advantage, but because it provides an effective underlying flexible technical and information infrastructure that mirrors an organisation's dynamism. They propose that the Japanese Kaizen model is a good example of what such invisible efforts can achieve. Essentially, IS managers will have to tackle issues that they would have considered solved in the past because operating conditions have dramatically changed since. This will probably prove an unwelcome suggestion to some IS managers who have been working for a high organisational profile over the last decade, but should prove beneficial to the organisation.

1. Origins of Information Systems

Information systems have been in existence in organisations since before the invention of the computer. Their role and reason for existence may seem obvious to many. Nevertheless, the main providers of such systems have consistently re-focused their efforts and the services that they provide. The first information systems departments provided automation of routine tasks and were generally called electronic data processing (EDP) departments. The vast amounts of information gathered on the computer at this time led EDP departments (now called IS departments) to develop computerised management information systems. One of the earliest and most comprehensive definitions of such a Management Information Systems was provided by Kennevan (1970)

"A Management Information System is an organised method of providing past, present and projection information relating to the internal operations and external intelligence. It supports planning, control and operational functions of the organisation by furnishing uniform information in the proper time frame to assist the decision maker" (Kennevan 1970).

Such conceptual foundations of the information systems field viewed the IS department as a support function whose primary concern was with meeting the information needs of the organisation. This was to be achieved by putting in place a technology and systems infrastructure that sustained operational activities as well as meeting the information and decision support needs of managers. Recent definitions of information systems (Reynolds, 1992; Zwass, 1992; O'Brien, 1993) resemble quite closely Kennevan's 1970 definition. Thus little appears to have changed, in the last twenty five years, in terms of what theoretically constitutes an information system .

Leavitt and Whistler (1958) predicted that information technology would increase the rate of obsolescence and introduce an atmosphere of continuous change into many industries which would force them towards rapid technical and organisational change. These predictions have proven to be generally true as a result of dramatic improvements in areas of computers and telecommunications. Such technological developments have brought new responsibilities for the information systems function. In particular it has had to take on board the management of not just the computing facilities of an organisation but increasingly it has the responsibility for the telecommunications facilities which now underpin most computer

installations. It has moved from being solely an information systems function to being concurrently an information technology function and an information systems function (Earl 1989). With information technology continually changing, IS managers face a difficult task as regards the areas in which they should focus their limited attention. It appears from the literature and interviews with IS managers that the core competence of the IS department is expected to expand exponentially like the computing power that underpins it.

2. IS Concerns in the IT era

A number of studies have reported the concerns of IS managers (Dickson et al, 1984; Brancheau and Wetherbe, 1987; Niederman et al, 1991). These studies have focused on the concerns of a sample of top ranking IS professionals and managers mainly in the USA and UK. These studies consistently reveal a similar set of concerns over time although the importance of particular issues may change. These studies have been combined for comparative purposes in Table 1.

	1982	1984	1986	1987	1992	'97
Strategic IS	1	5	1	2	5	5
IS Planning	3	1	4	3	2	1
Data resource management	4			9	2	3
End User Computing	2	2	3			
Role of IS in organisation	5	4	5			
IT infrastructure problems		3				
Business Process Reengineering				NR	1	3

Sources: 1982 (Earl 1983), 1984 (Dickson et al 1984), 1986 (Earl et al 1986), 1987,1992,1997 (London Business School projection)

Table 1: Concerns of IS Managers in the US and UK

A study of Table 1 reveals that throughout the 1980s and 1990s in some form four issues have dominated the minds of IS managers. These are IS planning, end user computing, strategic information systems and the role of the information systems function in the organisation. A fifth issue in the form of business process reengineering has emerged in the 1990s.

IS managers in developing countries have different concerns from their Western counterparts. The main issue of concern to IS managers in the developing countries is the information technology infrastructure issue (Dexter *et al*, 1993). The difference between the IS management concerns in the developing countries versus those of the Western IS managers provides a unique lag time comparison which the authors believe could provide interesting hypotheses. One area that provides grounds for comparison is the difference in the issues which concern the respective IS managers. In this regard Figure 1 divides the two sets of concerns into two tiers. The first tier contains information infrastructure and technology infrastructure issues and the second tier includes issues like end user computing (EUC), strategic information systems (SIS), information systems planning (ISP), executive information systems (EIS) and business process reengineering (BPR). The obvious answer as to why the western IS managers are concentrating their efforts on second tier issues is because they have solved the first tier issues and are extending their influence. The authors however propose an alternative hypothesis. They believe that IS managers are concentrating on second tier issues in an attempt to avoid being accountable for the mundane tasks which are at the core of tier one issues. Such issues provide little organisational profile whereas the issues at tier two can do much to improve the organisational visibility of IS functions.

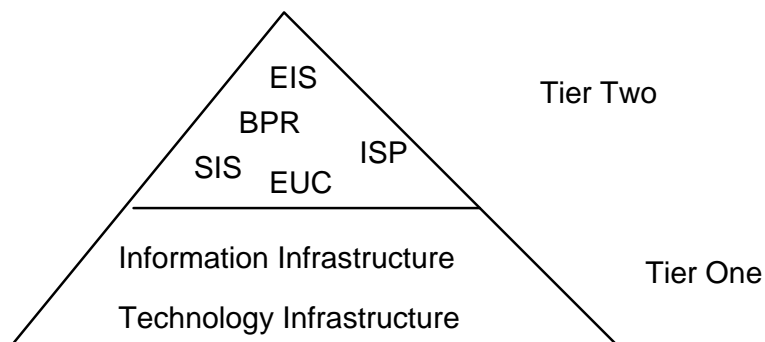


Figure 1.

This paper questions the value that second tier issues provide for organisations and proposes a redirection of the operations and focus of IS functions back to tier one issues. The main reason that such a redirection is required is due to the changing organisational structures and business strategies which in turn demand new information systems and information infrastructures to support them. It proposes that issues such as executive information systems, strategic information systems and business process reengineering have done more to improve the visibility of IS functions than to provide value to organisations. Visibility is used here to describe

activities which have as their primary objective the gaining of top management's attention. This is in contrast to activities where the primary objective is the development of an IS to benefit the organisation. The paper also proposes that IS functions are operating based on misguided concepts of organisational need which allows them to justify activities that prove to be more beneficial to the IS function per se, rather than to the organisation.

3. Influence Inflating Fads and Discarded Concepts

The history of information systems is littered with discarded concepts and semantic forms of information systems. In the forty years of its existence, the discipline has evolved through different versions of information systems such as Electronic Data Processing, Management Information Systems, Decision Support Systems, Expert Systems, Executive Information Systems and Strategic Information Systems. Along the way the information systems department has adopted new concepts, such as, information systems planning, IS function alignment, and business process reengineering, to enable the management of new technologies. The whole information systems field is a battlefield in which buzzwords hatch, shoot to prominence and then fade into oblivion largely due to the overselling of a concept.

The information systems field has progressively distanced itself from failed attempts to meet the information systems needs of organisations. Part of this distancing was to use new terms to represent systems that proved to be little more than modifications to previous concepts. Comparisons of MIS with other information systems concepts such as DSS and EIS reveal little theoretical differences (Dickson, 1981; Fitzgerald, 1992). One area that received much attention during the 1980s was the concept of executive information systems (EIS). A comparison of EIS definitions with early MIS definitions, such as Kennevan (1970) illustrates that EIS represents the fulfilment of what MIS at its inception, promised to management. Although a number of factors have been recognised as contributing to the emergence of EIS, a push from the IS department has been identified empirically as a very significant factor leading to the development of these systems (Fitzgerald and Murphy, 1994a). Fitzgerald and Murphy propose that IS functions which found themselves outside the strategic epicentre in organisations used EIS as an exciting high-profile project to win back some influence at top management level. Some EIS developers found themselves so removed from executive management that they were forced to develop EIS for middle managers in the hope that top managers would recognise the benefits of such systems. This type of attitude by the IS function clearly demonstrates a

greater concern with their departmental visibility rather than with the development of the organisation.

Strategic Information Systems (SIS) proposed by people like Porter (1985) and Earl (1989), and supported by case examples like McKesson (Clemons and Row, 1988), American Airlines (Copeland and McKenny, 1988) and American Hospital Supply (Venkatraman and Short, 1990), thrust the IS function onto the organisational stage for over a decade. Subsequently articles (Hopper, 1990; Freedman, 1991) appeared to dispute the extent of the competitive advantage gained in the particular case studies, the degree to which these case studies were re-inventable and the degree of planning inherent in the legendary case studies. As well as criticisms of these flag bearing case studies, literature appeared to highlight expensive information systems which has as their aim the achievement of competitive advantages but turned out to be very expensive failures. The literature disputing SIS was slow in coming and in the interim the phrase “Information Technology for Competitive Advantage” appeared in management literature and textbooks world-wide. The fear that spread within the top echelons of management, as a result of such successful business case studies, endowed upon many IS functions more visibility, influence and budgetary lenience than other infrastructural support functions have ever achieved.

Information systems planning is something which has been of concern to IS managers consistently over the last decade and a half. The aims of such planning are to enable control and accountability within the information systems function and to integrate the IS function more closely with the goals of the organisation. Both of these objective are noble and worthwhile aims, however a recent study has shown that IS managers appear to engage in IS planning more in an effort to improve their standing within organisations rather than to allocate their scarce resources (Finnegan and Fahy, 1993b). The extent of the desire to use the IS planning process to achieve visibility is further highlighted by the fact that IS strategy formulation still has a long way to go before achieving comparable status to that of business and marketing strategy (Finnegan and Fahy, 1993a). Thus while IS planning is a source of IS management dissatisfaction (Lederer and Sethi, 1989) due to its inability to provide strategic benefits it is being pursued by IS managers primarily *because* it provides organisational visibility.

The rationale behind aligning the IS function with the business organisation may be associated with meeting user needs for information systems technology and with strategic IS planning. However a closer look at the concept reveals a potentially

more self serving motive. It acts as a perfect catalyst in the attempt to improve IS visibility. It attempts to secure the attention of top management thereby ensuring that the IS function is recognised as a important organisational cog. This can prove to be important when it comes to the allocation of organisational resources.

In the 1990s, the IS function has moved to some degree, in its effort to achieve visibility, away from strategic alignment and competitive positioning and towards organisational design. This has come in the form of business process reengineering (BPR) and represents another attempt by the IS function to achieve organisational prominence. The seminal work by Hammer (1990) and Davenport and Short (1990) focused on the redesign of organisational processes, especially those that had been designed prior to the permeation of information technology within organisations. BPR is in essence a tool to enable improvements in organisational processes. The process therefore requires someone with a broad managerial skill base and not just the information systems skills that typifies most information systems professionals. The IS function has now set itself up as the main proponent of BPR despite having missed out on the opportunity to redesign business processes in the past. This was most evident during the introduction of early MIS systems where manual systems were reproduced on automated systems even though redesigning them would have provided enormous benefits. A lack of business understanding among IS professionals resulted in this failure and consequently organisations did not achieve potential benefits. The same mentality that led to the failure to recognise that IT was not important by itself at this time may now contribute to BPR exercises that are nothing more than automation or downsizing projects resulting in programs of continuous improvement posing as BPR. IS functions must remember that business process reengineering is not about "half-measures for the half-hearted" (Fitzgerald and Murphy, 1994b) which is often nothing more than a politically constrained IS department can offer. It would therefore seem that having IS personnel as the main proponents of BPR is more likely to result in visibility for the IS function rather than broad organisational benefit.

End user computing became a major preoccupation of IS managers during the 1980s. This activity by non-IS people started to become a threat to the established computing baronies of IS functions, despite arguments that such activity could lead to the development of strategic information systems (Earl, 1989). It appeared, initially at least, that the IS function was going to lose its dominance and influence in the technology and systems development arenas. IS managers responded with an effort to "manage the end user environment" (Amoroso, 1988). Although such management

could be justified in terms of the organisational risks of end user computing (Davis, 19xx), it also served as a means of controlling an activity that could potentially deprive the IS function of its leverage in the organisational computing domain, though this factor was rarely acknowledged. The authors believe that control of end user computing by the IS function was driven by the desire to ensure that the important, and visible, position that it theoretically held within the organisation was not undermined. Although it eventually had to concede certain responsibilities to users (Kwan and Curley, 1989), the IS function managed to remain influential in relation to computing.

During the 1980s great expectations that information technology could provide a strategic competitive weapon, encouraged organisations to manage IT as a special case, one that operated beyond the norms of conventional procedures (Earl, 1992). These expectations were created by computer vendors and were perpetuated in many ways by the IS function in their desire to maintain their special privileges. The key concerns of IS managers during the last decade such as EIS, SIS, IS planning, BPR and the management of EUC provide the potential to enhance the organisation if that is their main aim. However it is the belief of the authors that these concerns of IS managers have a common undertone - a desire for increased kudos, or visibility for the IS function within the organisation. In pursuing such desires IS management have gotten side-tracked and neglected their fundamental purpose which is the support of the organisation.

Figure 2 shows a matrix of IS efforts categorised along two dimensions. These are the degree of visibility that they provide for the IS function within the organisation and the amount of value that they provide for the organisation. As shown in this figure, efforts at achieving competitive advantage by developing strategic information systems and engaging in IS planning may often have as their primary objective the achievement of visibility rather than providing a valuable contribution to the organisation. The authors would also include executive information systems and business process reengineering, in their current forms, in the visible category. The issues which fall on the visible side of Figure 2 represent the key concerns of the IS managers in the US and UK.

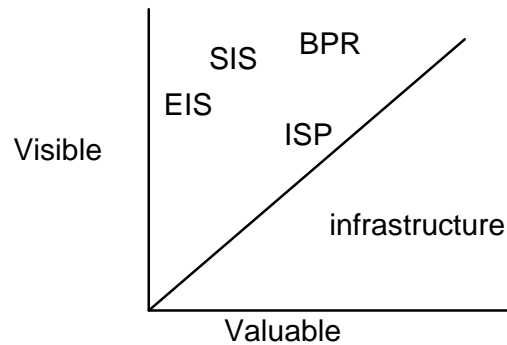


Figure 2: An IS efforts matrix

The IS managers in the developing countries have as their main concern the development of an information systems architecture which constitutes the valuable activities as outlined in Figure 2. This concern is not shared by the Western IS managers. Yet Keen (1992) believes that the key management issue of concern to managers in the future, with regard to information technology, is the design of a flexible information technology platform. The validity of this comparison can be challenged by arguing that the IS managers in the developing countries will evolve to the second tier issues once they have implemented projects to provide the information and technology infrastructures. The authors believe that this evolution should not take place. Research, as outlined above, indicates that western IS managers have become preoccupied with improving their profile. In so doing it is the authors belief that they have failed to recognise fully the changing organisational structures which have taken place in the last decade. These changes demand that the basic infrastructure of the information systems department should once again become the key concern of Western IS managers. In the next section the changes which have occurred in organisational activity will be outlined. From this it will be argued that the key to a successful contribution from the IS function in the future will be the return to basics of providing an informational and technical infrastructure which meets the needs of the new organisation. Ultimately the authors argue that the IS function can provide the most benefits to an organisation when the IS department appears all but invisible.

4. A Valuable role for IS in the 1990s

Traditional information processing has been referred to by Boynton (1993) as a "stovepipe information infrastructure" which blocks potentially useful information from being shared across production stages. These systems were adequate in a time

where departments to a large extent operated independently of each other, with predefined cross over points. The current management literature is emphasising the need for flexibility and mobility within the organisation in order to compete and win in the 1990's (Davidow and Malone, 1992; Savage 1990). Competition in the future will be "time based competition" (Keen, 1992; Stalk and Hout, 1992). This will involve the dismantling of the traditional hierarchical organisational structure. It will be replaced by a networked organisation which will provide flexibility because new activities can be introduced without damaging the existing structure (Dampney and Andrews, 1991; Sproull and Kiesler, 1991). Ward (1990) proposes that the most appropriate structure for an organisation's information and systems is usually that which mirrors the structure of the organisation itself. Thus in the new competitive arena of the 1990's, the IS department needs to refocus itself on its core objective which is to provide information and technology infrastructures which can be adapted to support the goals of the organisation. Dampney and Andrews (1991) believe that at the core of the new organisational infrastructure, the integrity of the information resource will determine the longevity and soundness of the corporation or industry". Boynton (1993) proposes that attention needs to be paid to open architectures, flexibility, reusability, and other capabilities that allow future change within the design process of information systems. These are the mundane issues of the first tier which management in surveys do not appear to be concerned with, but these issues provide the capability to produce the proposed second tier effects. In essence they can provide the organisation with competitive advantage, but in doing so will place less emphasis on the profile of the IS department.

A second area where IS managers need to be aware of changing IS support requirements is in the area of business strategy. There are two main schools of business strategy. The first of which is the "mechanistic" perspective on strategy formulation (Ciborra, 1994). The basic premise on which this school of thought is based is that strategy is programmable, long-term goals can be set, strived for and thus achieved (Porter and Millar 1985; Wiseman and MacMillan, 1988). The alternative school of business strategy proposes that strategies are emergent as much as they are determined (Mintzberg and Quinn, 1992). Thus the strategist is someone who crafts strategy in response to the conditions of the external environment. The strategist is "a pattern recogniser, a learner if you will who manages a process in which strategies (and visions) can emerge as well as be deliberately conceived" (Mintzberg and Quinn, 1992). This type of strategy formulation can be seen in the classic strategic information systems examples. The literature pertaining to these case studies would lead one to believe that these systems were developed by IS

departments as part of a deliberate purposeful strategy to use IT to gain competitive advantage. However, none of these innovative systems have been fully designed in a top-down manner or developed in one shot, rather they were all introduced through prototyping and tinkering, a process which Ciborra (1994) calls "bricolage".

The belief that the IS department can seek out and achieve a competitive advantage while going solo, is fundamentally misguided. Information technology may act as an enabler or catalyst in the process of building business success, but it can only be one element in the process (Land, 1992; Galliers 1993). Keen (1991) believes that competitive advantage derives from the management structure of the organisation. Ciborra (1994) proposes that competitive advantage derives from the cognitive and organisational capability of converting data into practical knowledge for action. The role of the IS department within this is to provide the support and infrastructure which will enable the management and organisation to recognise trends and implement strategies on the basis of this information.

Porter (1985) highlights one of the most difficult business strategies to imitate as one which concentrates on the internal linkages between departments within an organisation. This is because the systems and processes by which the different activities are interlinked are not transparent to the competition and so are not amenable to being copied. Molloy (19xx) argues in a similar vein to Porter stating that most opportunities for competitive advantage lie between the organisational boxes, i.e. cross communication. Indeed he goes further and states that "the sophistication of an organisation is the ultimate competitive weapon". Davidow and Malone (1992) are more specific and believe that "networks of computers have assumed much of the traditional role of management hierarchies." Thus a central role for the IS department is the development of an IS infrastructure which is organisationally rooted and thus is difficult for the competition to imitate and as such could be the source of a continual competitive advantage.

An example of successful business change is the Japanese car industry. One of its central tenets is the idea of Kaizen, the process of continuous improvement (Imai, 1986). This strategy is based on purposeful action which is adapting to the external environment. Perhaps the greatest irony of the Kaizen system is that it was not seen as strategic by its founder, it was simply a way to manage the production process more efficiently. It was effectively a back-office function which when performed well became strategic because it was impossible for the competition to put such systems in place with immediate effect. The same argument can be made for Information

Systems. The real strategic value may lie in the mundane, seemingly insignificant back-office jobs which ultimately can have a large effect on the competitive position of an organisation. Computers, because of their own continuing improvements, provide many opportunities to incrementally improve the functioning of a business. The strategic advantage here lies in the continual, gradual increase in competence rather than in one bold strategic thrust.

Merrill Lynch, the original inventors of the cash management account, announced in 1990 that they were placing innovative technology in the back seat, at least temporarily (Koerner 1990). The new emphasis within the information systems department of the company was to reduce costs and to gain competitive advantage through faster systems which are more flexible and easier to use. Thus Merrill Lynch, an innovative user of IT, have decided to build their IS platform so that it is flexible and thus more adaptive to the needs of the management when called upon to supplement or drive a business strategy. This route is the one which they believe will ultimately provide them with a competitive advantage from their information technology investments.

Another example of successful "back office" IS support comes from Rank Xerox's warehouse and distribution system (Watson, 1993). In this mundane and routine task there existed a key part of the firmwide productivity and quality improvement puzzle. Behind the improved warehouse "picking" system lay a computer which was not state of the art as regards computerised warehouse systems but rather one which was tailor made to the application required. The point being that it was not extraordinary information systems which produced the competitive advantage, but rather attention to detail in terms of matching the computer system precisely to the business requirements. This is the type of mundane activity that underlies infrastructure support. It is unlikely to prove to be highly visible activity for the IS department but is most certainly capable of achieving benefits for the organisation as a whole.

The information systems function can provide a technology and information infrastructure that is a "between the boxes" Kaizen system. It should become a back office function that proves to be strategic, not because it proactively chases business strategy, but because it is an effective underlying infrastructure. Such a concept has been previously lost amongst the IS function's attempts to improve its organisational visibility and become a notable source of competitive advantage. The paradox here is

that the IS function is best positioned to help achieve competitive advantage by becoming invisible.

6. Conclusions

The computer department at the time of its formation in most organisations was seen as a support function for the organisation. Gradually the function developed systems which addressed the concerns of management. As information technology has developed, the information systems function has taken on additional responsibilities, most notably the management of the IT architecture. In the last decade however IS managers in the US and UK have not considered the information and technical infrastructure as one of their key concerns. Instead they have been concentrating on areas such as IS planning, controlling end user computing, developing strategic and executive information systems, and business process reengineering. The authors believe that there is a hidden agenda behind these concerns. This agenda consists of an attempt by IS managers to improve the visibility of the IS function and artificially inflate the importance of this vital, but support-oriented, function.

In focusing on these attention seeking projects IS managers have lost sight of their primary function to manage both the information and technology infrastructures. This neglect is in itself dangerous, but is intensified by the fact that organisations of the 1990's do not resemble their predecessors of the 1980's. New networked organisations demand a corresponding information technology infrastructure.

Business strategy of the 1980's held the belief that plans were carefully and meticulously formulated and then executed. This belief as to the nature of planning underpinned the literature on strategic information systems, which advocated bold, meticulously planned strategic thrusts into the heart of enemy territory. However the reality was far from the scenario of a perfect campaign planned in advance. Most information systems which had a strategic impact were not so much developed as emerged. They did not appear in a single blaze of strategic glory. This type of continual development is common in business systems which have achieved the reputation of yielding a competitive advantage. The best example of this is the Kaizen system developed by the Japanese which yields its competitive advantage from the mundane improvement process which is its underlying philosophy. **If the IS department is to provide a truly strategic perspective to the organisation then it will have to adapt a process of continual improvement in the mundane features of information systems. (*What does this mean?*)** This is in stark contrast to the

rainbow chasing that the IS managers have been concerned with over the last decade. It is worth remembering that the IS department is providing a support service which while vitally important is still not the end product which most organisations are selling.

This paper does not propose that IS managers neglect issues such as strategic IS planning, the management of end user computing and IS function alignment. Rather the authors propose that such issues should be seen as being of secondary importance to information and technology infrastructure support. We also propose that issues such as gaining competitive advantage and redesigning business processes are beyond the organisational role of the IS department. Most certainly, IS support will be needed if such activities are taking place, but a good underlying information and technology infrastructure should suffice. This change of focus will result in a less visible role for the IS department and may prove unpopular within such departments. What is required is a change of the mind set of IS/IT managers from glorified notions of becoming top board members back to the work of providing a support service with excellence.

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