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Alexander Teubner
University of Muenster

Martin Mocker
University of Muenster

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CONTENTS OF INFORMATION STRATEGIES IN PRACTICE

Martin Mocker, European Research Center for Information Systems, University of Münster, martin.mocker@ercis.de

Alexander Teubner, European Research Center for Information Systems, University of Münster, alexander.teubner@ercis.de

Abstract

Information strategy is a top-priority issue in practice. Consequently, some research efforts have been devoted to related topics. So far, the focus has been on the Strategic Information Systems Planning processes as well as on IS/IT and competitive advantage. However, basic questions regarding the content of information strategy have not been investigated and have only been answered only in a normative manner up to now. This paper aims at a better understanding of the contents of information strategies in practice through exploratory interviews.

Practitioners distinguish between two different levels of information strategy. On a business level, information strategy was driven by the question of how to support business with information technology and systems. Moreover, companies with a divisional structure also formulate corporate information strategies that are concerned with coordinating the IS/IT activities across the enterprise. Regarding content, we identified several decision areas that were addressed by the information strategy of the investigated companies. We found that corporate information strategies were devoted to setting standards and defining mechanisms to coordinate and govern the enterprise wide IS/IT responsibilities. Business information strategies were much broader and also included decisions on the application landscape and its functional support for the business, on organizational plans for the IT unit or on IS/IT investments.

Even if on the same level, information strategy content differs from company to company. However, we also found a number of recurring patterns. For example, the pattern of information strategy as a 'governance policy' puts forward regulations and guidelines for managing IT. This pattern was prevalent on the level of corporate information strategy. The 'marketing strategy' pattern is about the image and role of the IT unit vis-à-vis the internal customers. Finally, the 'departmental plan' pattern sets the focus on the resources and the tasks, organization of the IT unit.

A comparison the decision areas identified in our research with those discussed in academic literature leads us to conclude that the academic discussion is far from practical concerns. For example, while using IS/IT to gain competitive advantage is a core topic in the academic discussion it was almost inexistent in our cases. In contrast, practitioners strongly emphasize decisions such as standards, which are almost ignored in the academic discussion. Our paper concludes with possible explanations for gap between research and practice. It also outlines the challenges for future research required to further investigate and potentially close this gap.

Keywords: Information Strategy Content, IS/IT Strategy Content, Strategic Information Systems Planning (SISP), IT and Competitive Advantage, Strategic IS/IT Decisions.

1. Motivating Information Strategy Content Research

Information (systems/technology) strategy[1] is a top-priority topic in practice. As such, strategic planning of IS/IT is among the highest-ranking issues on management agendas (Galliers, 1993; Watson et al., 1997; McGee et al., 2005; Luftman et al., 2006). Another indication is given by the existence of columns in practitioner magazines and of practitioner conferences dedicated to the topic information strategy (examples are the column "IT Strategien" in Computerwoche, a weekly German computer magazine or respectively the annual practitioner conference "Strategisches IT-Management" hosted by Handelsblatt, a German daily business newspaper). Finally, it is not unusual to find managers holding positions such as "head of IT strategy" in practice, expressing that this topic deserves dedicated treatment and requires additional resources.

Maybe also due to its prominence in practice, some research efforts have been devoted to this topic. While a broad range of issues has been discussed, many articles focus on the process of formation rather than on the content of information strategy. For example, Brown (2004) found that only 26% of articles are concerned with the content while 84% address the process of formation. Teo and Ang (2000) confirm that "most research seems to focus on the IS planning process itself […] rather than on the output […]", i.e. the "strategic plan"[2]. When developing an information strategy, organizations make a number of strategic IS/IT decisions. Without going into detail on what is 'strategic', we refer to information strategy content as those IS/IT related decisions that are made as part of an information strategy – regardless of whether they were planned systematically in a process or not.

We suggest to group those articles that may be used to learn something about information strategy content into two streams: one is concerned with the relation of IS/IT use and competitive advantage (for a recent review cf. Piccoli & Ives, 2005). These articles are grounded in theories such as Porter's extension of industrial organization theory (a.k.a. the Market-Based View; e.g. Porter & Millar, 1985; Porter, 2001) or the Resource-Based View (e.g. Wade & Hulland, 2004). However, they address the content of information strategy only implicitly. What can be learned from this stream of literature is that the IS/IT decisions of highest strategic importance are regarded as either identifying so called strategic information systems (SIS, i.e. IS to gain competitive advantage) or identifying, nurturing and employing IS/IT resources to support business initiatives aimed at competitive advantage. The other stream directly addresses the content of information strategy but makes heterogeneous[3] suggestions that are only poorly argued. Here, we find a number of very different proposals that are either normative or supported by nothing but common sense. There is basic consensus that the application portfolio is a core part of strategy. Such a portfolio according to Lederer and Sethi (1992) "might embrace the selection of prosaic applications" as well as "new applications with the potential to create an advantage over competitors". Galliers (1991) criticizes the focus on the portfolio by stating that "no longer should organizations be looking simply for a prioritised portfolio of information systems applications as the sole outcome of the process". Lacking a better concept he defines "IT strategy in a broad sense to incorporate the range of issues associated with strategy formation and implementation with respect to information systems". Such a vague definition has resulted in a number of enumerative lists of decisions to be included in an information strategy ranging from hardware plans to facilities plans (e.g. Conrath et al., 1992; Das et al., 1991; Lederer & Salmela, 1996). Earl (1989; 1996; 2000) proposes a more structured model by distinguishing IS, IT and information management (IM) strategy. Admitting that many parts of his proposal are still "conjectural" (Earl, 1996, p. 491) he suggests to distinguish between the "what" (IS), the "how" (IT) and the "wherefore" (IM). Brady et al.'s (1992, p. 187) "research reveals that delineating between the three [domains of Earl's model] is infrequently done by organizations".

In fact, there are indications that there is only a weak connect between what research and practitioners consider as part of an information strategy. Analyzing the topics discussed under the label information strategy (the term "IT Strategy" seems to be more common in practice) at practitioner conferences and in magazines reveals a difference between research and practice. Most frequent "IT strategy" topics in Computerwoche in 2005 included technology standards (37 articles), IT cost reduction (16 articles), IT security issues (9 articles) and IT provider management (11 articles). All these topics have not frequently been attributed with strategic relevance in research so far (cf. Doherty & Fulford,

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[1] We use the term information strategy in analogy to the term information management since it is meant to encompass other concepts such as information systems (IS) and information technology (IT) strategy. In practice, the term IT strategy is more popular.

[2] Markides (1999, p. 6) supports this notion saying that "despite the obvious importance of strategy and despite decades of academic research on the subject, there is surprisingly little agreement on what a strategy really is […]". If this statement holds true for business strategy it is likely to be even more accurate for information strategy.

[3] The use of different terms for the supposedly same concepts supports this notion: Lederer and Salmela (1996) use the terms "strategic information plan" and "IT strategy" – regretfully without explaining the differences between them. The latter term is used by Gottschalk (1999) as well. Chan, Huff and Copeland (1997) use the terms "IS strategy" and "IS/IT strategy" while Smits, van der Poel and Ribbers (1997) use the term "information strategy".

2006 on the neglect of strategic security issues in research). This notion is confirmed but not substantiated by earlier research on "strategic IT issues" reporting "differences within and between organizations, but particularly in comparison to the academic literature" (Brady et al., 1992, p. 183).

Our research strives to uncover and unravel the notion of information strategy in practice by providing insights into the content of information strategies. A better understanding of information strategy in practice is important for research for two reasons. Firstly, it can potentially provide a fresh impetus for research to address information strategy issues that have not been covered yet. Secondly, it is a precondition for analyzing the gap between academic literature and practice and a prerequisite for bridging it.

From this broad aim, we derived three more detailed research questions:

1. What is the content of information strategy in practice, i.e. which are the decisions regarded as part of an information strategy?

2. Are there differences and similarities (patterns) of information strategy content across companies?

3. How does information strategy content in practice compare to the proposals found in academic research literature?

The research approach taken to unravel the notion of information strategy in practice is outlined in section 2. Section 3 describes the results of our research; here the attention is put on the inter-company differences and similarities in information strategy content (cf. research question 1 and 2). In section 4, we discuss and compare our findings with those in academic literature (research question 3). We conclude by make suggestions for future research required to further investigate and eventually improve the situation described above.

2. Research Approach

To answer the research questions, we used exploratory, qualitative, open interviews. This approach was chosen for two reasons: Firstly, we are interested in getting deep insights practitioners' original understanding. To explore and really comprehend the "what's" and "why's" of information strategy content in practice, a qualitative approach is more suitable than a quantitative approach (Cropley, 2005, pp. 37, especially p. 49; Miles & Huberman, 1994, pp. 5). Practitioners can reveal their understanding, use and reasoning of information strategy in a face to face discussion much better than it would be possible using quantitative approaches employing questionnaires. In using a qualitative approach, we follow other researchers (e.g. Brown, 2004, p. 27) who state – again with an eye towards the current situation in research – that "it may be appropriate for more theory-generating research to be conducted, employing qualitative techniques […]". Secondly, the state of research described in section 1 would not allow generating strong hypotheses on information strategy content that could be tested solely quantitatively. The level of ambiguity in information strategy terminology and concepts suggests a bottom-up, theory-independent, exploratory approach.

We decided to use expert practitioners instead of other practitioners or even information strategy consultants. Talking to consultants might not result in a picture of information strategy thinking in practice because consultants' thinking might be as far away from practice as academic thinking is. Talking to non-expert practitioners might lead to insufficient or 'thin' data, since they might not have spent much thinking on information strategy. We stated in section 1 that some practitioners present their concepts of information strategy in conferences, have published them elsewhere or even formally hold the title of "head of IT strategy". These practitioners can be expected to deal with the topic information strategy not only marginally but as one of their core tasks. They can be seen as experts who have already devoted much thinking to information strategy. Through presenting their understanding in conferences or publications they are also likely to shape the understanding of other practitioners. Consequently, it is also appropriate to start with these experts when turning to practice regarding the above mentioned questions. To receive a broad overview, we selected companies with diverse backgrounds (regarding industry, size, IT organization). Table 1 summarizes the research sample according to these characteristics.

Table 1.   Research sample

Industry	Revenue[4]	Title of participants	Organization of IT
1. Insurance	2 bn.	Director IT Strategy	Sub unit of "Accounting & IT"
2. Insurance	2 bn.	Director IT Development	Main department
3. Health care	4 bn.	CIO	Profit center unit
4. Public institution	n/a[5]	Director Information Systems	Main department
5. Telecommunication	50 bn.	VP Corporate-IT-Management	Profit center unit & distributed across BUs
6. Investment Bank	24 bn.	Director IT Department	Main department
7. Logistics	17 bn.	Global Head of IT Logistics	Profit center unit & distributed across BUs
8. Universal bank	320 bn.	Deputy Head of Corporate IT Strategy	Profit center unit & distributed across BUs
9. Transportation		Head of IT Corporate strategy	Profit center unit & distributed across BUs
10. Pure online bank	48 mio.	Head of IT strategy	Fully outsourced, only two staff members remaining
11. Transportation	23 bn.	Head of Corporate IT strategy	Profit center unit & distributed across BUs
12. Financial services	3 bn.	CIO and Chief Process Officer	Main department
13. Ceramics manufact.	1 bn.	CIO, Director of IT Department	Main department
14. Financial services	50 bn.	CIO, Director IT Department	Main department

In total, we conducted 14 interviews. Each interview took around two hours. All interviews except two phone interviews were conducted at the respective company's site. All companies are headquartered in a German speaking country. Four companies are active only in their respective country the others are engaged in Europe or even globally. The interviews were conducted in German as this was the native language of the participants. We started each interview by asking the interviewee to give a brief overview of the company's situation and business strategy with a special focus towards the IS/IT situation. If the interviewee did not turn to information strategy content himself, we asked which IS/IT decisions were considered to be strategically relevant within the company. This gave way to a discussion on the content of information strategy.

We also asked for the content of previous information strategies, whether it had changed over time and if so why it did so. We went on by asking for reasons for viewing this decision as strategic. We also checked the oral descriptions of the content with potential documents at the site[4]. Eventually, we transcribed the recorded interviews and conducted a qualitative content analysis following Mayring (2003). For each interview we coded the decisions and reasons. To better understand what the interviewees really meant, we also applied the logic of the hermeneutic circle (e.g. Klein & Myers, 1999, pp. 71). Accordingly, our analysis moved from an understanding of individual statements on strategic IS/IT decisions to the participant's overall understanding of information strategy. The analysis also took note of the participant's context (e.g. his position in the organization, the organization's business strategy and situation in the industry), in order to better understand and frame the participant's statements.

3. Findings: Information Strategy Content In Practice

Overall, the experts were very open to share their thinking on information strategy content with us. Many of those who documented their strategies additionally provided us with or gave us temporary access to their official information strategy documents and presentations, at least on the level of the table of contents.

The following findings present the decisions identified through interviews as being part of information strategies. The inter-case comparison also reveals certain differences and similarities (patterns).

In total, we collected 99 individual decisions which we grouped into 12 decision areas <A full list of the individual decisions and their mapping to decision areas can be provided as an appendix to this article if two further pages would be accepted>. We arrived at this grouping by first clustering decisions related to the same object (e.g. application, set of applications, technical infrastructure, personnel, finance). However, it became apparent that the object alone is insufficient for distinguishing the decisions for our purpose. For example, the decision to exchange a number of applications because of unsatisfactory functionality, the general decision on the use of standard vs. custom-built software and the decision on which applications to include in the

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[4] This helped us to focus on what Argyris (1976) calls practitioners' 'theories-in-use' rather than their 'espoused theories' which might include 'wishful thinking'.

application portfolio are certainly all decisions on a set of applications. However, the nature or kind of decision (e.g. a principle, a prioritization, an allocation/distribution decision, a guideline for action, etc.) differs fundamentally: the first decision is about functionality, the second is about introducing standards in terms of rules and the last one is about an investment decision. Hence, by combining both, object and nature of decisions, we identified the 12 homogeneous decision areas:

a. **Application landscaping decisions** are related to the functional scope and composition (in contrast to technical design) of the application landscape as a whole. Looking at the application landscape means looking at a blueprint, i.e. a holistic view of the applications required to support the business. This aims at answering the question of which applications are needed or need to be changed in order to support the business: "So we developed an IT strategy that was more like a plan for building out IT – with which solutions do we support the business in order to […] reflect the growth [targeted by the business strategy] […]" (case 3).

b. **Application systems standards** are decisions on the standardization of application systems in functional (process) domains such as accounting or billing. Here the question is not 'which functionality is needed' but rather e.g. "for which process domains can we use standard software and where should we use custom-built software" (case 5). Another sample decision is provided by case 7: "[…] we conduct mail business […] in different countries, in very different facets – you have to make the decision once on whether we want to standardize, do we believe we can standardize that, yes or no".

c. **Technical architectural standards** are concerned with the high-level technical structure underlying the application systems and the technical infrastructure. Architectural standards are rules, policies or guidelines that any application or technical solution has to follow: "[…] no one could bypass that. Like in Germany 'everybody is driving on the right lane'" (case 3). Examples include the choice of databases or operating systems to use or the type of architecture (e.g. host-based vs. browser-based, service oriented architectures vs. monolithic architectures)

d. **IT process standards** provide guidelines for developing or operating applications and the technical infrastructure. These may be guidelines on how to manage the lifecycle of applications (e.g. evolutionary vs. big-bang changes), which process standard to use for IT operations processes (e.g. ITIL), project management (e.g. PRINCE2) or software engineering (e.g. V-model vs. RUP)[5].

e. **Investment decisions** neither focus on the functional nor on the technical side, but on the prioritization of the allocation of financial resources to concrete initiatives (although functional and technical criteria might serve as a base for this decision). The decision involves a trade-off between different requests e.g. for projects to build applications or technical infrastructure. The main decision object is the application/project portfolio: "The focus of the documents or the IT strategy work in the business units actually is the portfolio […] with mid- to long-term projects […] the decision on which applications so to speak get into the portfolio and will then be […] developed" (case 11).

f. **Budgetary decisions** are the decisions on the overall volume of the budget for IT as well as the general apportionment of the budget to business areas or to the budget categories such as personnel, hardware/software investments, external service provision, etc. The question here is 'how much do we want to spend on IT' and 'how do we want to distribute the overall budget to different categories' (in contrast to 'which concrete initiatives should we fund'): "[this decision includes] we use […] 70% of our resources directly for business areas and we use 30% of our resources for the infrastructure. […] The [resources for business areas] could then be further partitioned by saying: we use 30% of the portfolio for the topic 'monetary politics' […]" (case 4).

g. **Decisions on launching IS/IT projects that directly support business strategy** are on engaging in individual projects that are considered relevant for business strategy: "[Whether introducing an application is strategic] depends on what we are talking about. If we talk about an accounting reporting software, then I'd say, that cannot be strategic […] if it is really [an application for] business scope extension […] than it gets strategic relevance quickly" (case 6).

h. As for any functional department, the IT unit's human resources and their organization must be planned in order to allow efficient conduct of the required activities. The decisions related to these plans are laid down in **human resources and organizational plans of the IS/IT unit.** Decisions include the IT unit's organization into sub-units, its personnel and their skills: "how do we develop our [the IT unit's] employees, which core competencies do we see in our employees, how do we ensure employee training" (case 13).

i. **Decisions on the role of the IS/IT unit** determine the self-conception of the IS/IT unit (e.g. as a service provider, technologist, consultant, etc.) that it communicates and enacts towards stakeholders. These decisions affect the positioning of the IS/IT unit towards the business areas and the board of directors, towards its employees and to external stakeholders such as external customers (e.g. should the IS/IT unit serve the external market or not) and potential competitors for providing IS/IT services (e.g. 'providing services at competitive price with ongoing benchmarking' (cf. case 13)). The purpose of decisions is marketing the IS/IT unit towards different stakeholders: "the mission expresses in which area we [the IT unit] are active. The vision [of the IT unit] […] is the eventual expression of strategy. Which by the way is a very attractive vision for the employees [of the IT unit] here. So really showing a way forward" (case 4).

j. **Rights and accountability decisions** regulate the way in which IT decisions are made within the organization. This involves foremost the distribution of internal responsibilities for decision rights among different stakeholders within the overall organization and thus goes beyond the IT unit itself. This distribution might be among IT and business stakeholders as well as among corporate and business unit level stakeholders. Rights and accountability decisions also include the introduction of IT

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[5] ITIL = IT Infrastructure Library; RUP = Rational Unified Process, PRINCE2 = Projects in Controlled Environments

control mechanisms such as introducing service level agreements or charge-out provisions for IT services: "I […] always see IT strategy in connection with Governance. […] it determines who is allowed to do what, how are budgets determined, how investments, all these regulations" (case 8).

k. **Sourcing decisions** are related to the allocation of IT activities between the company and external parties. Only those activities that are not outsourced are potentially conducted by the IT unit. Hence, this decision area goes beyond decisions on the IT unit. In contrast to rights and accountability decisions, sourcing decisions concern the distribution of responsibilities among internal and external stakeholders and thus cross the boundary of the organization.

l. **Risk mitigation plans and policies** are concerned with avoiding or alleviating technical threats to business continuity, data privacy or security. In comparison to architectural standards their aim is more specific than ensuring a technically sound architecture. They address "[…] issues such as disaster recovery work. If something massive happens, how quickly are we able to support the business again?" (case 7)

While most interviewees looked at information strategy from a business perspective, some (cases 5, 7, 8, 9, 11) had a dedicated corporate perspective. The latter were not looking at supporting any specific business, but overlooking a set of businesses[6]. Thus, we separated these two groups in our analysis.

Table 2.   Information strategy content by case

Content of information strategy (decision areas)	Cases														
	Business unit and/or functional level										Dedicated corporate level				
	1	2	3	4	6	10	11	12	13	14	5	7	8	9	11
a. Application landscaping		2	3					2	1						
b. Application standards			1	2				1			2	3		2	
c. Architectural standards	3	1	3	3	3	3	2	2	3		2	2	3	2	2
d. IT process standards		2		2	3			2			1			3	2
e. Portfolio/investment							3		2	2			1		
f. Budget			3	3		1				2	1				
g. Strategic IS/IT projects					1										
h. HR plan/orga. of IT unit				3	1			2	3	3					
i. Role of IS/IT unit		1	3	3					3						
j. Rights & accountability		3	2	2	3						3	2	3	3	2
k. Sourcing			1	3		3	2	1	3		1		1		
l. Risk mitigation				2		3		1				2			2

We differentiated three degrees of coverage. A decision area was rated with low coverage (1) if it was only mentioned as part of the information strategy, but not particularly emphasized or only covered by making principle decisions (e.g. 'Sourcing ' was rated '1' if it was covered in the information strategy only by the principle that "we prefer 'buy' over 'make'" (case 12). We rated a decision area with medium coverage (2) if at least some very basic decisions were made or if larger parts of the decision area were covered. We assigned a rating of high coverage (3) if a decision area was covered extensively in the respective information strategy (e.g. by considering multiple important decisions within the decision area). If the decision was not mentioned or was explicitly stated to be strategically irrelevant we did not assign any coverage mark. The degrees of coverage of the decision areas for each case are shown in table 2.

3.1. Findings By Decision Area

Analyzing decision areas across cases (row-wise analysis of table 2) reveals that different companies emphasize different decision areas in their respective information strategies. We discuss those decision areas that were most frequently addressed as well as those that were taken care of least frequently.

We found standards to be on the information strategy agenda in almost all cases (only cases 2 and 14 have a coverage mark below 2). The interviewed companies look upon standards as an important decision area for two reasons: firstly, because choosing a technology standard is a long-term binding decision and a guideline for subsequent decisions: "you cannot change architecture decisions just like that […] you cannot change that tomorrow or the day after tomorrow all the time. […] And thus, these are

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[6] The interviewee in case 11 provided both perspectives. For this reason, case 11 appears in both groups in table 2 separately.

guidelines that simply have relevance, long term durability [...]" (case 13). Secondly, architectural rules are seen as a necessary countermeasure for the "short sighted view of the business". Without them, infrastructure would soon become a "very costly technology zoo" (case 8).

In contrast, decisions concerned with the application landscape, the application portfolio were less often on company's information strategy agenda. We hardly found companies that were concerned with launching strategic IS/IT projects, not to speak of this being a central issue.

There is a clear difference between dedicated corporate information strategies and business information strategies as regards the strategy content in our sample. Corporate information strategies concentrate on co-ordinating the organization-wide (business unit overarching) management of IT, e.g. by setting architectural and application systems standards or by issuing rights and decision rules. This was also recognized by the interviewees. They stated that they looked at decisions that have "visibility beyond business unit borders" (case 7). Such decisions aim at 'gaining company-wide synergies regarding IT' (cf. case 9) or answer the question on 'how much can I standardize across business units' (cf. case 5). Functionality (decision area 'a') or investment prioritization ('e') is not a matter of dedicated corporate information strategies. When these decisions are affected, corporate information strategy is restricted to projects that go beyond business unit borders (e.g. introducing a corporate-wide Enterprise Resource Planning (ERP) system, case 8). These decisions rather happen on the level where the functional and domain expertise is, i.e. the business level. The same holds true for decisions concerning the IT unit (decision areas 'h' and 'I'). They are made in the IT units themselves, not on a corporate level.

3.2. Patterns Across Decision Areas

First of all, analyzing table 2 case-wise (i.e. column-wise) reveals differences in the decision areas included in the information strategies of the 14 companies. The breadth of information strategy content ranges from very narrow and limited (e.g. case 1) to very broad and differentiated information strategies (e.g. case 4).

Thus, at first sight, information strategies do not exhibit a common structure. A dominant design is obviously lacking. Instead, information strategy content seems to be idiosyncratic to the respective organization. But we could still identify a number of non-exclusive patterns (similarities or regularities). This is to say that any company can adopt more than one pattern. Still, we illustrate the patterns with prototypical examples from the cases. Three patterns were most prominent: 1. information strategy as the marketing strategy of the IT unit; 2. information strategy as a departmental plan; 3. information strategy as an IS/IT governance policy.

The pattern '**information strategy as the marketing strategy of the IT unit**' is found prototypically in cases 3 and 4. They exhibit a very strong emphasis on budgetary decisions and decisions on the role of IT. In both cases, information strategy mimicked business strategy with the IT unit being regarded as a 'business within a business'. The information strategy then is a strategy for addressing the internal market of the company. In fact, the format of the information strategy is partly analogous to that of a business strategy: it addresses e.g. the mission and vision, definition of the customers, products and pricing, potentially even a way for positioning the IT unit against 'competitors', i.e. external IT service providers. This notion of information strategy as a marketing strategy can even go as far as to include decisions on whether the IT unit should serve the external market (case 3). Then information strategy becomes business strategy itself as the IT unit is perceived as a business of its own ('running IT like a business'). A prototypical description of the content of an information strategy following this pattern is provided by case 4:

> "[...] For us, IS strategy always consists of those [...] aspects listed here [...] Eventually it all ends in a 'mission' and 'vision'. [...] The 'market' [another aspect] includes customers [the internal customers of the IT unit, i.e. the business units] and products [services provided by the IT unit]. It is not so much the third dimension, which is often cited, the distribution channels [referring to investment committees that are used to 'sell' the products of the IT unit to the 'customers', i.e the business unit]. Distribution channels don't play such a role for us. Then from the 'market' we then look at 'product structures'. Here, I translate what the customer sees into complex product structures that we have internally. This is about architecture [...] For all these elements we define components of the strategy [...] This is our philosophy of the world, how we think about [IT] strategy"

The pattern of '**information strategy as a departmental plan**' is driven by questions such as 'what do I have to do to fulfill the targets set for the department' and 'which resources do I need for this' from the point of view of the IT unit. The first question sets an agenda for the IT unit in the form of a project portfolio. The second question defines the financial (i.e. budgetary plans) and human resources (i.e. HR plan) that are required to satisfy the work plan. Though case 14 is a prototypical case for this pattern, we also observed it in other cases (e.g. cases 3, 4). In fact, every IT unit has to make these departmental decisions somehow, but the respective decisions are not always looked upon as strategy:

> "Then from the 'market' we then look at 'product structures'. Here, I translate what the customer sees into complex product structures that we have internally. This is about architecture [...] Product structures that are underneath, that are

of course not visible to the customer as a whole – this is rather all internally. From the product structures we turn to 'delivery organization' with the static and dynamic organization, with its process structure that needs to be optimally designed to deliver the 'product structure', which we deliver in turn to the 'market'. Underneath the 'delivery organization' are the individual resources, most importantly 'staff with its skills' […]". (case 4)

When studying this pattern, we found that it is commonly misleading practitioners to concentrate on issues of the IT department rather than on IS/IT as a company-wide resource. For example, company targets such as cutting cost get translated into the information strategy as cutting the IT unit's budget rather than as using IT to cut cost in other business areas via process automation (which would increase the IT budget but cut cost somewhere else).

A third pattern is characteristic for corporate information strategies: here, we observe a very strong emphasis on all kinds of standards (application systems, architectural and IT process standards) paired with an emphasis on rights and accountability decisions. Standards as well as rights and accountability decisions are ways to regulate the decision making regarding IS/IT within the company. Thus, **information strategy** is seen **as an IS/IT governance policy**. Yet, this pattern is not only found in corporate information strategies, but also in business information strategies. In case 6, the rights and accountability decisions included were labeled 'business driven' as they included the set up of an investment committee whose members were business unit heads. Previously, the investments were decided by the IT unit. Thus, while the way how decisions are made is regulated in favor of business, the intention is still to 'regulate': "everybody has to follow that process". Decisions on architectural standards such as on using a standardized platform (e.g. in case 6 one built around Unix and Oracle) for all core systems allowed fulfilling business decisions "without having to build up a new infrastructure all the time" whenever a new business requirement comes in. Thus, architectural standards are seen as a necessary counter-balance to fulfilling business requirements as they make the case for sustainability and cost-efficiency. Without them, the IT architecture would soon be so messy that business requirements might not get fulfilled any more or only at an unbearably high cost. Thus, defining rules for IT is an important part of the long-term sustainability, although only indirectly related to business strategy.

4. Discussion: Comparing Practice With Research

Comparing practice with research reveals that information strategy in practice is concerned with other themes than those addressed in academic literature. As mentioned in section 1 academic literature on information strategy puts much attention on identifying SIS or strategic IS/IT resources. Yet, the decision on how to gain competitive advantage by using IT was hardly a concern in the diverse companies we interviewed. Even on a corporate level, the question is not 'how can IS/IT be used to extend the scope of the company or to gain synergies[7] from our current scope?', but on gaining IT synergies regarding IT, e.g. by standardizing IT processes, etc. Looking at the decisions described in section 3, most refer to 'managing IT' rather than 'using IT'.

Another expectation raised by literature was an emphasis of information strategy on the application portfolio (see section 1). But only five strategies in practice included this decision to some extend. In all of these cases, the application portfolio was seen as the interface to the business. Other cases did not include setting up a project portfolio in their information strategies. This is not to say that projects were not planned at all, but they were planned project-by-project. In these cases, the business areas requested cost estimates from the IT department as a basis for initiating a project. As one of the interviewees (case 3) said: "I follow Adam Smith in stating that the [internal] market will cure itself." Most of these companies lacked an overall investment plan for the application portfolio as a whole.

There is some literature that suggests information strategy to be a "functional strategy" (e.g. Lehner, 1993; Smits et al., 1997; Adler et al., 1992; Smits & van der Poel, 1996). The authors do not explain in detail what a functional information strategy is and what should be included. If the original concept of functional strategy from management literature (e.g. Newman et al., 1989; Vancil & Lorange, 1975) is transferred to information strategy, we would expect departmental concerns to be settled in this strategy. Indeed we could identify a similar pattern called 'information strategy as a departmental plan'. But this pattern was not as dominant as could be expected from literature. As stated above there was only one case (14) that exhibited this pattern in its pure form.

We found that information strategies are formulated on two different levels that we called business and corporate level. This distinction of levels has hardly been discussed in literature so far. There are only few hints in this direction. For example, Andreu et al. (1992) propose a normative model for integrating strategic business planning with strategic IS/IT planning. This model starts from business planning. Here it distinguishes between a corporate and business unit level as elaborated in strategic

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[7] Besides competitive advantage, scope and synergy are other elements of strategy. While competitive advantage is in the focus of business strategy, corporate strategy focuses on scope and synergy. For example, Porter (1987, p. 43) proposes that "corporate strategy is what makes the corporate whole add up to more than the sum of its business units", which is the common definition for synergy.

management literature (originally, it was introduced by Vancil & Lorange, 1975). Doing this, the authors also distinguish a corporate and a business unit level of strategic IS/IT planning. However, the consequences for the content of information strategy have not been addressed in literature so far. As we pointed out in the previous section, the content of corporate information strategy differs fundamentally from the content of business information strategy in our research sample.

5. Conclusions and Outlook on Future Research

In summary, our research supports the initial hypothesis that there is a gap between information strategy research and practice. Given that the Information Systems discipline accepts the challenge of offering practical help to managers, researchers have to analyze the reasons for such a disconnect: Has research not succeeded in transferring its insights into practice? Has research ignored relevant concerns? Did research even loose touch with practice?

We found some support for answering these questions affirmatively. From our sample, only three practitioners used academic sources (Carr, 2004; Weill & Ross, 2004; Bernhard et al., 2003) for information strategy formation at all. The reasons provided for ignoring academic sources were: "our situation is too special here" (e.g. case 3), i.e. the concepts from academia were regarded as being either too general or – referring to case examples given in literature – too specific to be applicable. Another respondent stated: "I have to think it through myself anyway" (case 4) indicating that academic literature does neither seem to be reliable to him nor can it be used to gain credibility in the boardroom. Instead, in our cases practitioners often used reports by analysts and consultants. In some cases, information strategy formation was perceived more as a question of convincing top management than of having a sophisticated plan for the future of IS/IT. Here, consultants expertise had much more weight than academic literature. The following statement illustrates this point: "Typically you get consultants in to develop the IT strategy document. And the next three years you continue it yourself until you realize: okay, now we need a fundamental change and get consultants back in. Thus, you systematically do not need any literature, because the crucial point for people dealing with IT strategy […] is to have an aid for convincing why you want to do it the way you do. And the best aid for convincing is of course you have McKinsey or Cap Gemini or Arthur Andersen in the company or something. Then you do not need to do a lot of convincing any more. Put in simple words, this is what's behind it" (case 11).

Better accessibility to and transfer of the results of academic research might soothe the problem. However, this is only a precondition for academic work in order to receive more attention and appreciation in practice. But it has become obvious from our research that important practical concerns in information strategy making are ignored in the academic discussion. This is not to say that academia should adopt its research agenda for information strategy without reflection. There is a certain risk in directing research to whatever practitioners demand. For example, Galliers (1995) questions more generally for information management as a whole the "extent to which the research agenda should be dictated by concerns in the world of commerce and industry". One reason he provides for this is that "IT directors too readily follow the latest 'silver bullet' and are taken by the hyperbole surrounding certain of the management fads" (Galliers, 1995). In other words, current IT trends might influence practitioners' understanding of information strategy which should not be fed back to research uncritically – just take the example of the recent e-commerce hype.

We conclude that research should not adopt information strategy topics from practice if there are no good reasons for doing so. Such good reasons may be derived from the arguments given by practitioners for putting IS/IT themes on their strategy agenda. These arguments can analyzed for validity from a theoretical standpoint. In our research, we collected a number of arguments. Some of the most prominent are provided below:

- **Applying business strategy terms to IT**: Here, strategy terminology, such as mission, vision, decisions on the scope (i.e. products and markets) etc. is used to structure information strategy. This kind of reasoning is also found in literature on information strategy (Henderson & Venkatraman, 1999). However, we found that while the terms are transferred, the underlying theory gets lost in a number of cases. For example, the idea of defining product market domains is mapped to the definition of company-internal customers of the IT unit (case 4 and 14). In contrast, the question of how IT options might affect the choice of the company's overall scope is not addressed.
- **Applying characteristics of strategic decisions to IT**: In contrast to an often superficial application of strategy terms, some respondents used criteria from strategy theory (e.g. long-term binding, irreversibility, influencing subsequent decisions, novelty/fundamental change, company-wide impact etc.) to identify those IS/IT decisions that deserve strategic consideration. These need not necessarily be formulated in common business strategy terminology.
- **Direct relation to business strategy**: Few respondents argued that the closeness to business strategy is the main criterion for making an IS/IT issue strategic. From their point of view, a company's business strategy sets certain requirements (e.g. following a low cost strategy or growth through regional expansion) which IS/IT helps to fulfill. One example would be to cut cost through the use of IT to automate when following a low-cost business strategy.
- **Criticality of IT to business operations**: Problems in IT infrastructure might have severe impact on business operations. Some interviewees (case 7, 13) viewed the measures to mitigate these risks as strategic (e.g. decisions concerned with

introducing disaster recovery). The question is whether all decisions that cause severe operational problems should be considered strategically relevant.

Whatever the definite reasons are, academics have to be careful when working on information strategy as long as the disconnect between practice and academia exists. Not only that research might investigate the wrong things. Traditional quantitative research will deliver misleading results if respondents think about something completely different from what is meant by the researcher. More exploratory research in close touch with practitioners is needed before research can develop comprehensive theories of information strategy.

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