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## Challenging Assumptions for Strategic Information Systems Planning: Theoretical Perspectives

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**STRATEGIC INFORMATION  
SYSTEMS**

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# CHALLENGING ASSUMPTIONS FOR STRATEGIC INFORMATION SYSTEMS PLANNING: THEORETICAL PERSPECTIVES

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## ABSTRACT

A number of well-documented, fundamental assumptions are associated with strategic information systems planning (SISP). A core activity for this domain is the alignment of an organisations systems and technology strategy with its business objectives. The difficulty is the complex and diverse nature of the strategy process itself that renders such a match increasingly problematic. The evidence within the literature relating to SISP suggests that it does not fully mirror contemporary business strategy and contains some fundamentally incorrect assumptions. This paper identifies eight such assumptions that propose a number of challenges for future research directions. Case examples are also presented which reflect the issues posed for exploiting the value of Information Technology (IT) as a strategic opportunity given the approaches adopted for SISP. Finally, a number of challenges to SISP are noted which relate to identified categories, through an 'IS complexity framework', of reviewing benefits, managing business change, and assessing organisational competencies for sustainable competitive advantage.

**Keywords:** strategic information systems, planning, business strategy

Communications of AIS Volume 3, Article 9

2

Challenging Assumptions for Strategic Information Systems Planning:  
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# 1. INTRODUCTION

The literature is unanimous in prescribing that any investments in information systems and their associated technology (IS/IT) should be closely linked with the strategic direction of the organisation (Wiseman, 1985; Earl, 1989; Ward & Griffith, 1996, Hackney, 1996). While these decisions are traditionally delegated to the IT professionals, it is increasingly recognized that business managers should also be involved in the process. Consequently, the notion of 'Strategic Information Systems Planning' (SISP) is promoted to involve a variety of opinions for determining IT requirements (Reponen, 1993).

A basic premise underlying SISP is a distinction between an IS strategy and an IT strategy (Earl, 1989; Burn, 1993). The IS strategy is demand oriented, focusing on information and system requirements in meeting business objectives. These needs are captured in terms of their most appropriate applications. The IT strategy, on the other hand, is supply oriented and concerned with specifying the technology as to how to deliver these applications. Prescriptive approaches have been proposed to help in aligning these IS/IT strategies with an organisation's business strategy through identifying applications that support the business and at the same time give direction to IT investments.

However, the central role played by the business strategy in defining the IS strategy and ultimately in determining IT investments is called into question. Conclusive evidence clearly indicates that strategy is emergent (Mintzberg & Waters, 1985), often serendipitous (Hamel & Prahalad, 1994) and continually changing (Pettigrew, 1985; Hamel, 1996). The challenge in developing IT-based applications for business requirements, therefore, is to articulate these dynamic processes before a technical solution can be developed. A further complication arises from the notion of "fit" implied by strategic alignment. Little consensus exists on the approach that should be used to achieve this strategic congruence

and indeed there is some scepticism that there is a universal "best" approach (Hackney, 1996; Burn, 1997; Sauer & Burn, 1997). These researchers suggest that it is inappropriate to assume that IS strategic alignment will automatically improve the chances of IS effectiveness and improved organisational performance through the notion of "fit". More recently a number of authors identified various factors (e.g., senior management support, IT function assessment) for successful congruence between IT and the business but there is little comment on how such changes can be implemented (Dutta, 1996; Earl, 1996; Horner & Benbasat, 1996).

In this paper the generally held assumptions that underlie SISP are challenged. First, the business strategy literature is outlined to briefly present current debates and is related to the new organisational challenges. Second, a catalog of underlying assumptions relating to SISP is presented together with a number of real life examples which support the inadequacy of such assumptions. Finally, the paper concludes by suggesting the challenges in which the dynamics of the organisation in an exciting but turbulent environment may be reflected more accurately through SISP.

## II. ORGANISATIONAL STRATEGY RESEARCH

Two prominent discourses on organisational strategy appear to dominate the literature, namely 'rational' and 'interpretive' approaches. Through a variety of forms, proponents of both camps seek to establish their respective validity. Historically, the rational perspective includes much of the writings of Ansoff (1965), Porter (1980, 1985), and others that is strongly favoured by consultants and by business school faculty. The basis of this 'rationality' is the assumption that the environment, both internal and external, to the organisation can be treated as objective realities that can be assessed formally and prescriptively.

The origin of this contemporary analysis into approaches to strategy formulation can be found in the field of thought commonly termed the 'design school'. Here the essential components are the extent of congruence or fit between an organisations internal structure and its external situation (Miles & Snow, 1978). The objective is to determine what a firm believes to be its main commercial strengths and then to provide a perfect match of these strengths to its wider competitive environment. Proponents of the design school essentially seek a strategic match between internal resource capability and external opportunity. This match is argued to enable an organisation to achieve its competitive aims, following its strategy and structure, towards superior performance evidenced through profitability and increased market share (Andrews 1971; Ansoff, 1965; Chandler, 1962; Hofer & Schendel, 1978; Porter, 1980, 1985). The main criticism of formal-rational views of strategy formulation is their failure to recognise and acknowledge the diversity and complexity of organisational realities.

More recent views on strategy formulation however suggest that organisational decisions are significantly influenced by cultural, political and power-behavioural situations (Mintzberg, 1987; Pettigrew, 1987; Prahalad & Hamel, 1990, 1994; Pettigrew and Whipp, 1991). This finding is in line with the earlier observations of Quinn (1980) who proposed that strategy develops incrementally through logical decision making and that organisations experience 'strategic drift', i.e. consequences which differ significantly from initial formal planning. Mintzberg & Waters (1985) further suggest that such strategy formulations will emerge over time and may not represent what was originally intended. Evidence also suggests that managers within organisations establish small informal groups to aid their pursuit of objectives. These associations or coalitions provide the opportunity to secure more resources and to gain influence where there is mutuality of interest (Hackney, 1996). Thus, in this view there may be a complete lack of managerial consensus towards organisational decision making which is a major assumption of the rational approaches.

Communications of AIS Volume 3, Article 9

5

Challenging Assumptions for Strategic Information Systems Planning:  
Theoretical Perspectives by R. Hackney, J. Burn, and G. Dhillon

Implicit within both these approaches is an understanding that the organisation is a tangible entity where relationships will be formed between tasks, structure, strategy and processes. These views can be questioned in relation to the new forms of organisation that are often referred to as Virtual Organisations. Virtual Organizations can be characterised by the intensity, symmetry, reciprocity and multiplexity of linkages in their networks (Grabowski & Roberts, 1996). Their strategies are therefore developed in an inter-organisational environment and their planning needs to evolve beyond a firm-centred approach to take a network perspective. The IS and business strategies are obviously interleaved whether one argues for the 'rational' or 'interpretative' approach but need to consider the external environment as part of the inter-organisational network. Planning processes tend to relate more to spheres of influence within the network rather than the technology, processes or structure. Leveraging this influence allows strategies to emerge rather than be formulated. Decisions are therefore made as a result of evolving sets of inter-organisational environments that can be characterised by the extent to which power and influence are dispersed within them.

### **III. SISP ASSUMPTIONS**

A variety of proposed theoretical frameworks incorporate both business-driven and creative approaches in the search for significant opportunities for gaining benefits from IT. The language and concepts associated with this research include 'top down' (Ward & Griffith, 1996), 'middle out' (Henderson & Sifonis, 1986), 'eclectic' (Sullivan, 1986) and 'multiple' (Earl, 1989) methods. Incorporated within these approaches are a variety of tools and techniques, borrowed primarily from the 'formal rational' business strategy domain.

However, the research evidence questions whether SISP, in its many guises, is actually working. Lederer & Sethi (1988), for example, highlighted that only 24% of applications recommended for development via a formal planning process were ultimately developed because organisations needed to carry out further substantial analysis post planning. Flynn & Goldeniewska (1993) even suggested that the whole process of IS planning may be a cosmetic exercise conveyed as a type of informal social consequence of traditional systems analysis and design. The SISP process is consequently grounded in a number of fundamental assumptions. In the remainder of this section these assumptions are surfaced and their validity is assessed.

### **ASSUMPTION 1: A BUSINESS STRATEGY EXISTS**

One of the major assumptions which underlies SISP is that organisations must articulate a business strategy with which IS/IT can be aligned. As noted, this process may be shown to be emergent, often serendipitous, and continually being renewed. The challenge is that IS/IT strategy must itself be dynamic. While it may be possible to determine a flexible IS strategy, the paradox is that in order to develop an IT application a strong element of stability and predictability is required. In essence, business strategy formulation involves an ability to articulate and capture a diverse, fluid, and informal set of organisational characteristics which, to date, IT professionals regard as functional, quantifiable and certain.

### **ASSUMPTION 2: IS STRATEGY CAN BE ALIGNED WITH IT STRATEGY**

Paradoxically, the business strategy process is itself often constrained by the legacy of IT systems. These legacies represent the results of past strategies as articulated by earlier IS planning decisions. This restriction, imposed by IT, resulted in some organisations considering the opportunities presented through



outsourcing routine applications. These options, however, involve significant difficulties for strategy where business critical systems cannot be readily facilitated by a third party.

### **ASSUMPTION 3: AN IS STRATEGY AND BUSINESS STRATEGY ARE DIFFERENT**

A central assumption underlying SISP is that a clear distinction between a business strategy and an IS strategy is identifiable. This assumption suggests that IT is something which is 'bolted on' and in some way secondary to the business strategy and not an integral part of it. Therefore, it is best either to integrate IT into the business so that a single set of decisions covers business and IT issues alike or to accept that IT is a service and possibly outsource it. However, in many firms, IT is often intrinsically linked to the success of the business, particularly in information-intensive industries. A number of well documented examples show how organisations significantly improved their business performance as a result of building strategic applications. The challenge here is to provide a transparent relationship between the two where the systems are developed as the core of the business.

### **ASSUMPTION 4: IT IS A SOURCE OF COMPETITIVE ADVANTAGE**

Another fundamental assumption underlying SISP is that IT can provide a source of competitive advantage (McFarlan, 1984; Cash & Konsynski, 1985). The reality is that IT has become a commodity and many organisations would not exist or indeed survive without exploiting appropriate systems. However, technology alone does not generate sustainable competitive advantage (Cecil and Goldstein, 1990; Galliers, 1991; Senn, 1992). Rather, advantage is gained through the business changes that IT facilitates (Earl, 1992) or its ability to leverage organisational capabilities (Hamel & Prahalad, 1994). The implications

and challenge of this analysis is that IT-based sources of competitive advantage must focus less on IT, *per se*, and more on the process of organising and managing the technology within a firm. (Mata *et al.*, 1995).

### **ASSUMPTION 5: STRATEGIC INFORMATION SYSTEMS EXIST**

The phrase *strategic information system* is now common in the lexicon of management. These are the systems that are seen as giving the organisation strategic advantage. In reality, however, strategic information systems may be considered a misnomer. The examples of strategic information systems (such as American Airlines and Thompson Tour Operators) in fact represent a significant process capability that the organisation was able to harness mainly through communication technology. It is the process capability that is strategic to the business not the information system application.

### **ASSUMPTION 6: STRATEGIC APPLICATIONS OF IT ARE FORMALLY PLANNED**

A further underlying assumption of SISP is that the strategic application of IT can be formally planned. As Mintzberg notes, those involved in the process, 'should complete their thinking before they begin to act' (Mintzberg, 1993, p. 282). However, an analysis of four of the most well known strategic information systems, Baxter's ASAP, McKesson's Economist, American Airlines SABRE reservation system and the French videotex, Teletel, Ciborra (1994) concluded that they were not fully designed top-down or introduced as part of a rational planning process. Rather they were tried out through prototyping and informal decision making. This result corresponds to Earl's (1996) recent research on IS planning which concluded that 'effective [IS] strategies often emerge through implementation'. Planning in general is again noted as 'formal rational' through programming and not discovering (Hamel, 1996).

### **ASSUMPTION 7: SISP ENCOURAGES ORGANISATIONAL INTEGRATION**

The irony of SISP is that it is supply oriented where a strong focus on individual applications can result in organisational fragmentation. This focus is clearly incongruous with the strategic objectives of the organisation where the integration of systems and process is desirable. The assumption is that integration takes place at the technological level. The end result, however, is usually more often about coordinating what results are achieved rather than the integration of the business processes. The implication of lessons from business process re-engineering (BPR) suggests that a strong process perspective should be adopted before any IT implementation is undertaken.

### **ASSUMPTION 8: SISP WORKS**

In 1993, Mintzberg published a paper entitled “Strategic Planning is an Oxymoron” (Mintzberg, 1993) He points out that strategy and planning cannot be embraced under a single concept and may well require skills and processes which are the opposite of one another. If this is the case (as the authors believe) then SISP must be a dual oxymoron since we have the added complication in relation to whether we mean strategic IS or strategies for IS and whether either can be planned. The existence of formal SISP processes does not guarantee success and indeed little empirical evidence shows any relationship (other than the converse) between the two (Lederer & Sethi, 1988; Ma & Burn, 1998).

## IV. SISP PRESUMPTIONS IN APPLICATION

In this section the basic assumptions are again considered with an illustration within each of an applicable application. These assumptions are:

1. Business strategies exist
2. Business strategies are different from IS strategies and IT,
3. IS and Business strategies can be aligned

Surprisingly, the adoption of Enterprise Resource Planning (ERP) models in such a diverse range of organisations highlights the flaws in this assumption. Packages such as SAP define the business model and the decision-making processes which support the model. Critics of this approach suggest that ERP requires the organisation to adapt business strategies to “fit in” with the technological infrastructure. As part of a research project in Australia, organisations were interviewed about the implementation of SAP and how it impacted business strategy. The most common reaction was relief that SAP could help them define a business strategy and further directly support this strategy with IS and IT. In a sense an ERP provides dynamic stability!

### **IS CAN BE ALIGNED WITH IT AS A SOURCE OF COMPETITIVE ADVANTAGE**

Burn (1997) reported the results of a longitudinal study where data was collected over six years from twenty banks. This particular group seems especially vulnerable to changes in technology. These changes cause the group to continually perform a balancing act between defending its positions and driving to regain strategic advantage. Huge investments in state-of-the-art technology in one year can lead to a strategic disadvantage when the technology is overtaken but business critical systems must be maintained and cost benefits may have yet (if ever) to be realised.

## **STRATEGIC IS's ARE DIFFERENT FROM BUSINESS STRATEGIES**

Cargo and container industries provide for two extreme examples. In Hong Kong, Hong Kong International Terminals Ltd (HIT) is a prime example of a business where IT is totally integrated into the business and where the organisation maintains its strategic advantage as the world's biggest independent operator through its innovative use of IT (Burn & Szeto, 1997). The recent opening of the new airport at Chep Lak Kok in Hong Kong, however, was accompanied by a disastrous cargo handling situation from Hong Kong Air Cargo Terminals Ltd (HACTL) where the IT systems was developed as part of a huge contract for an integrated Port and Airport Development Strategy (PADS) yet failed completely to handle the cargo movements. As a result, billions of dollars of business were lost to companies shipping through Hong Kong and long term damage to HACTL as a company resulted.

## **SISP WORKS AND ENCOURAGES INTEGRATION**

The latest report from the Cambridge ITelligence Update (1998) on e-commerce suggests that the high proportion of failures can be attributed to poor understanding of integrated business solutions. Carl Potter, Managing Consultant with Cambridge Technology partners comments:

“ It seems that a high proportion of large organisations just don't realise that building an e-commerce system requires a total business solution, integrating new business processes and existing IT infrastructure. The most worrying trend is the high proportion of organisations not learning from their mistakes, but just going on to repeat them in grander style”.

This finding is reinforced by an empirical analysis of Biotechnology companies. It is apparent, and not unusual, that many multinational organisations are not resourcing their e-commerce strategies very well and are adopting a passive approach to marketing their products on the Web (Hackney & Ranchhod, 1998).

## **CHALLENGES FOR SISP**

The challenges for SISP can be classified into three broad categories (Figure 1):

- reviewing benefits,
- managing business change and
- assessing organisational competencies.

This categorization demonstrates the opportunity to develop more dynamic frameworks which attempt to capture IS complexity within the SISP process.

## **V. REVIEWING BENEFITS**

One of the key challenges to IS/IT planning relates to the inability of the business to reap benefits from IT investment. This “productivity paradox” has mainly been attributed to the mismatch between business strategy and the IS planning process. It is argued that if strategy and planning are not in tandem with each other, then there is a huge risk of benefits not accruing from these investments. Hence it may not be sufficient merely to install an IT application and hope for the savings. At the very least, some training will be required, and probably changes in tasks, roles, and responsibilities. To overcome the producti-

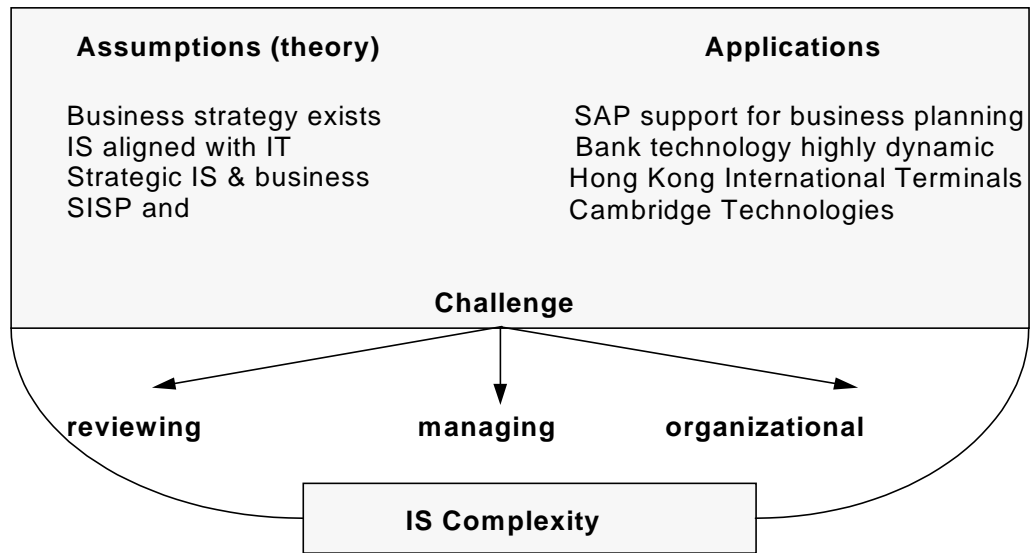


Figure 1. SISP Assumptions, Applications, and Challenges

vity paradox calls for a coherent understanding of the business strategy that may demand an investment, the IT strategy which may determine the nature and type of the system, and an IS planning process which establishes a link between the business strategy and the IT strategy.

## VI. MANAGING BUSINESS CHANGE

Organisations today are experiencing significant change. These changes resulted not only from advances in technology but also from a competitive marketplace. As a result, the management of IS/IT related change emerged as a significant challenge for IS/IT planning. Indeed when an IT system is implemented in an organisation, what actually occurs is change ranging from small scale and localised to major changes in the conduct of business and even major organisational restructuring. Change is not always welcome and may result in significant resistance within organisations through the uncertainty it creates.

Communications of AIS Volume 3, Article 9

14

Challenging Assumptions for Strategic Information Systems Planning:  
Theoretical Perspectives by R. Hackney, J. Burn, and G. Dhillon

Reports suggest that the success rate for IT and change initiatives is somewhere between 20% & 50% (Crescenzi 1988; Willcocks & Lester 1993). McGolpin (1996) further showed that in successful investments coherent change management initiatives were an integral part of the projects.

## **VII. ASSESSING ORGANIZATIONAL COMPETENCIES**

The changing business environment coupled with a drive for obtaining benefits from IS/IT investments generates a new challenge for IS/IT planning: the challenge of assessing future organisational competencies. An innovating organisation's superior understanding of the technological and business aspects of information systems increases the likelihood that it will introduce competitively significant enhancements and thus sustain its advantage, despite innovation by rivals. Such innovation is becoming a key challenge in terms of IS planning, especially because of the prevalent disconnect between the business strategies and IT strategies. Research suggests that lack of innovation is related to the lack of organisational competence (Dhillon & Lambert 1996; McGrath *et al.* 1995).

## **VIII. IS COMPLEXITY FRAMEWORK**

The assumptions, applications, and challenges for SISP are clearly complex. Traditional approaches to these aspects of IS research made few positive attempts to determine the characteristics of the dynamics involved in the core objective of aligning an IS strategy with the business. Figure 2 illustrates a simple attempt at identifying the factors that consider some of these complexities.



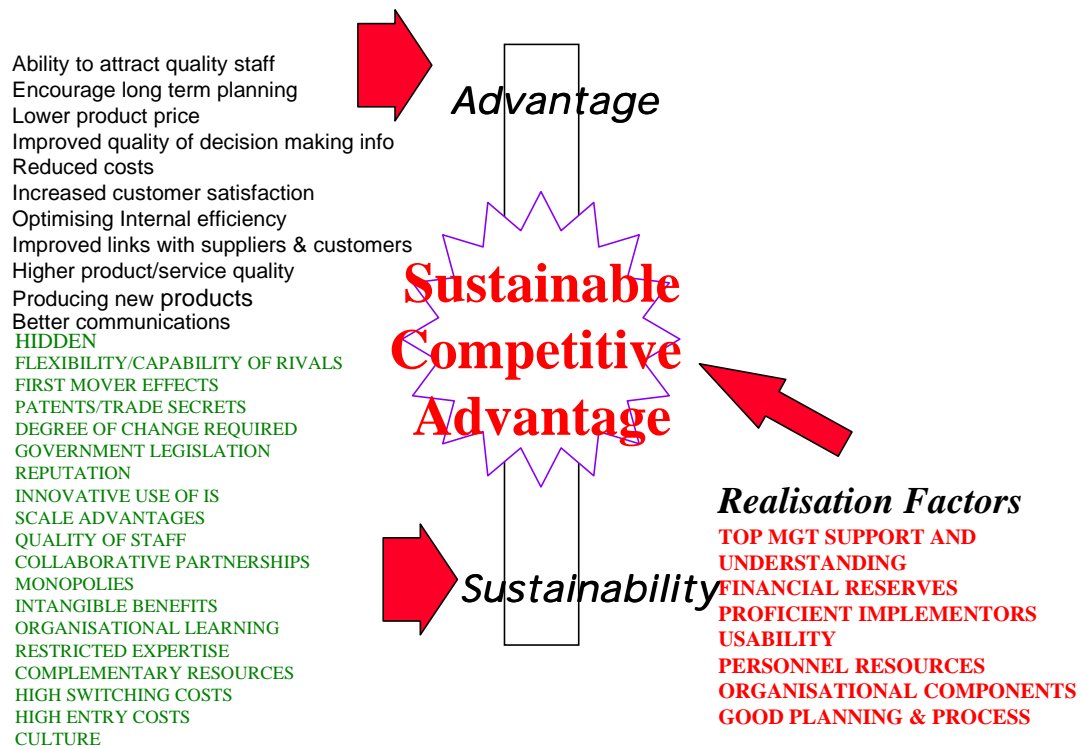


Figure 2: IS Complexity Framework (Hackney et al, 1999)

The framework suggests that the traditional approaches to SISP require a fundamental reassessment in view of the challenges noted and the assumptions made. It proposes that the factors leading to an ephemeral advantage when coupled with 'sustainability' elements will enable an IS-derived competitive advantage through a recognition of the complexities involved. Clearly, our analysis of the theoretical assumptions, which underpin SISP, require changing to reflect more appropriately the organisational realities involved.

## IX. CONCLUSION

This paper argues that the assumptions underlying the objectives of SISP do not represent the existing research evidence. The central notion of aligning an

IS/IT strategy with an organisation's business strategy is fundamentally problematic. The diversity and complexity of organisational strategic processes are clearly not being considered through the 'formal rational' approach' adopted by SISP. . A defined strategy is the result of creativity, innovation, and foresight which represents a contradiction for organisations that engage in activities to develop SISP.

Competence to exploit an IT opportunity is influenced by the prevailing management culture, experience, and satisfaction with IT through so-called 'power behavioural' models. These models extend beyond technological feasibility and customer demand through an organisational infrastructure that is capable of developing and exploiting system innovations quickly. The impetus to develop IT applications does not come from the mere existence of a firm's technological strengths. Organisations need internal competences that can react effectively to changes in the business environment. An understanding of the potential strategic impact of IT and its integration with complex business processes is required to enhance the sustainability of competitive advantage.

Clearly, more research, in theory and practice, is required to demonstrate further the importance of addressing the changing perspectives of organisational dynamics through the opportunities from SISP.

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Communications of AIS Volume 3, Article 9

17

Challenging Assumptions for Strategic Information Systems Planning: Theoretical Perspectives by R. Hackney, J. Burn, and G. Dhillon

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