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A Literature Overview on Strategic Information Systems Planning

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A Literature Overview on Strategic Information Systems Planning

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Abstract
Strategic Information Systems Planning (SISP) has been among the highest ranked issues on management agendas for many years. As such, SISP should be a major concern for researchers as well. However, SISP does not play that important of a role in the academic discussion, at least in Germany. Leading German textbooks on Information Management devote only small sections to strategy themes. Moreover, the recommendations given for conducting SISP in these textbooks are mainly normative and hardly take international research findings into account. Taking this as a motivation, we conducted a comprehensive literature review of German and Anglo-American information systems journals. Our objective was to understand more fully what we know about SISP through international research. On the flip side, our research aims at identifying fields that are in urgent need for closer academic investigation so that individual speculations and normative recommendations might still substitute for valid research insights.
Overall, we found a considerable amount of research conducted in the field of SISP that we organised in five broad thematic fields: Strategic IT impact, approaches to SISP, information systems strategy, and strategic alignment. We give a short overview of research conducted so far and seminal publications available in the research fields. Moreover, based on a sub-sample of our literature base, we compute statistics which indicate the intensity of the academic discussion in the different thematic fields over time. Our statistics show that most attention has been paid to the competitive use of IT. The IS strategy in contrast has only been of limited interest, though it is central to any strategic considerations in IS. Our survey also suggests that German speaking researchers have devoted relatively few efforts to SISP in comparison to their Anglo-American colleagues.

Keywords
Strategic Information System (SIS), Strategic Information Systems Planning (SISP), IS Strategy, IT-based competitive advantage, SISP approach, Strategic Alignment

1 Motivation and Introduction

Strategic thinking about information technology (IT) emerged in the 1980s when IT changed its role from an automation tool to a facilitator and, ultimately, an enabler of business. With its widespread use throughout organisations, IT also became a significant cost factor which called for cost justifications and deliberate planning of IT investments. This in turn gave rise to long-term planning of IT costs, investments in IT-based information systems (IS), as well as their impact on the business.

Long term and more strategic considerations in IS planning also shaped the role of the IT manager. Traditional IT managers were in charge of implementing technology, operating information systems and, if this happened at all, controlling costs. In this role, they reported to departmental heads or chief financial officers (CFO). But, with rising strategic concerns in IT, a new type of IT manager emerged: the so called “Chief Information Officer” (CIO). In contrast to traditional IT managers, CIOs are expected to actively participate in strategic business planning, take responsibility of IT cost, and justify IT investments with the business value generated through IT. As advocates of IT on the top management level, CIOs are often members of the board reporting directly to the CEO.

Not surprisingly, with the proliferation of CIO type IT managers Strategic IS Planning (SISP) became a topic of high relevance in practice. It has been among the highest ranked issues on management agendas for more than two decades [LuKN06; WKGB97]. In line with its importance it is common that bigger enterprises that largely build their business on information technology (IT) have dedicated SISP management positions such as “Head of IT strategy” or “Director Strategic IT Management” [MoTe06]. The practical challenges of SISP also find their way into practitioner conferences and magazines.

In line with its high relevance in practice, SISP has also been intensively discussed by academics. There is a considerable amount of published research on SISP. Moreover, most international textbooks and edited books on the management of IT – often titled (Strategic) IS Management or IT Management to distinguish them from books on systems analysis, software engineering or programming – give credit to SISP. This is particularly true for English textbooks such as [WaPe05] or [GaLe03]. German textbooks, in contrast, often adopt an engineering-like perspective on the management of IT and devote only minor parts of the text to strategic concerns in IS. This can easily be demonstrated with the contents of those German textbooks which are published in their third or higher edition: The chapters devoted to strategic management concerns include 44 out of 516 pages [Krcm05], 120 pages out of 588 pages [HeLe95], or 44 out of 1001 pages [BiMR04; BiMR07]. But even those parts of the text that are claimed to address strategic questions cover more general themes such as technology management, communication management, quality management, security management, innovation management, knowledge management, and controlling. These themes include some strategic topics such as formulating IS policies or planning for disaster recovery, but they also have a very operational and technical side (e.g. network access control or virus protection).

In addition to a lack of attention paid to SISP in German academic literature, we found indications that the current body of academic knowledge on SISP does not fully meet practitioner concerns: Firstly, despite decades of research, improving SISP continues to be a critical man-

agement issue. We feel that academic interest in SISP has even decreased over the last decade despite the on-going interest that practitioners have in this topic. Secondly, and more concretely, various cases have been reported, where senior IT managers involved in SISP intentionally ignored the academic body of knowledge on SISP [Gall93a; Teub07]. Our observations are also supported by other researchers who find indications for a gap between the academic debate on SISP and practitioners concerns in SISP [HaBD00].

The perceived incongruence between research on SISP, textbook knowledge and practice led us to review the academic discussion on SISP again. Our motivation for doing this is even stronger since no similar attempt has been made in the recent past. The objective of our research is, first of all, to provide a comprehensive overview of what we know about SISP in research. Such a map of academic knowledge can provide a valuable resource for teaching SISP. But beyond feeding lectures and textbooks on SISP, it may also provide some help in identifying relevant knowledge for SISP problems and challenges in practice. Finally, such a knowledge map serves to revisit the field of SISP as a whole by exhibiting fields that are potentially under-investigated. Thus, it can help to depict directions for future research especially if compared to the concerns which are prevailing in practice.

2 Objectives and Methodology of the Literature Study

The objective of this research is to give the reader an overview of the international academic discussion on SISP. This overview is intended to describe the field of SISP research and provide some insight into its maturity. Our research is based on a review of the academic literature on SISP in leading IS journals as well as management and strategy journals. Since our focus is on the academic discussion, we have not taken account of practitioner magazines and trade journals in our review. We have also excluded non-scholarly contributions such as editorials or book reviews.

Our review follows the general guidelines for literature reviews [WeWa02; Fett06]. In a first step, we filled our literature base with data from the EBSCO Business Source Complete database which gives access to a broad spectrum of international journals. Then, relying on a comprehensive synopsis of nine journal rankings [AIS06] we then cross checked for the coverage of the most prestigious IS journals. In order to obtain an adequate coverage of the most prominent IS journals, we extended our database search to further resources including Proquest ABI, Science Direct and the online database of the Association of Information Systems (AIS).

Number	Journal Name	Year	Volume	Database
1	MIS Quarterly	1977	1	EBSCO
2	Information Systems Research	1990	1	EBSCO
3	Communications of the ACM	1965	8	EBSCO
4	Management Science	1954	1	EBSCO
5	Journal of Management IS	1984	1	EBSCO
6	Decision Sciences	1970	1	EBSCO
7	Harvard Business Review	1922	1	EBSCO
8	European Journal of Information Systems	1993	2	Proquest
9	Decision Support Systems	1997	19	EBSCO
10	Information & Management	1977	1	Science Direct

Table 1: Top ranked international IS journals covered by the databases

Table 1 shows that our database covers all the IS journals included in the aggregate AIS ranking. The table also displays the starting volumes and years of the journals that were digitally available in the data base sources we used. Assuming that the SISP discussion started at the end of the 1970s, our database sample does not provide a full coverage of the journals since early volumes were not always accessible digitally. Hence, we had to complete our sample through a manual lookup of journals. When doing this, we included two further journals on general management and strategy research ("Field" = "GM" in Table 2) that might equally serve as outlets for SISP research. However, we found that neither the Academy of Management nor the Journal and the Academy of Management Review provided any contribution to the field of SISP. We also took a closer look at three further prominent IS journals not represented in the database thus far. Somewhat surprisingly, we found that none of the two journals of the Association of Information Systems added to SISP research while a third journal, the Journal of Strategic Information Systems, was a rather fertile source. Table 2 displays the list of Anglophone journals

included in the sample that we looked up manually. The second and third columns represent the starting years and starting volumes of our manual lookup: We began with either the first volume available or, given that the first volume had been issued before 1975, with the volume issued in 1975.

Journal Name	Year	Volume	Field
MIS Quarterly	1977	1	IS
Information Systems Research	1990	1	IS
European Journal of Information Systems	1992	1	IS
Journal of Management Information Systems	1984	1	SIM
Information & Management	1977	1	SIM
The Journal of Strategic Information Systems	1991/92	1	SIM
Management Science	1975	21	GM
Harvard Business Review	1975	53	GM
Strategic Management Journal	1980	1	GM

Table 2: Anglo-American journals manually reviewed

However, neither the databases nor the international rankings represented German-speaking journals adequately. For this reason, we added the journal Wirtschaftsinformatik as the leading outlet of the German Information Systems Community to the sample. In the absence of other German academic IS journals, we also included HMD as a leading practitioner-oriented journal, which also publishes a lot of scholarly research. In addition, we incorporated three leading German-language outlets for business administration and management research: “Zeitschrift für Betriebswirtschaft”, “Zeitschrift für betriebswirtschaftliche Forschung (Schmalenbachs Business Review)”, and “Die Betriebswirtschaft”.

Search and select activity	Effect	Total no.
database search in EBSCO/Business Source Complete, Proquest, Science-Direct for “(Info* OR IT OR IS) AND strateg*” in title, abstract and keywords	+ 1244	1244
Manual search of titles and abstracts from 1975 on in MISQ, ISR, JMIS, JSIS, I&M, MS, HBR, AMJ, AMR and SMJ	+ 419	1663
Review of abstracts to exclude non-IT and, respectively, non-strategic themes	- 1253	410
Manual look-through of the leading German IS, BA, and Management Journals	+ 24	434

Table 3: Sampling process

Table 3 sums up our selection process and the resulting samples. The databases search provided us with an initial sample of 1244 academic papers potentially related to SISP. Further 419 papers were identified in the manual scan including management journals (Table 2). However, a review of abstracts showed that only one fourth of the contributions dealt with SISP. The analysis of German journals yielded further 24 papers providing us with 434 papers in the final sample.

We analysed the articles on a quantitative and a qualitative level. In a first step, we investigated the number of contributions over time. This analysis helped to get a general idea of the evolution of the intensity of the SISP discussion. The second step was concerned with the contributions made to the discussion. Here, we analysed each article for the research questions under investigation. As a result, we could identify a number of different research foci according to the contents of the contributions. We also had an eye on the research methodologies applied, although this was not in the forefront of our research [Fett06].

3 Development of the Academic Debate

The time frame for our study begins in the late 1970s with the evolving discussion on the Management of IT/IS in general and SISP in particular, and ends in 2006. In order to provide some statistical figures on the development of the discussion over time, we needed a sample with all included journals covering the full time horizon of interest. Since our databases sample does not cover all journals over the full time horizon, we decided to do our statistical calculations on the sub-sample that we have looked-up manually and that is documented in Table 2. The sub-sample represents the overall sample quite well since it covers about 50% of the articles we found to be relevant for SISP. Hence, for statistical purposes, we will first and foremost refer to the sub-sample.

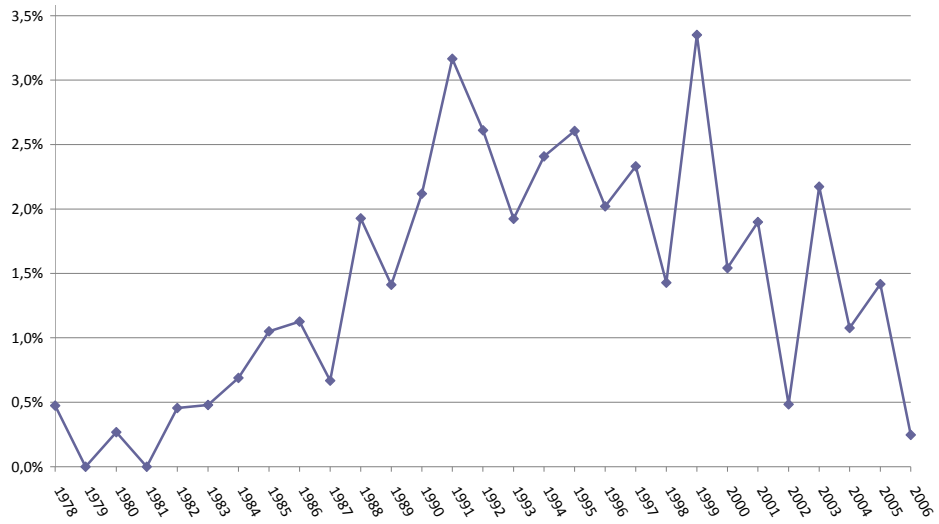

Figure 1: Frequency distribution of SISP publications

Figure 1 depicts the resulting frequency distribution of publications on SISP in relative frequencies. For the purpose of computing relative frequencies, we have counted the overall number of articles published in the journals of our sample. The percentages displayed on the y-axis in Figure 1 indicate the number of publications that we could relate to SISP in relation to the overall number of articles published in the journals of our sample. By using relative frequencies, we avoid distorting our results by the overall number of articles published and by the fact that some of the journals included in the sample started after 1978. In absolute figures, our sample included more than fifteen thousand articles of which 231 were devoted to SISP topics. What can be seen from the graph is that SISP became a “hot topic” in the late 1980s and remained to be one throughout the 1990s. Afterwards, the academic interest decreased. Potential explanations for this will be given on a more granular level in the following section (Section 4).

The structure of our sample reveals that SISP has been a major research concern in the Anglo-American hemisphere while receiving relatively little attention in the German research community, where it can be said to be only a marginalised topic. The 5 German-speaking journals included in our survey yielded only 24 articles with an explicit SISP focus. In contrast, we found 419 articles in the 9 Anglo-American journals of our sample (see Table 2). Though it is true that these numbers cannot be compared directly, these differences are striking in orders of magnitude and thus tell a lot about the attention paid to SISP in the different communities.

4 Towards a Knowledge Map

For the purpose of developing a knowledge map of SISP research we conducted an archival analysis of the contributions in our sample. We aimed at a classification scheme with only a limited number of categories on the top level, and a second level which allows for differentiating these main categories in subcategories where needed. We looked through the abstracts of all publications and outlined their contents with a few keywords. We also took a closer look at the main text when necessary.

The classification process led us to identify five different areas of SISP research, the dominant research area being the "strategic impact of IT". A second major area of research deals with how to develop an IS strategy and how to conduct SISP. The discussion dwells on topics such as process, methods, roles, and responsibilities within SISP. Making the development of an IS strategy a concern of its own raises a further consideration: How to link strategic IS planning with business planning? This question is in the core of the research field of "Strategic Alignment", which also takes a substantial part of the discussion on SISP. Two further research domains clearly fall short of the interest devoted to those mentioned above which both closely relate to the IS strategy as the output of SISP: The concept and contents of IS strategy and the implementation of the strategy.

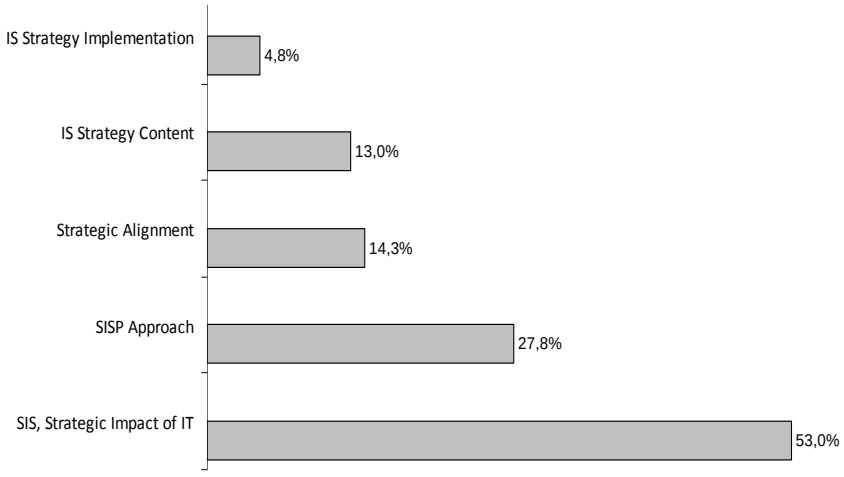

Figure 2: Share of publication devoted to each knowledge domain

Figure 3 displays the relative frequencies of publications in the different areas of SISP research that we identified (multiple attributions possible).

4.1 Strategic Impact of IT

A strategic orientation in the discussion of IS emerged during the late 1970s. Previously, IT was mainly used to automate existing processes and facilitate paper work. IT was primarily regarded as a tool for rationalisation. But in the late 1970s, a number of cases showed that IT also had the potential to change the firm's products or the way a firm competes within its industry, which gave rise to the notion of "Strategic Information Systems" (SIS). [SaKi91] define a SIS as an IS "(…) that has a profound effect on a company's success and destiny, by (a) influencing or

'shaping' the company's strategy or (b) playing a direct role in the implementation or support of the company's strategy". SISs were looked upon as systems with specific characteristics that provided firms with a competitive edge. Over time, this early notion of SIS vanished in favour of more theoretical explanations for IT's impact on competitive advantage.

4.1.1 Strategic Information Systems

The early discussion of IT and Strategy was driven by success stories on strategic information systems as summarised in [KGGS94]. Table 4 provides some prominent examples. Early research was built on the premises that there are specific common characteristics that constitute SIS. The dominant research method was the case study. Cases were analysed in order to reveal common characteristics that could explain the competitive impact of the SIS under investigation.

Organisation, System	Description	Competitive Effects
American Airlines, SABRE	Flight reservation system integrates travel agencies with airline companies	Additional fees from travel agencies, agency switching cost, superior market knowledge
Baxter Healthcare, Value Link	System taking over the materials management function of Baxter's customers (hospitals) on a partnership basis	Enhanced customer service and better relationship management, customer lock-in effect
Wal-Mart integrated planning, forecasting, and replenishment	Integrated supply chain planning system linking Wal-Mart with branch stores and suppliers based on a satellite network	Improved business processes, enhanced logistics, lower warehousing costs

Table 4: Exemplary SIS success stories

SIS remained a dominant concern in the academic debate throughout the 1980s and early 1990s, even spawning a journal of the same title in 1991, the "Journal for Strategic Information Systems" (Table 2). Over time, the (mis-)conception of SIS as a special type of IS with common characteristics was abandoned in favour of an investigation of the different impacts IT can have on competition [Senn92; Kini93; Maie97]. Using "IT as a competitive weapon" then became the prevailing idea [Pars83; IvLe84]. Simultaneously, the focus of research shifted from analysing the nature of SIS to drawing up proposals for putting the strategic potential of IT into action. Corresponding publications proposed frameworks and methods to plan SIS. These publications were authored by both academics and as well as consultants. A large number of propositions are only normative and lack a sound research methodology While others build on analytical frameworks; among them McFarlan's Strategic Grid [McFa84], Ives and Learmonth's Customer Resource Life Cycle [IvLe84], or the concept of strategic thrust [RaWU84, Wise85]. The scope of the discussion widened with these more theoretical contributions, moving to the more general question of how IT could yield competitive advantage.

4.1.2 IT and Competitive Advantage

The subject of IT and competitive advantage is rooted in the discussion on Strategic Information Systems of the 1980s, and it cannot be properly demarcated from the SIS discussion. What can be said, however, is that the broader discussion on IT and competitive advantage went beyond a case-based (casuistic) analysis of single IT applications. SISs were no longer regarded as a specific class of systems with common characteristics; instead their competitive impacts were explained on a wider theoretical basis. The subsequent discussion capitalised on competitive theories from management studies, notably Porter's works on industrial economics [Port90]. The discussion had its peak in the late 1980s and the early 1990s, but still continues today on a lower level of intensity. Figure 3 depicts the number of articles on the strategic impact of IT (including SIS) in percentages of the overall number of articles published (lower line). The upper line depicts the overall number of SISP publications. A comparison of both lines indicates that more than 50% of all publications in the field of SISP contribute to the discussion on the strategic impact of IT (with multiple attributions possible).

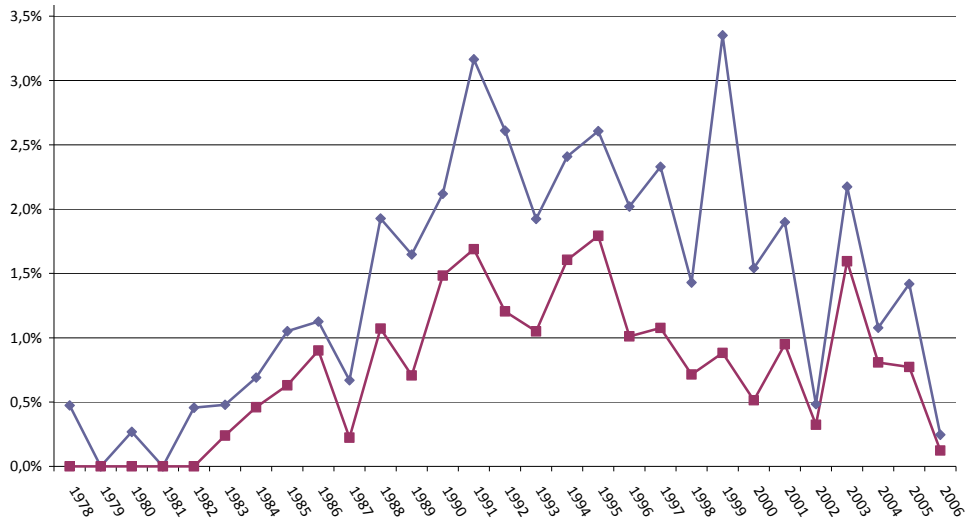

Figure 3: Share of publications on IT and competitive advantage over time

The discussion on IT and competitive advantage is heavily driven by managerial planning theory and, more particularly, by theories of competition. Most contributions start from theoretical considerations and models where the authors either illustrate the explanatory power of their models with real world examples or demonstrate their application to practical problems. Three important theoretical streams can be distinguished: Market Based Theories, Resource Based Theories and Dynamic Capability Based Theories (see [PeWa04]). In addition, there is a fourth position which denies the strategic relevance of IT. We also include this comparatively new position because it has provoked a vivid and partly heated debate on whether the role of IT has changed under the technological conditions of the information age.

Market Based View

The Market Based View (MBV) emerged from Porter's adaptation of principles in the field of Industrial Organisation to the field of Management Studies [Port80]. Porter adopted an industry

perspective from Industrial Organisations Research to explain competitive advantage in terms of positioning a firm in its industry context. For example, his well-known Five-Forces-Model highlights the forces that shape the power balance in an industry and that can be influenced in favour of the firm or to its disadvantage.

It has been acknowledged early on in Management Studies that IT plays a vital role in changing the industry power balance. For example, [Vita86] holds that the use of IT to gain competitive advantage is “one of the major business stories of the 1980s”. Accordingly, this topic has been a matter of an intensive debate from the middle of the 1980s onwards [PoMi85; BaTr86]. Contributions to the debate strongly build on competitive theories with Porter’s 5-Forces-Model perhaps being the most prominent. Figure 4 shows sample IT impacts in each of Porter’s forces in order to illustrate the application of the 5-Forces-Model in SISP.

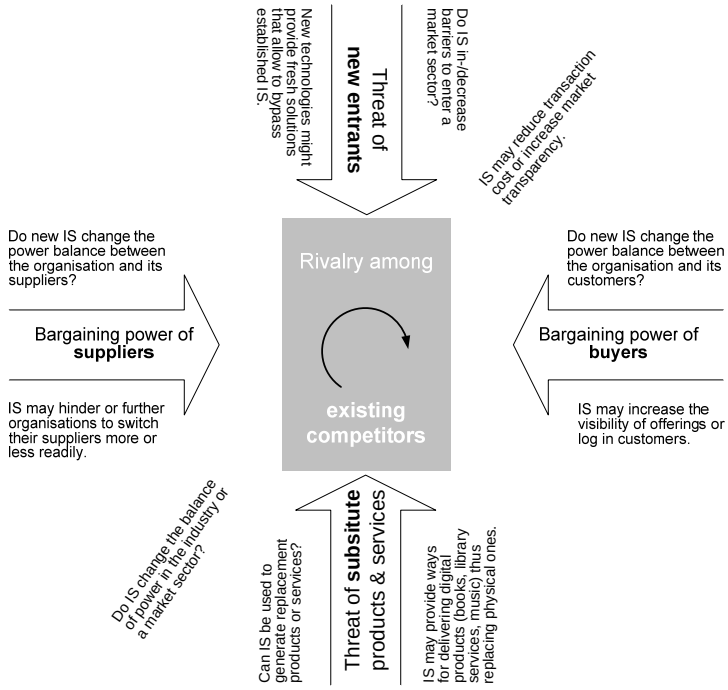

Figure 4: Sample IT impacts on Porter’s competitive forces

However, despite such considerations, many systems perceived as strategic have proven to fail in supporting any competitive advantage sustainably due to imitation by competitors [KGGS94; SeGr95]. Clemons and Row propose to explain cases of sustainable and non-sustainable competitive advantage through organisational differences, namely the degree of vertical integration, differentiation, and in the quality of the organisation’s key resources [ClRo91]. Competitive advantage may be sustained where IT leverages some complementary organisational resources such as structure, skills, or culture. The Resource Based View on IT and competitive advantage (see below) refines such thinking in terms of corporate resources.

Resource Based View

While the MBV can be regarded as the classical perspective of explaining IT enabled competitive advantage, more recent work recognises the resource based perspective as a more sub-

stantial way to explain sustainability of such advantages [MaFB95; WaHu04; PiIv2005]. Theories following the RBV propose that the source of competitive advantage is rooted within the firm and, more specifically, in the deployment and use of valuable, idiosyncratic, rare, and inimitable ‘resources’. However, adherents of the RBV admit that resources conceptually “remain an amorphous heap” [Wern95, p. 172]. Very basically, a resource can be interpreted in a wider and a narrower sense. In a wider sense resources are defined as “(tangible and intangible) assets which are tied semi-permanently to the firm” and which can “be thought of as strengths or weaknesses of a given firm” [Wern84, p. 172]. As such they “include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve efficiency and effectiveness” [Barn91]. Other authors use a narrower definition instead, distinguishing resources from capabilities. While resources are identified with more physical assets, capabilities are defined as the “capacity to deploy resources, usually in combination, using organizational processes, to effect a desired end” [AmSh93, p. 35]. Capabilities are embedded, making them less imitable and therefore superior to (physical) resources in providing a competitive edge to the firm.

In face of the debate on different resource conceptions, it is not surprising that the IT resources proposed in literature also differ. Table 5 gives a first idea of the differences in the identification and conceptualisations of (narrower sense) IT-resources and capabilities in literature. IT resources in general are physical assets including software, hardware, personnel, but also information (repositories). The concept of an IT capability is broader and emphasises the knowledge, skills and abilities of the firm’s IT workforce. It does not only include physical assets and technical knowledge, but also skills in IT management and IT use. Moreover, an understanding of the impact IT has on business is required.

Resource / Capability	Description	Exponents
	Resources	
Information	Information represented on media and typically stored in large data and document bases	[PiIv05] [PeWa04]
Information Technology	Physical assets, means for technology based information processing and communication	[PeWa04]
Information System	Socio-technical system, IT application to solve a business problem which is embedded in working practices and the organisation	[PeWa04]
IT/IS capital	Capital available for IT/IS investment	[MaFB95]
IT infrastructure	Interrelated IT components that jointly provide a set of basic IT services to the organisation.	[Bhar00] [PiIv05]
IT personnel	Staff that is concerned with implementing and running IT	[RoBG96] [Bhar00] [PeWa04]
IT management	Executive IT staff including CIO, IT director, IT project manager	
	Capabilities	
IT standards and architecture	Design principles and design logic underlying the application and integration of hard- and software	[RoBG96]
IT business knowledge	IT understanding of and experience in the business, including CIO's knowledge of the business In particular	[BhGr05]
IT knowledge of business management	Knowledge of senior executives regarding IT functionality	[ArSa99]
Technical IT skills	Knowledge about implementing IT and skills required to operate IT smoothly	[RaLe05] [MaFB95] [PiIv05]
Managerial IT skills	Managerial skills of executive / senior IT personnel	[BhGr05] [MaFB95] [PiIv05]
IT–business relationship	Intense communication, shared visions, priorities, risks and responsibilities	[RoBG96] [BhGr05] [PiIv05]
	Dynamic Capabilities	
Organisational learning	Ability to integrate, build and reconfigure IT competences and capabilities	[TiSo03] [PiIv05] [BhGr05]
IT asset stock accumulation	Processes and consistent patterns of resource flow which build up specialised IT resources over time	[PiIv05] [Neo88]

Table 5: IT resources in literature

It has been well acknowledged that IT resources are a fundamental prerequisite for delivering IT enabled strategies. But the successful application of IT is typically accompanied by significant organisational change. Hence, some researchers argue that the successful implementation of strategic IT-enabled initiatives requires other organisational resources to be mobilised as well. These resources that interplay with the IT resources are called complementary resources. [PoDe97] distinguish complementary resources in human and organisational resources. According to [MeKG04], complementary resources include human capital as well as organisational capital in terms of formal structures or informal relationships ("social capital").

Dynamic Capability View

The Dynamic Capability View (DCV) builds on the RBV but criticises it at the same time for not recognising the dynamic nature of both the resources and the competitive environment. [TePS97] argue that "if control over scarce resources is the source of economic profit, then it follows that such issues as skill acquisition, the management of knowledge and know-how […], and learning become fundamental strategic issues" because they form the firm's "ability to integrate, build and reconfigure […] competences". These more fundamental "meta-level" organisational capabilities are termed dynamic capabilities.

Dynamic IT-capabilities capture the ability to search, explore, acquire, assimilate, and apply knowledge about IT-resources. Hence, the intensity and continuity of learning are crucial to building dynamic IT capabilities [BhGr05; TiSo03; PiIv05]. A further dynamic capability proposed is IT asset stock accumulation. Some standardised IT resources such as microcomputers or storage facilities are readily available to the firm and can be purchased on the open market. Others like IT-infrastructure or specialised information repositories are built by the organisation itself and their development over time is predicated on the availability of precursory assets. With reference to the latter type of IT resources, asset stock accumulation as a dynamic capability can be defined in terms of the processes by which organisations build up resources over time [PiIv05].

Commodity View

IT's power to provide firms with competitive advantages was an unchallenged assumption for IS research and practice until recently, when Nicholas Carr's assertion that "IT Doesn't Matter" gave rise to much controversy. Carr argues that IT has decreased in price as much as it has increased in capacity and presence. Now, IT is ubiquitous and accessible to all firms and hence should be viewed as a commodity. Accordingly, IT cannot provide competitive advantage to any single player because it lacks scarcity as a precondition of supernormal rents. Instead, Carr views IT as an infrastructure technology and compares it to railroad and telegraphs, whose benefits are also accessible to anyone and hence do not provide competitive advantage [Carr03]. Carr's contention finds support in [KGGS94] showing that not all competitive uses of IT that had originally been published as success stories made the employing firms "sustained winners." Admittedly, empirical evidence for the success of strategic IT investments is relatively weak compared to the theoretical indications at hand [MeKG04]. This lack of support is partly due to measurement problems [Pott98]. However, there are a number of empirical findings that support the assumption that strategic investments in IT have had a positive effect on firm value [DeRZ03] and on financial performance [BrGH95; FlWo90; Bhara00; SaHa03]. Therefore, a number of authors have contradicted Carr's provocative claim [Miez04], primarily arguing against his narrow conception of IT. Carr draws analogies to physical infrastructures such as road and rail networks and hence looks upon IT as something physical. Building on such a notion of IT, Carr's claim becomes a pseudo-contradiction to current wisdom on IT and competitive advantage. It is well accepted that not the physical artefact is causal for sustainable competitive advantages but the way IT is applied within the organisation. Hence, a competitive use of IT requires keeping track of IT developments and being able to deploy IT innovatively and in unique ways. This lesson can be learned from the DCV which highlights the need for continuous learning.

4.2 SISP Approach

The discussion on IT and competitive advantage highlighted the strategic impact of IT. At the same time, it emphasized the need for deliberately planning strategic IT/IS investments [PeWa04]. With that, the attention of SISP research turned to the "how?" of SISP. Recent research has proposed to give an aggregate answer to the question of "how to?" by applying the multidimensional concept of "approach" [Bake95]. According to the work of [Earl03; Earl93], the approach to SISP determines how the SISP process is executed and which methods are applied. Earl defines the SISP approach in terms of the "(...) interaction of method, process, and implementation, as well as the variety of activities and behaviours" [Earl03, 189]. He uses nine criteria to characterise the approach taken towards SISP: emphasis, basis, ends, method, nature, influencer, business strategy relation, priority setting, and role of IS. These criteria have proved to be effective in differentiating SISP approaches in practice [Earl93; Earl03]. Other researchers use different criteria to characterise the SISP approaches. These include comprehensiveness, formalisation, vertical flow, and participation [SeGr99; SaKi95; Pybu82]. However, several prominent conceptualisations map fairly well to Earl's criteria (see [SeGT98, 311; DoMS99]).

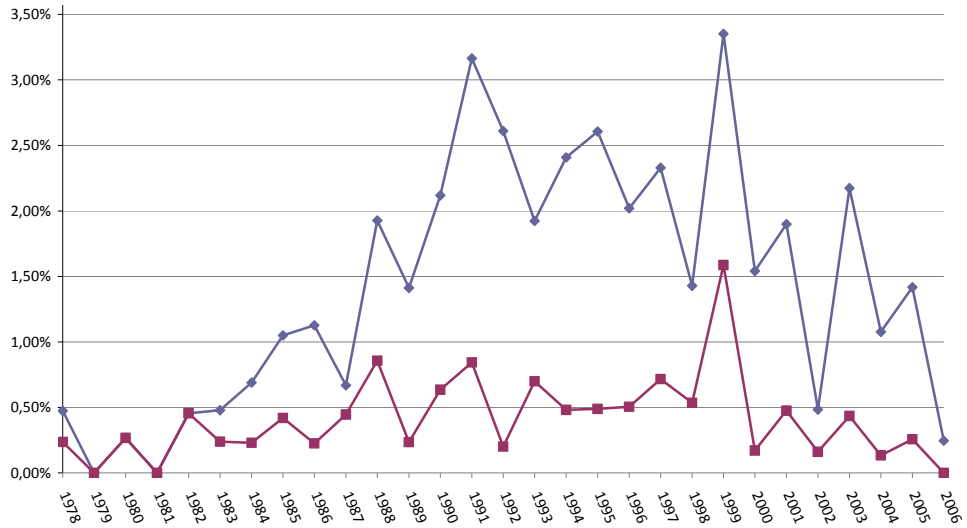

Figure 5: Share of publications on SISP approach over time

The SISP approach is at the heart of the academic discussion on SISP (Figure 2). Figure 5 displays the relative number of publications on the SISP approach (lower line) in comparison with the overall number of SISP publications (upper line). However, the SISP approach is a multidimensional concept unifying different aspects and hence giving a comprehensive answer to the question of how to conduct SISP. A more differentiated understanding is provided by an analysis of the different "ingredients" of the approach: the methods to be applied, the process to be followed, and the participants included in the SISP process (i.e. its organisation)

4.2.1 SISP Methods

Conducting SISP is a complex and difficult endeavour for managers who are in charge of it. Accordingly, consultants have proposed a number of methods and methodologies. Methodologies refer to the techniques and tools that managers can apply during the planning process. Prominent methodologies from consulting practice include IBM's Business Systems Planning [Zach82], James Martin's Strategic Information Planning [MaLe89; Teub03], or Method/1 by the now defunct Arthur Anderson [LeGa92]. They support managers with principles and techniques to analyse the organisation's information processing needs, identify priorities for applications that address these needs and develop architectures and schedules for implementation. These methodologies strongly build on formal modelling techniques borrowed from Software Engineering that are integrated throughout the whole SISP process: from planning objectives to defining IS projects. Example techniques are data flow modelling, matrix diagramming, functional decomposition, and entity relationship modelling.

Method development in the academic community has been vilified by the frameworks developed for analysing competitive advantage through IT (Section 4.1). Hence, the methods proposed from academics focus on the generation of strategic options (see Table 6) rather than the organisation wide planning and implementation of information systems as opposed to the methodologies mentioned above. Among the most recognised of these "impact" methods [LeSe88; BeBL91] are Critical Success Factor Analysis [Rock79; ShBZ85], Value Chain Analysis [PoMi85] and Strategic Thrust Analysis [Wise85]. While grounded on theoretical considerations, these methods remain largely conceptual and normative. Some of them have been proposed in textbooks [Wise85; Gall88; Hein05] and from there found their way into research papers.

Method	Underlying theoretical considerations
Critical Success Factor Analysis	In the context of IT planning Critical Success Factors (CSF) are conditions which – in the eyes of business executives - are most vital to the success of the organisation. Hence, CSF can be used to identify new opportunities to use IT as well as to prioritise IT resource allocations.
Value Chain Analysis	The value chain conceptualises the organisation as a series of activities that transform inputs to outputs. Each transformation activity bears opportunities to enhance the competitive position of the organisation. IT plays a significant role for enhancing activities that are "information intensive."
Strategic Thrust Analysis	Strategic thrusts are major competitive moves made by a firm: differentiation, cost reduction, innovation, growth and alliances. They are targeted at suppliers, customers and/or competitors as the main players in the organisation's industry. IT can be used to support or shape the enterprise's competitive strategy

Table 6: Exemplary SISP impact methods

Although methodologies for SISP have taken a large part of the academic discussion in the 1980s and early 1990s [BoZm87; LeSe88; Barl90, LeGa92], they lack empirical underpinnings [FlGo93, 300ff]. Some of them still owe proof of a successful application in practice [LeSe88]. Accordingly, Conrath, Ang and Mattay [CoAM92, 366ff.] hold that "(…) the field of [SIS] planning has a great many normative guides (…), these are based on common sense and historical perspective of what has and has not worked in the past, rather than theory." In fact, there are indications of a gap between the expectations about these methodologies and experiences organi-

sations have made in their application [LeSe88; GKQW92]. Moreover, a number of authors have pointed out that there is no one best way to strategic IS planning, highlighting the need for tailoring methodologies to the specific needs of the organisation [McFa83; GKQW92]. However, until now, there has been only preliminary insight into the effectiveness and the specificity of the different methodologies [LeSe88; BeBL91; FlGo93].

4.2.2 SISP Process

SISP methodologies can be regarded as being comprised of two interrelated features: techniques and process [Bake95, 69; Teub05]. While the process can be seen as a sequence of activities, the techniques supports the planner in carrying out these SISP activities successfully. In an early understanding, the SISP process was interpreted as the process of "SIS-Planning", i.e. planning for competitive IS (e.g., [King78; Wise85]). Later on, the term was used in a wider sense of "strategic planning for IS" comprising the full spectrum of "key analytical, evaluative and creative activities which result in a final strategic plan" [FlGo93, 294]. Taking account of both understandings, [DoMS99, 263] define the SISP process as "(...) an exercise or ongoing activity that enables organisations to develop priorities for information system (IS) development" where "applications are chosen for their alignment with business objectives or their capacity to create significant impact on the organisation's competitive positioning". Table 7 depicts seven exemplary SISP activities that [FlGo93] extracted from the process models underlying five germane SISP methodologies.

Task	Description
1. Access business goals and strategies	Consider organisational goals and strategies and the business and IT aims
2. Evaluate current set of information systems	Evaluate the strength and weaknesses of the current state of IT application and the set of information systems
3. Identify information needs	Identify the information needs of the organisation
4. Evaluate competitive business environment	Evaluate the external competitive business environment including business threads and opportunities with special interest in the competitor's use of IT
5. Assess IT environment	Assess the external technological environment, observe and evaluate technological trends
6. Define system priorities	Agree on priorities concerning the development of new systems as well as the maintenance and reengineering of old systems
7. Setup project definitions and portfolio	Define the projects to be carried out within the planning horizon in terms of objectives, budget, timetable and personnel requirements

Table 7: Activities covered by traditional SISP methodologies ([FlGo93, 294])

As an annotation to Table 7, it must be said that the nature of SISP has changed significantly since the advent of early SISP methodologies [Gall93a]. Early methodologies attempted to link SISP to business strategy imperatives in a somewhat reactive top-down way. In the 1980s, when the option generating methods proposed by academics received wider attention, a more proactive stance was taken. When the ideas of business process reengineering became popular in the 1990s, extraordinary attention was also paid to the impact of IT on business process-

es. Planning concerns widened from purely competitive concerns to the organisation's overall structure and processes [Gall93b; Earl98]. SISP also shifted from reactive top-down planning to proactively identifying opportunities to leverage the organisation through IT [KiTe00]. This involves deeper appreciation of the organisation's business model, products and services, structure and processes, human resources, values and beliefs, including the IS function itself.

4.2.3 SISP Organisation

Closely related to the SISP process is the question of how to organise the activities involved in SISP. Perhaps the most obvious question that concerns the organisation of SISP (not to be confused with the strategic organisation of the IT function) is whom to involve in the process. Initial answers to this question can already be drawn from some SISP methods which make assumptions about the participants. For example, Information Strategy Planning according to [Mart89] explicitly calls for gaining top management support while, in contrast, [DiWe85; Earl89] strongly build on user involvement. A number of studies have investigated the participants and their roles and responsibilities in SISP in more detail. Apart from IT/IS management, the following participants have been proposed to be involved in SISP (compare [SaKi95; Earl93]): top management [Ruoh91; FlGo93], end user representatives [HaKa99], and line managers [Repo94; Heck03]. Moreover, external consultants and IT vendors are seen as sources of expertise [AnTe97; Repo94; Boar94].

As soon as the participants of SISP are defined, the question of their role is raised. Roles define the expectations directed towards the participants and the competences given to them. For example, assigning the role of a "sponsor" to top management [Mart89] implies that IS/IT initiatives need support from top management level while top management is not expected to actively participate in the initiatives. Setting up a decision committee is another example [RaRa88]. Depending on the composition of the committee, authority can be shared and weighted between different groups in the organisation.

Authority \\ Strategic Pattern \\ Decision	IT Principles	IT Architecture	IT Infrastructure	Application Needs	IT Investments
Business Monarchy	Profit Growth	Profit	Profit	Growth	Profit Growth
IT Monarchy			Profit		
Feudal					Growth
Federal				Profit	
IT Duopoly	ROA	ROA	ROA	ROA	ROA
Anarchy					

Table 8: SISP governance (see [WeRo04, 137])

The discussion on the organisation of the SISP process is closely related to IT governance research. According to Ross and Weill, IT governance is the locus of IT/IS decision making authority in terms of decision rights and accountability [WeRo04]. Following this definition, SISP governance can be looked upon as the rights and accountability framework intended to encourage desirable behaviour in SISP. Ross and Weill differentiate six governance mechanisms de-

pending on the involvement of top management, IT management and line management. For example, the Business Monarchy gives full authority to the board level, while the IT Duopoly shares authority between top management and, respectively, line management on the one hand and IT management on the other. The authors further investigate the effectiveness of the different IT governance mechanisms in four strategic decision areas (compare Table 7): IT principles, IT standards, the IT infrastructure, the application needs of the business, and investments in IT/IS. They found that some IT governance structures are prevalent in organisations with superior financial performance in terms of profit, profit growth, and return on assets (see Table 8).

4.2.4 Success of Different SISP Approaches

The study by [RoWe04] uses measures for the performance of the whole organisation as indicators and proxies for the success of different SISP governance mechanisms. However, a final answer to the question of how to conduct SISP necessitates relating SISP approaches – the methods used, the processes followed and the participants involved – to success. A first stream of research on the SISP approach has investigated success factors for conducting SISP. Success factors are broadly defined in this context as “necessary conditions for successful SISP” [Earl93 5f.]. Among them are sufficient time and resources to carry out the SISP process, a qualified planning team in general and an able SISP team leader in particular, as well as a strong link to corporate plans.

The use of a planning procedure, and the right choices for it, is also important. SISP also requires a clear cut business plan as a reference point and a proper idea of changes in IT that have to be expected [LeSe88; LeSe91; AnTe97]. Other, softer factors are seen in top management commitment, good user relationships, the absence of hidden agendas and the relative power of participants [EnHG01; AnTe97; LeSe92].

Meeting critical success factors does not automatically provide a firm with good strategic plans nor does it guarantee planning success. Critical success factors are only preconditions or means to an end. If observed, they increase the chance of conducting an effective SISP process, which in turn might lead to good strategic IS plans [Ocon93]. However, causal effects are not deterministic; instead, they depend on the planning situation. Research has acknowledged the situational nature of SISP and the more theoretically interested researchers have proposed to study SISP in a situation dependent manner. Figure 6 depicts a contingency model for studying SISP success as typically used in literature ([SaZB94; SaKi95; LeSa96; Brow04].

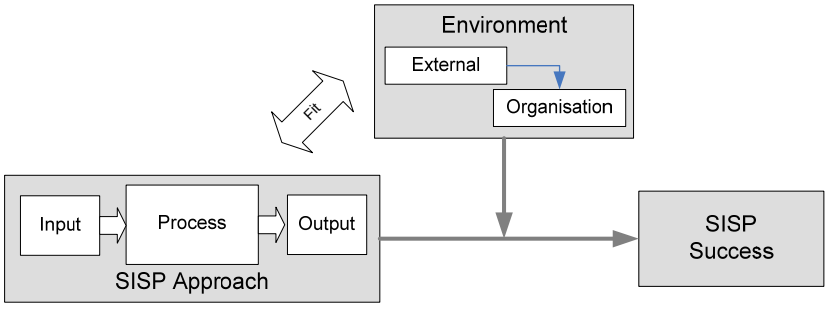

Figure 6: Contingency model of SISP success

The basic model suggests a relationship between the chosen SISP approach and SISP success. At the heart of the SISP approach is the SISP process, which is often conceptualised as converting inputs into outputs [AnSP95; Bake95; Brow04]. Inputs refer to the resources allocated to the planning process [PrKi94]. They not only include time, money, and personnel, but also information and intangible inputs such as motivations and expectations for SISP. Outputs are the deliverables of the SISP process. These deliverables determine the future IS landscape and define actions to be taken together with the necessary resource commitments. Ideally, the deliverables are tied together in an overall strategic IS plan (see Section 3.3.3).

Constructs	Example variables investigated in research
External Environment	• Industry information intensity [PrKi94] • Environmental complexity [SaZB94] • Heterogeneity of markets [SaVD93; SaKi95] • Dynamism, turbulence/stability [SaZB94; LeSa96; SaKi95]
Internal Environment (Organisation)	• Organisational structure, size and complexity [LeSa96; SaKi95; ArSa99] • Maturity and reputation of the IS department [LeSe92] • Status of IT department and rank of IT manager [SaKi95; KiTe00] • Reliance on IT [SaKi95] • Consensus between business and IT [SaZB94]
Inputs to SISP	• Understanding of strategic business plans [King78; LeSe92; PrKi94; Repo94] • Corporate objectives and driving motivations [AnSP95] • SISP knowledge and experience [King78; SaZB94] • IT and business domain knowledge [RaSe02; ArSa99; Repo94] • Top management support [RaRa88] • SISP resources [LeSa96; LeSe92]
SISP process characteristics	• SISP process followed [LeSa96; AnSP95] • Methods and tools applied in the SISP process [BoZm87; LeSe89; Earl93] • SISP process mode: rational/political, planned/emergent [SaKi95; HaLi99] • Organisation and governance of the SISP process [RaRa88; RaRa89] • Formalisation of the SISP process [SeGr99; SaLR00] • Comprehensiveness and intensity of planning [SeGr99; NeLS03; Brow04] • Rationality of decision making [SeGr99]
Output of SISP	• IT/IS architecture [Pybu83] • IT opportunities [Pybu83] • IT investment priorities [Pybu83; AnSP95]
SISP Success	• Perception / satisfaction of mangers [LeSe91] • Absence of problems [Ocon93; KiTe00] • Improvement of SISP capabilities [RaRa94; SeGr98] • Alignment between business and IS strategy [LeSa96; SeGr98; ArSa99] • Effectiveness of the IS department [Pybu83; AnSP95] • Fulfilment of critical IS needs [Pybu83] • Plan acceptance and implementation [RaRa89; AnSP95]

Table 9: Operationalisation of constructs of the contingency model of SISP success

This influence of the SISP approach on success is mediated by environmental factors. External conditions are factors outside the organisation such as information intensity of the industry or stability of markets. Internal conditions are characteristics of the organisation, but outside the scope of SISP. They include the overall organisational structure, the organisation of the IS func-

tion, or the status of the highest ranked IS manager. Table 9 depicts exemplary variables that have been investigated in the different categories of the contingency model.

4.3 Information Systems Strategy

While the process of SISP has received quite some attention in academic research, its outcome, the information systems strategy (ISS) and its content, has been widely neglected so far [TeAn00]. We found that only one of every eight papers in our sample was concerned with the IS strategy itself (see Figure 7). A similarly small proportion was reported in another study which analysed SISP literature between 1991 and 2004 [Brow04].

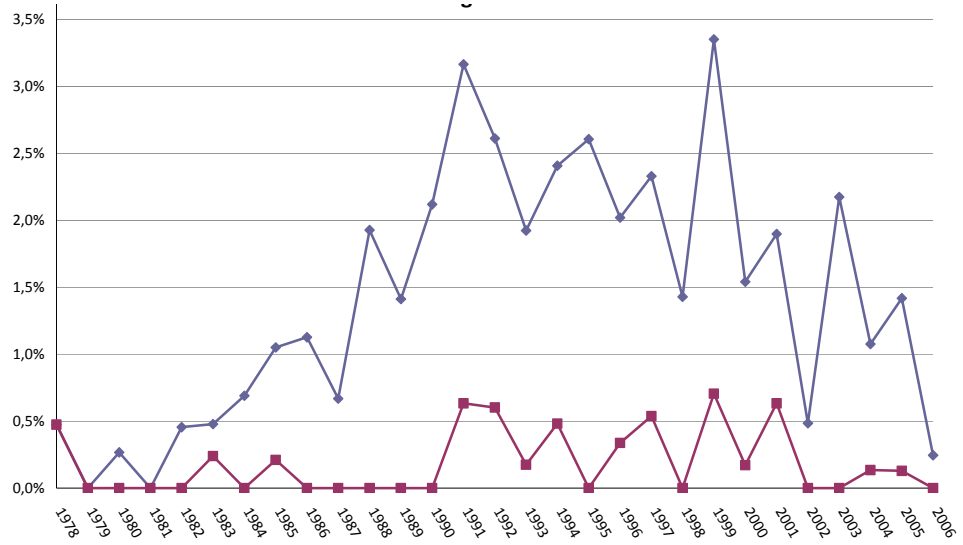

Figure 7: Share of publications information strategy contents over time

Despite the low number of articles investigating the concept or contents of IS strategy, the term (or similar terms like IT strategy [Gott99], IS strategy [Gall91], IS/IT strategy [CHBC97] or information strategy [SmPR97]) are used frequently – unfortunately very often without having defined it. Hence, rather than looking at definitions, we have tried to discern concepts of ISS instead. We view a concept as the set of assumptions that an author makes (mostly implicitly) when employing the term [FaTu98; LaMa99]. We have discerned three different concepts: IS strategy as the “use of IS to support business strategy,” the “master plan of IS function” and the “shared view of the IS role within the organization".

Table 10 characterises these four conceptions of IS strategy in four respects. First of all, the central question asked and answered by an IS strategy according to each of the four conceptions is depicted (column 2). The answer to this question in turn implies a specific benefit to the organisation which is captured in the “desired impact” (column 5). The standpoint taken (column 3) characterises both, the focus and intentions of each type of IS strategy. Lastly, the relationship to business strategy (column 4) elaborates in more detail the assumptions on how the IT strategies are linked and – in a dynamic perspective – should be aligned to business strategy.

Characteristic Conception	*Central question answered*	*Standpoint taken*	*Relationship to business strategy*	*Desired impact*	*Exemplary references*
Managerial attitude towards IT	What is our view towards the role, management, and use of IT within the organization?	Organisation-centric Normative	IS strategy is something different from business strategy. IS strategy is a general policy on an organisational level.	Provide a shared understanding across the organization to guide subsequent IT investment, management and deployment.	[Szyp81; Pfei90; Pars83a]
IT in support of business strategy	For a chosen business strategy, how can IT be used to support business strategy? In particular, how can IT be used to gain and sustain competitive business advantages?	Business-centric Impact oriented	IS strategy is subordinated to business strategy. It is an annotation to business strategy rather than a strategy in its own right	Ensure that business strategy is implemented and the desired strategic and competitive impacts are achieved.	[Attk94; HaHa97; Hoey98; Gott99]
IT master plan	What IT and related assets are needed across the organisation? How to develop and deploy IT and related assets?	Information processing-centric Buildout-oriented	IS strategy is a strategy in its own right. It is developed in co-alignment with the business strategy.	Given that IS strategy is in-line with business strategy, IT/IS shall effectively support and enable the organisations future business.	[Earl89; Gall91; HeVe93; TeMo09]
IT departmental plan	Which tasks are imposed on the IT function for the next planning period and which assets are required to fulfill these tasks?	IT department centric Strategy execution-oriented	IS strategy is a functional operationalisation of business strategy. It defines the measures and resources required by the IT department to support business strategy execution.	Identify IT assets requirements and ensure that the required assets are retrieved and effectively allocated to related tasks and responsible positions	[Lehn93; SmPR07; McLe98; BoBK05]

Table 10: Conceptions of IS strategy prevailing in academic literature

4.4 Strategic Alignment

Generally speaking, alignment is concerned with “bringing together” business and IT. Hence, some authors synonymously speak of “integrating” or “linking” business and IS in order to derive a “fit” [AJPW04, p. 223]. The need for alignment results from the historical separation of business and IT responsibilities, the latter being delegated to dedicated IT personnel.

What distinguishes Strategic Alignment from traditional views of “linkage” and “fit” is a fundamental shift from an operational orientation towards a more strategic one; taking account of the external marketplace and the future requirements concerning IT/IS resources and the IS organisation [HeVe93, p. 12; Teub06]. A number of authors hold that alignment is not an issue of its own right arguing that the separation of business and IS planning in SISP research is somewhat artificial. For example, [Smac01] asserts that IT is persuasive in business and thus should not be conceptualised as being separate from it. Saying this, he denies the common assumption that there is a need for ex post alignment.

Besides few critics, the need for strategic alignment has been largely acknowledged from the outset of the academic SISP discussion on. Galliers and Newell [GaNe03] even call it a central tenet of much of SISP theory and practice. In line with this claim, methodologies for SISP make explicit reference to business strategy and its link to IS strategy making without exception. The traditional methodologies proposed in the 1980s start from the assumption that business plans and goals form the basis for the strategic IS plan (see Section 4.2 and Table 7). These approaches follow a sequential top down way of integrating business strategy into IS strategy which has been criticised as being static, reactive and unidirectional [LeBa03; KiTe00].

While the term “strategic alignment” was used only sporadically in the 1980s, it became a common term in the 1990s. The concept was further elaborated and the notion of linking business and IS strategy changed significantly. Firstly, a number of authors call for a more dynamic understanding of strategic alignment, focusing on the integration of the planning processes rather than linking the outcomes (e. g. [Burn96; AJPW04]). Secondly, the unidirectional notion of strategic alignment was given up in favour of bidirectional linkages between business planning and IS planning (e.g. [TeAn99; TeKi97; TeKi99; LeBa03]).

The shift from unidirectional to bi- and multidirectional alignment linkages can be exemplified with the “Strategic Alignment Model.” The time when Henderson and Venkatraman first published their seminal article on this model [HeVe93] also marked the beginning of an intensified academic debate (see Figure 8). While acknowledging the unidirectional top down integration of business and IS strategy, the authors argue that this ‘traditional’ way of alignment might be inappropriate in some planning situations. As research on IT and Competitive Advantage (Section 4.1.2) has already suggested, there are situations in which IT opportunities shall be used to impact the competitive position of the organisation and hence influence its business strategy. Consequently, IS planning should not be associated with business planning only unidirectionally, but bidirectionally [LeBa03] and reciprocally [KiTe04].

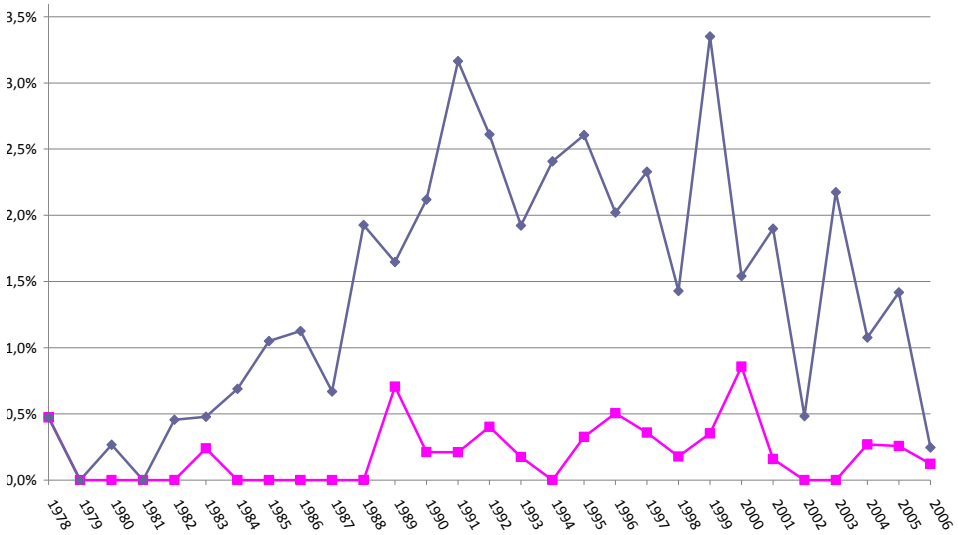

Figure 8: Share of publications on Strategic Alignment over time

Figure 8 depicts publications which explicitly deal with and make investigations into, strategic alignment. Early publications are predominantly conceptual. They introduce the notion of strategic alignment and propose models and frameworks which are often illustrated with examples [HeVe93]. Latest publications have also made efforts to define the constructs involved (business strategy, IT/IS strategy, strategic alignment) more precisely and assessed them empirically [SaCh01; Luft03]. In addition to the publications in Figure 8, the idea of strategic alignment has also entered publications on IT and competitive advantage and on the SISP approach.

In fact, the general idea of alignment has become popular in the academic and business press alike. Hence, we have to acknowledge that there is a larger debate on the alignment of IT and business in general as opposed to alignment on the strategy level ([CHBC97] and [ChHC98] for example, investigate how IT is actually used by the business). However, the often vague and multi-faceted use of the term allows for construing “alignment” extensively so that it is in danger of becoming meaningless (“aligned IT” being used synonymously with “good IT”, at least if we accept that IT should be used in accordance with business demands).

4.5 Strategy Implementation

Strategy implementation has received by far the least attention in the SISP discussion (see Figure 2). This is not to say that strategy implementation is not a significant concern. Quite the opposite is true. Ward and Peppard [WaPe02, p. 127] make the point when stating: “Despite an understanding of the importance of strategic planning for IS, in the past decade many organizations have developed perfectly sensible IS strategies that have been left to gather dust, or have been implemented in a half-hearted manner (…)”. For example, a survey by [LeSe88] found that after about two years into the planning horizon, less than one fourth of the projects that were defined in the IS strategies had been initiated. A study of Norwegian organisations revealed that after five years only 42% of the projects that were defined in the strategy had been implemented [Gott99b]. In both cases, implementation was measured in terms of project initiation and completion, respectively. Stricter implementation measures such as “completion in time” or “realisation of intended benefits” [Earl93, 3] result in even smaller implementation ratios [Gott99a].

Enablers	Inhibitors
Comprehensible and well communicated strategy	Inscrutable concepts, poorly communicated plans
Strategy defines architectural standards and investment priorities, identifies actions to be taken and allocates the resources needed	Strategy is a “technical playing ground” rather than an overall plan, does not include an implementation plan, resources not defined or available
Clear link to business objectives and strategy, clear notion of business impact	IS strategy not in line with the overall direction of the firm, relevance to business not visible
Strong board level commitment, line management commitment and user involvement	Missing or waning initial commitment, lack of management interest, organisational resistance
Anticipation of environmental changes, periodic questioning and adaptation of IS strategy	Dynamic changes in the external environment
Responsibilities for implementation properly defined	Responsibilities ill-defined or assigned to people who lack authority to enforce realisation

Table 11: Enablers and inhibitors to information strategy implementation

Strategy implementation is an important and growing concern for research since shortcomings in strategy implementation lead to failures in meeting SISP objectives, missed opportunities, or inefficiencies through incompatible systems or waste of resources [LeSa96]. Research has already identified important inhibitors and enablers to the implementation of IS strategies (see Table 11 for an overview). Some researchers see inhibitors in characteristics of the IS strategy itself [LeSa96; Gott99a]. Others find the most important barriers in vanishing peer commitment, ill-defined responsibilities, and problems in measuring benefits [EnHG01; Wils91]. The latter may also be the case if the persons in charge of implementation do not have the necessary authority to enforce implementation projects. For example, a software project manager may have the authority to ensure successful software development while having problems enforcing organisational changes in the business units necessary for successful software implementation and embedding. Further inhibitors are a lack of skills and resources to implement the plan. Moreover, a dynamically changing business environment that makes strategies obsolete [Wils91; HLSZ03].

5 Conclusions and Desiderata for Future Research

The discussion on SISP started in the early 1980s, peaked in the 1990s, and has declined thereafter. Does that mean that the discussion has come to an end? We have tried to demonstrate that this in fact is not so: researchers' decreasing attention to the topic is contrary to practitioners' concerns. The continued interest of practitioners as shown in the annual "top issue lists" of IT executives [WKGB97; MPCT05; Luft05; LuKN06] clearly indicates the relevance of additional research on SISP: how else can it be explained that even after more than 25 years of research, the same topic keeps drawing IT executives' attention?

It is noteworthy that the German Wirtschaftsinformatik (WI) marginalises SISP in both research and teaching. There is a scarcity of original research publications on SISP in the WI discipline and a lack of empirical studies from German speaking countries [Brow04, 26]). We also found that German textbooks on Information Management recognise findings from Anglo-American research, if at all, only occasionally and in fragments (see for example [VoGu01; Stic01; Hein05; Krcm05; BiMR04; BiMR07]). Saying this we acknowledge that the German WI perceives itself more as an engineering-oriented discipline as opposed to the Anglo-American IS discipline which is predominantly behavioural. Accordingly, it is reasonable to take an additional look at original German research such as that on information and business engineering methodologies or enterprise architecture [HeHR96; Teub99; ÖsWi03]. And in fact we find that the architectures and methodologies put forward in German publications include a strategic level which dwells with translating business strategies into IS architectures. However, the assumptions underlying the strategic levels of architecture planning and business engineering mostly remain implicit and lack validation. Moreover, our literature review shows that neither the IS strategy nor the strategic planning process are made concerns of their own in Enterprise Architecture and Business Engineering research.

But which significant unresolved issues have to be addressed most urgently by academics? The knowledge map developed in this report may act as a basis for finding blind spots in the academic debate. In a nutshell, the areas that received most attention are related to the competitive impact of IT as well as the process of conducting SISP (approach, method, tools). Strategic IS/business alignment has also been a substantial concern. In contrast, very little research has been done on the content of the IS strategy resulting as the output from the SISP process and its implementation. Figure 9 depicts the conceptual links between the fields of research described in this article. IS strategy is an output of SISP (SISP approach following a certain process and organisation, using certain tools etc.). The impact of the IS strategy, such as competitive advantage, may only be achieved through the implementation of an appropriate IS strategy. Finally, IS strategy can – at least conceptually – be distinguished from its counterpart on the business side, i.e., the business strategy. The reconciliation of the IS strategy with the business strategy has spawned the topic of alignment. It is also for this reason that we have included business strategy in our framework, though it is not an original concern for IS research. However, business strategy and strategy planning have implications for the SISP approach, IS strategy itself, and the impact of IS strategy.

Figure 9: Research framework

In terms of prioritisation, we consider it worthwhile to revive SISP research by focusing on the IS strategy itself for two reasons: first, IS strategy has received only a little attention thus far, and secondly, IS strategy assumes a central position in the field of SISP (see Figure 9 above). Accordingly, we cannot expect to set up a good theory of SISP in the absence of a sound understanding of IS strategy and its contents. It is good common sense that we must understand an intended outcome before we can define useful ways to produce this outcome. If this is at least partly correct for SISP research, a better understanding of the IS strategy, i.e. the “what” to achieve, could well stimulate further research on the process, i.e. the “how” to achieve the “what”.

Theoretical deficits such as this certainly present a barrier for SISP research [LeSa96]. Thus, building a theoretical basis for SISP with IS strategy at its core would provide significant benefits for future research. Moving towards a comprehensive theory of SISP requires an integration of present partial theories (e. g. theory on competitive advantage) and strong research efforts in the future. Combining the German normative, task-oriented approach with the Anglo-American problem-oriented approach might even help to push SISP research further, if the cultural differences can be overcome, where integrating the two perspectives might lead to a more complete understanding of SISP. Starting with a normative concept of IS strategy, which is grounded in reasoning and existing partial theories, and then contrasting it with (and finally adapt it to) practitioners' SISP problems might indeed be a fruitful proposal to revamp SISP research.

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