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# Information systems strategy: Quo vadis?

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ABSTRACT

This article is a personal retrospective which traces the evolution of information systems strategy (ISS) since it emerged as a topic in the late 1970s and considers the nature of organisations' ISSs and how they have been influenced by the interplay of many factors over that period. In addition to responding to the rapidly evolving underlying technologies, ISS practice in organisations has had to deal with the combined effects of economic cycles and an increasingly global business context, which effect both the organisations themselves and the development of the IT industry. This article argues that the changing fortunes of the IT suppliers and their strategies are two of the most significant influences on organisations' ISSs. The influence and contribution of academics and their research is also discussed. The study of ISS has largely followed practice and attempted to explain its nature, role and impact using contemporary theoretical paradigms but often based on relatively limited empirical data. In conclusion it is suggested that a new multi-centred, collaborative approach, involving both academic and practitioner experts to develop a comprehensive evidence base, would enable greater understanding of how the range of factors interact to determine the nature and value of ISS in 21st century organisations.



## 1. Introduction

This article is a personal reflection on themes and factors influencing the evolution of information systems strategies (ISS) over the last 30 years or so and thoughts about the future directions that ISS practice and research might take. It is based on my and others' research of the topic plus my experience of teaching the subject and working with many hundreds of organisations' managers and IS practitioners in developing and implementing ISSs over those 30 years. Most of that research and experience has been in corporations and public sector bodies in Europe, but also in other parts of the world.

Sadly, an initial reflection is that all the knowledge we have developed about ISS appears to have had little impact in some organisations, even though they invest hundreds of millions of pounds in new information systems and technology (IS/IT) every year. For example, in July 2011 the UK House of Commons, Public Administration Select Committee issued a report: Government and IT – "a recipe for rip-offs: time for a new approach", in which the causes of the UK government's record of expensive IT project failures were examined in depth. The conclusion that undue dependence on an oligopoly of IT suppliers, combined with the '*failure to integrate IT into the wider policy and business change programmes*' were two of the root causes, is disturbing. Perhaps even more disturbing was the admission that this can be '*traced back to a lack of skills. . .skills needed to understand new opportunities. . .or to integrate IT into the policy making process*' (p. 32). As a consequence the IT suppliers are effectively determining both the UK Government's IS strategy and the level of success it can achieve with its IS/IT investments.

Although this is perhaps an extreme case, the diagnosis could be true of many other organisations and it is relevant to one theme in this paper: in the long term, it is the major IT product and service suppliers that have the most influence on

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organisations' ISSs. Few research studies would suggest this, possibly because it is difficult to study organisations' ISSs and relationships with the IT suppliers over the long term.

## 2. In the beginning

ISS 'started' in the 1970s, initially based on the observed evolution of mainframe IT applications and the extending role of IS from task efficiency to information provision (Anthony, 1965; Somogyi and Galliers, 1987). This evolved into an 'architecture' based view of ISS (Zachman, 1977, 1982), which reflected the interests of the major incumbent suppliers, especially IBM. Similarly, the very influential 'six stages of growth model' (Nolan, 1979) was a mainframe centric view describing how ISS had and would evolve, assuming organisations adopted the newly available database technologies. It was based on limited empirical evidence and although its weaknesses have been exposed (King and Kraemer, 1984), many organisations used the stages or maturity model as the rationale for their IS strategies. Later, an organisational overlay was applied to the model, based on the McKinsey 7S framework to provide a broader context for understanding ISS development and evolution (Galliers and Sutherland, 1991).

In essence these views of ISS were largely organisational (King, 1978), rather than business based, suggesting that ISS could be considered as similar in all organisations since it related to deploying IS/IT in support of functional activities and hierarchical managerial structures. To this point ISS was mainly dominated by the views of IT manufacturers and consultants, but by the start of the 1980s academics were beginning to define what was meant by ISS and research the subject with increased rigour.

## 3. Defining ISS

The term Information Systems Strategic Planning (ISSP) was defined by Boynton and Zmud (1987, p. 59) as *'activities directed toward (1) recognising organisational opportunities for using information technology, (2) determining the resource requirements to exploit these opportunities, (3) and developing strategies and action plans for realising these opportunities and for meeting the resource needs'*. This definition perhaps reflects the prevailing IT centric perspective, as did Earl's (1989) definition which refers to the *'long term, directional plan which decides what to do with IT'* (p. 67) that is concerned primarily with *'aligning IS development with business needs and seeking advantage from IT'* (p. 63). Later definitions take a broader perspective: for example *'thinking strategically and planning for the effective long-term management and optimal impact of information in all its forms: information systems (IS) and information technology (IT)...'* (Ward and Peppard, 2002, p. 118). Over time other topics, such as knowledge management, were introduced into ISS (Galliers, 1999), which expanded the domain further towards business activities and away from the technology.

At the centre of many views of ISS is the notion of managing a portfolio of investments to achieve strategic alignment and balance priorities (McFarlan, 1981; Lederer and Salmela, 1996; Segars and Grover, 1998). Some definitions explicitly use the term 'portfolio'. For example, Lederer and Sethi (1988, p. 446) describe SISP as: '*the process of identifying a portfolio of computer-based applications that will assist an organisation in executing it business plans and realizing it goals*'. Similarly, Earl (1989, p. 86) argues that IS/IT '*strategic plans should be thought of as portfolios' which 'should consider the trade-offs and balancing between risk and return...and the allocation of IS resources*'. Other definitions do not explicitly use the term portfolio, but also refer to the selection and management of a range of investments (Segars et al., 1998; Doherty et al., 1999). Our recent study of portfolio management practices in the difficult economic times since 2008, reinforces how integral they are to ISS in many organisations, especially when investment funds are limited and decisions become more complex (Daniel et al., 2011).

Most of these and other definitions of ISS emphasise the purposes and activities involved in the development of strategies, investment selection and planning implementation, rather than managing the implementation of those strategies. This perhaps does not reflect the reality that, for most business managers, an ISS is only a means to an end, not the end itself. If the selected investments cannot be successfully implemented, ISS is a largely irrelevant exercise (Mohdzain and Ward, 2007).

## 4. The glory days

In the early 1980s, IT was being distributed away from the centre, creating more options and expanding application possibilities using new technologies, for example, electronic data interchange (EDI), office applications, relational databases, packaged software as well as mini-computers and personal computers. Academics were becoming increasingly influential in identifying the opportunities that new IT-based innovations offered organisations. McFarlan et al. (1983) spelt out the increasing value of comprehensive planning for all these types of IS investments and integrating ISS with business planning processes. From 1984 onwards, 'IT and competitive advantage' began to dominate both the business and academic agenda (McFarlan, 1984; Ives and Learmonth, 1984; Porter and Miller, 1985) and led to new ISS thinking and approaches, using business based models to explore how IS could create opportunities and advantages, or perhaps, more often, how to avoid disadvantage. This engaged the business community for the first time in defining ISS as an integral rather than consequential component of business strategy – the era of strategic information systems (SIS) was born! It was an era when the business, IT function and suppliers' agendas coincided, probably for the first time.

The research agenda was generally reflecting practice: observing and analysing what organisations were doing and why, to determine how IS/IT produced advantages and ways of discovering those opportunities (Cash and Konsynski, 1985; Clemons, 1986; Ward, 1988). A number of Strategic IS Planning (SISP) methodologies were developed by IT suppliers and consultants – although most were 'strategic' front-ends to existing systems development methods – and software to support the strategic analysis and planning processes began to appear. Academics questioned the value of these very prescriptive methods and suggested more formative approaches employing a variety of tools and techniques would be more appropriate (Sullivan, 1985; Ward, 1987; Lederer and Sethi, 1988).

ISS thinking was now largely following the main trends in business strategy and adopting its concepts and models to complement traditional IS/IT development models. However, in line with the emphasis of many of the definitions above, it was essentially focused on processes or methodologies to develop the strategy rather than manage its implementation. Studies began to explore how effective these approaches were, but even defining how to measure the 'success' of IS strategic planning and the strategies themselves proved elusive (King, 1988; Galliers, 1991, 1993; Fitzgerald, 1993; Earl, 1993).

## 5. Disintegration and segmentation

Some major trends in the 1990s began to re-separate ISS from business strategy as recession caused organisations to cut costs, including IT (Earl, 1992). The IT industry's profits were becoming more dependent on selling software and IT services which reduced the influence of the major hardware suppliers on organisations' IS strategies. The Business Process Redesign (or Re-Engineering) movement (Hammer, 1990) gained strong business support. It argued for a substantially increased, if different, role for IS not only in business performance improvement, but also in transforming processes, relationships and even business models (Davenport and Short, 1990; Venkatraman, 1994). However this 'revolutionary', rather than evolutionary, approach was contra to the IT organisations' preferred more conservative, 'architecture' view of ISS. So called 'IT-enabled business change' was being driven and owned by the business managers and the IS/IT organisation's role was to implement rather than advise or question. With the benefit of hindsight it was clear that the rhetoric and hype of BPR was not always consistent with the reality: many BPR initiatives were excuses for cost reduction rather than value creation and often ignored the organisational consequences (Hammer and Stanton, 1999).

The parallel rapid growth of outsourcing (Lacity et al., 1994, 1995) and later off-shoring, largely to reduce IT costs, further marginalised and threatened the role of many IS/IT departments, which no longer could rely on the backing of powerful suppliers, many of whom now had a vested interest in taking over their functions. The deployment of enterprise wide software packages, such as ERP, became a dominant element of many strategies, increasing the importance of organisation's ISS, but not necessarily the in-house IT organisation (Davenport, 1998), who often found themselves effectively competing for work with the software suppliers and their 'implementation partners'.

Suppliers and consultants often saw IT management as 'in the way', preventing them from working directly with the business. IT departments were struggling to find a role (Venkatraman and Loh, 1993; Ward and Peppard, 1996): they needed to be involved in 'radical' business change, while they were expected to provide services demanded by business users and also cut costs significantly. ISS was being squeezed off the agenda, by the business managers and the suppliers, who, respectively, saw it as either time consuming and unnecessary or reducing their ability to influence investment. The rapid commercialisation of the Internet from the mid-1990s (Porter, 2001) exacerbated these trends as IT departments did not possess the combinations of knowledge and capability to develop the new types of applications. This often frustrated the business managers who were trying to explore and exploit new business opportunities based on the Internet.

The 1990s were largely a period of consolidation and rationalisation, with little innovation, but during which IS/IT applications had actually become more integral to business strategies than ever before and were increasingly owned by the business. However, this diffusion and fragmentation (Ciborra, 1994) made ISS more difficult to research, partly because IS academics had less appropriate access. Their traditional research 'sites' and contacts – the IS/IT departments and CIOs – were mainly implementation focused and no longer driving ISS.

## 6. The resource based view of IS

At the same time business strategic thinking had evolved to focus on 'sustainable' rather than 'opportunistic' competitive advantage – the resource-based view (RBV) suggested organisational resources and capabilities were at the root of organisations' long term success (Wernerfelt, 1984, 1995; Barney, 1991). However, the ambiguities in path dependencies and delays between cause and effect meant that rigorous studies were difficult and time consuming – which limited academics' opportunities to study ISS from this new perspective. Having defined IT as a resource, it was reasonably easy to identify competences needed to develop and deploy that resource (Feeny and Ives, 1990; Clemons and Row, 1991) and how organisational IS competences could be assessed (Peppard and Ward, 2004), but there was only indirect evidence to show how business performance and IS resources were related (Mata et al., 1995).

These trends gradually moved IS studies away from the increasingly diverse and less structured 'things' businesses were doing with IS/IT towards studying the IS/IT organisations and their processes and relationships (Peppard and Ward, 1999; Chan, 2002). Further studies of ISS planning approaches and their success or effectiveness still proved inconclusive (Doherty

et al., 1999; Segars and Grover, 1998; Grover and Segars, 2005) as did the development of any ISS 'theory' (Lederer and Salmela, 1996; Newkirk et al., 2003).

## 7. A strategic hiatus then. . .a new opportunity!

Y2K meant an almost total shutdown of new or innovative uses of IS/IT for nearly 2 years before 1st January 2000. And it was a period of further consolidation for most, replacing old applications with packages that were 'millennium bug' proof – necessary strategies, but not very interesting. As a result ISS went onto the back burner for a few years, before the explosion of the dot.com boom, in part fuelled by latent business demand from pre 2000, created new opportunities: e-commerce and e-business had arrived and new 'e-enabled' business models were the prevailing fashion (Feeny, 2001; Amit and Zott, 2001).

The IT function was often seen as reactionary and unduly risk averse, especially since the Y2K problems appeared to have been over-stated. Some organisations even set up separate e-departments outside the IS/IT function. Unfortunately, for most organisations the supposed 'new economy' involved expensive IT investments with few benefits. It had been oversold to naïve business managers by IT companies, consultants and even some academics! However, e-commerce research introduced some new thinking and theories to the subject (Daniel and Wilson, 2003,) although much of it was merely relabeling and recycling existing knowledge. Once the e-commerce bubble had burst in 2002 the 'debate' about whether IT was strategically important flared briefly (Carr, 2003 versus Farrell, 2003). Unfortunately Carr's title, 'IT doesn't matter', appealed more to many business managers following the considerable sums they had seen wasted on false e-promises and it increased their scepticism about the value of an IS strategy.

## 8. Back to business as usual

Since 2003, apart from adapting to more and more legislation, expanding interactions of individuals with organisations' IS and the related developments associated with Web 2.0, ISS has been largely about 'more of the same'. The focus has been on extensions to existing applications, often to increase their utility through 'self-service' or 'mobility', or consolidation and replacement of applications to reduce the variety of systems and technologies and achieve more cost effective long term supply. IT management attention has been largely on IT strategies rather than IS. The objective has been to find lower cost but also more flexible *and* resilient supply options and delivery, as organisations look for ways to respond to the forces of globalisation and the resulting cost pressures (Mohdzain and Ward, 2007). Cloud computing appears to offer solutions to some of these challenges. At the same time business managers are looking to use IT to enable the 'transformation' of significant aspects of the business, which involves not only internal restructuring but also externalising many currently in-house functions. Investments in both common and collaborative IS are essential to create many of these new business options, such as shared services and demand chain management.

## 9. But is there yet another new era beginning?

Web 2.0 is now beginning to be exploited by organisations, essentially in two ways: to be able to adapt its applications more quickly and cost effectively as cloud-based software solutions and services emerge to reduce the risks of purchasing expensive products by buying access to applications as needed; and to take advantage of the organisation's 'collective intelligence' to complement its existing more formal information system based business knowledge. The main approach to the latter is by investing in organisational variants of social networking technologies as well as sophisticated 'business intelligence' applications. This represents a major new dimension for ISS research over the next few years, but one which is more diffuse than ever and could be seen as 'individual-based IS strategies': i.e. the individual defines how he or she uses the information and systems provided by the organisation to carry out and develop his or her role. Recent litigation over the ownership of a Twitter contact list may be an indication of some implications of this new dimension.

## 10. And then there was the financial crisis

Our recent research (Daniel et al., 2011) suggests that, in the extended recession following the financial crisis, organisations are once again more conscious of the need to consolidate their investment plans and explicitly link their IS investments with the business strategy. The study also confirmed that, as expected, the ISSs were dominated by the IT driven elements and largely 'defensive' investments, aimed at preventing disadvantages and reducing costs, especially IS/IT costs.

## 11. Summary: the story so far

The balance of influences on the nature of organisational ISS has changed repeatedly over the last 30 years. Inevitably the economic cycles have been a major cause of changes in focus and priorities as well as the stimulus for innovative new entrants to the IT industry or consolidation through mergers and acquisitions. Throughout that period the IS/IT organisation has fought to retain its influence while being gradually squeezed into becoming largely a purchasing and implementation agency as the suppliers and business managers have taken over decisions affecting the ISS. Information systems strategies

have become more collections of investments which can be related back to business strategies or options, rather than coherent sets of investment plans which are driven by the strategy. This is perhaps inevitable given the increasing rates of market and industry change and the uncertainties and short term thinking that causes. But it may also be because, for many organisations, IS/IT is now just 'business as usual', requiring incremental development and attention to reducing cost?

Table 1 attempts to summarise these main trends and influences.

## 12. The academic challenge

The increasingly varied and dispersed role of IS/IT in organisations has meant it has become a component of many other business and management disciplines, making the subject matter of ISS more complex. It would also appear that results of research in the field of ISS have had less impact on practice as the uses of IS/IT have diversified making ISS more difficult to study. Also, the timescales for academic dissemination have become extended and often the published research reflects studies carried out several years earlier. At the same time, there is an increasing requirement by the higher impact journals for papers to show a specific 'contribution to theory'. However any substantive development of theory relies on the availability and access to a comprehensive body of relevant, reliable empirical evidence. The ever increasing pressures on academics to publish more papers, can mitigate against undertaking longer term in-depth research and developing collaborative relationships for complementary studies; this makes building that body of knowledge increasingly difficult.

Information systems is a dynamic 'subject' practiced by hundreds of thousands of professionals and managers globally and studied by, at most, a few thousand academics. Few of those professionals will have read any journal publications or have been taught by any of the academics. This is not peculiar to IS. For (management) academics to make an impact is challenging, unless research is mainly derived from and informs a practice based agenda rather than merely an academic one (Pettigrew, 2011). He argues that part of the problem is that there is '*no natural focused community for our research*' (p. 349) but also that academics mainly engage with the business community on a project by project basis.

A recurring theme in this article has been that IT service and product suppliers have been, and still are, the main influencers of ISS in many organisations, even if at times new entrants with new technologies have disturbed the status quo. But it has to be recognised that many of those suppliers are also keen to sponsor and fund 'relevant' research. In 2010, SAP established an 'academy' – a global network of academics from a variety of institutions and disciplines, IS executives from large organisations and consultants – to study a number of aspects of ISS and business transformation in a range of industries and organisations over a period of years. Some 30 years on, it seems that the IT suppliers are still investing, including in academic research with the aim of ensuring the ISS agenda is aligned to their interests.

## 13. And what of the future?

In terms of ISS in organisations, the low growth economic forecasts suggest that the recent trends are likely to continue for several more years, but perhaps with separating themes: the 'formal' use of IS/IT in business processes and 'informal' connectivity amongst individuals, using personal mobile devices. The former will be governed increasingly closely to avoid downside business risks and will be developed and supported in close association with IT suppliers. Finding ever more cost effective means of delivery will probably dominate the IT management agenda. The latter is already growing exponentially in terms of transaction volume, but causing concerns over security as well as the amount of disruption and organisational inefficiency it can create.

There are still many 'traditional' ISS questions worthy of further study, even if the context has evolved. In particular the enduring questions of whether or how having an ISS makes a difference to organisational performance and which aspects of

**Table 1**
Summary of evolving ISS influences and trends since the 1970s.

| | In the beginning | The glory days | Disintegration, RBV and Y2K | Dot.com boom and bust | Business as usual |
|---|---|---|---|---|---|
| Economic situation | Low growth | Strong growth and deregulation | Weaker, but growth later in 1990s | Strong | Illusions of strength but then much weaker |
| New technologies | Few | Many | Weak (apart from emergent Internet) | Many | Few, except mobile |
| Power of main suppliers | Dominant | Weaker | Strong, especially IT service suppliers | Weaker | Stronger again |
| IT function position | Strong | Strong | Weakening, due to outsourcing options. Regained control for Y2K? | Disregarded by business managers | Regaining some influence |
| Business interest in IS/IT | Low | High | Strong during BPR era then steadily reducing | Strong to exploit new e-options | Weak and sceptical |
| The focus of ISS | Sustained growth in IS/IT investment | Innovation and competitiveness | Consolidate IS via packages and reduce costs | Innovation at all costs | More consolidation and cost reduction – IT focus. |

the ISS or how it was devised have the most impact, remain largely unanswered. It is encouraging that some recent studies have revisited and attempted to address the first of these questions (Chen et al., 2010; Leidner et al., 2011). However, as above we probably need to understand and define what ISS means in today's complex, uncertain and rapidly evolving business, technology and social environments. And to what extent do ISSs align with, enable or co-evolve with business strategy? Can we understand 'IS/IT capabilities' sufficient to explain how they contribute to business and organisational performance: how are they created, sustained and even destroyed? And there are no doubt many more.

These are complex questions and will require studies of how organisations are actually deploying IS/IT to be sustained over periods of years. It also suggests a range of studies in different organisations and industry sectors, to understand what influences the content of those strategies, but also implementation success and how effectively they are adapted to a changing environment. If the influence of IT suppliers is as strong as I have suggested, then those studies also need to consider how the strategies reflect the balance of interests among the suppliers, IS/IT and business management.

This is a call for studies which are probably beyond the capacity of individual academics or even single institutional centres to carry out, but also provide an opportunity to overcome the 'low impact' criticism of IS and management research in general. Perhaps it is time for the IS academic community adapt to the new 'Web 2.0' paradigm of collective rather than centralised intelligence by encouraging engaged scholarship and research that harnesses the combined knowledge of both practitioner and academic communities. This would obviously need orchestrating, but how? From the reference list below it appears that JSIS has become the primary journal for publications about ISS, with contributions from many academics across the world. Perhaps those academics could, working with the JSIS editorial board, develop a future ISS research agenda to which interested researchers can subscribe and define complementary research programmes, collaborate in empirical studies and share results? It's just a thought.

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