Assessment of information strategies in insurance companies in the Netherlands

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Abstract

This paper describes the information strategies of three major insurance companies in the Netherlands. A research model was developed as an aid to describe how managers nowadays deal with information strategy. We report on the linkages between information strategies and business strategies, the roles of the stakeholders involved, and how the results are perceived. We found that in all three companies the executive board, IT management and line management are heavily involved in the information strategy process. The main focus in the three companies is on adjusting IT to business goals and processes, with only some attention directed towards creating a competitive advantage with IT. With respect to the effects of information strategy, we found that none of the three companies systematically evaluate the effects of information strategies on an organizational or a business process level. More case study research is required to look into the evolutionary changes of information strategies within organizations, and the effects of information strategies on the business processes and the use of IT over time. © 1997 Elsevier Science B.V.

Keywords: Information strategy; Information systems strategic planning; Case studies; Insurance companies

1. Introduction

The concept of "strategy" carries several connotations. Its roots in military tradition indicate innovative leadership and bold visions. Anthony (1965) has defined strategic planning as the definition of goals and objectives. Ansoff (1984) sees strategy as a

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mechanism for coping with a complex and changing environment. Mintzberg (1980) views strategy in five different ways: as a plan (rules leading to a goal); a ploy (a trick to beat competitors); a pattern (a way of behaving); a position (a safe place); and a perspective (a vision, a set of assumptions). Andrews (1980) defines strategy as: "the pattern of decisions... that determines... goals, produces principal policies and plans and defines the range of business".

In general, the concept of strategy relates to corporate strategy, which is the strategy that guides the corporation or enterprise as a whole. Business units within large organizations have business strategies related to their specific product-market situation (Porter, 1987). From corporate or business strategy derives the notion of functional strategies such as marketing strategy, manufacturing strategy, personnel strategy, financial strategy and information strategy. Of interest are the linkages between the functional strategies and the business strategies. Specifically, business strategy and information strategy can be linked in several ways (Parker et al., 1989; Henderson and Venkatraman, 1993).

In this paper we investigate whether these (theoretical) linkages exist in organizations with a substantial level of sophistication and interest in information management. We describe how managers in these organizations formulate information strategies in practice, which stakeholders are involved, how it links to business strategy, and how the results are perceived. This is done within the context of previous information strategy activities, looking for possible changes in the approach to information strategy. Our purpose is to learn how information intensive organizations make plans with respect to the demand and supply of information, and how this relates to the planning of IT. The research question in this paper is three-fold: (i) how can the practice of information strategy in an organization be analysed; (ii) what is the actual practice in the insurance industry; and (iii) how does information strategy relate to business strategy?

After scanning the literature we decided to carry out case studies within a small number of organizations, based on interviews with both IS managers as well as general managers, in order to provide a richness in understanding strategy that cannot be obtained via a survey approach (Chan and Huff, 1992). We describe the planning process for information strategies as well as the contents of the plans, as suggested by King (1988) and Walsham and Waema (1994). A framework to analyse an organizations information strategy was derived from the literature and used to gather information from both informants and secondary sources, e.g. company documents. The following section summarizes the information strategy literature, while Section 3 provides an overview of the model used in this research. The final two sections use this model to analyse the information strategy within three major insurance organizations and compare the findings with related research, respectively.

2. Literature on information strategy

Information strategy began to attract interest at the beginning of the 1970s, and many terms have been used since then to address the alignment of information systems and business strategy. Similar terms are, for example, information systems strategy (ISS), information systems strategic planning (ISSP) and strategic information systems planning
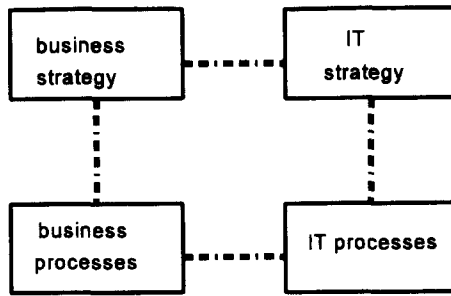
Fig. 1. Strategic alignment model (Parker et al., 1989; Henderson and Venkatraman, 1993).

(SISP). For an extensive review of the literature we refer to Earl (1989), Ward et al. (1990), Galliers (1993) and Fitzgerald (1993).

A frequently used term, related to information strategy, is strategic information systems planning (SISP), defined as "the process of deciding the objectives for organizational computing and identifying potential computer applications which the organization should implement" (Lederer and Sethi, 1988). However, Galliers (1991) views information strategy as only a part of SISP, together with information technology (IT) strategy, information management (IM) strategy, management of change strategy, and human resources strategy. Earl (1989) sees SISP as a combination of information systems strategy (aligning IS with business goals, and exploiting IT for competitive advantage), IM strategy and IT strategy.

In this study we used the term information strategy, and define it as: "a complex of implicit or explicit visions, goals, guidelines and plans with respect to the supply and the demand of formal information in an organization, sanctioned by management, intended to support the objectives of the organization in the long run, while being able to adjust to the environment". The definitions might look similar, but strict comparison shows that the SISP definition tends to focus on explicit objectives and on applications and technology. Our definition concentrates on the use and importance of information in an organization, starting with the planning of information (in the end influencing IT, as well as influenced by IT). Therefore we preferred this definition as a starting point to investigate how contemporary organizations deal with their needs for information and the planning of IT. The other three definitions mentioned were subsequently used to complete the research model and to develop the questionnaires, as described in Section 3.

Of particular importance is the linkage between the information strategy and the business strategy in an organization (Parker et al., 1989). Henderson and Venkatraman (1993) propose the strategic alignment model (Fig. 1) covering the linkages between four domains in an organization: (i) the business strategy domain (BS); (ii) the business processes domain (BP); (iii) the IT strategy domain (ITS); and (iv) the IT processes domain (ITP). They distinguish two main perspectives on how the alignment between the domains can take place. In the first perspective business strategy is the driving force for BP or ITS, ultimately affecting ITP. In the second perspective IT strategy is the driving force for ITP or BS, ultimately affecting BP.

We have analysed the linkages between information strategy and business strategy in
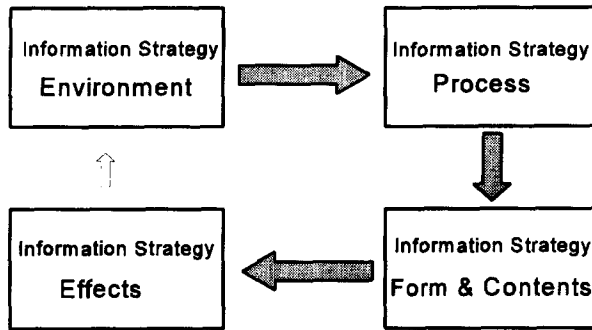
Fig. 2. Research model describing four components of information strategy.

several ways: by looking at the attitudes of senior managers (as a part of the information strategy environment), by analysing the information strategy process (with roles, methods and coordination), by analysing the content of the strategy, and by looking at how the effects are evaluated. As a support for these analyses we used the research model, explained in the next section.

3. Research model

The purpose of the model is to provide a framework for case study research into the actual practice of information strategy in contemporary organizations. We wanted to use the model as guideline for structured interviews with managers from various departments and levels, and as a framework to categorize the findings. The model used in this study focuses on four issues: environment, process, form and content, and effects of information strategy. The four components of the model are related to each other in several ways. The main relationship is that the environment influences the process which produces the content (being the output of the strategy process), which yields the effects, which change the environment (the impact or outcome of the strategy) and so close the loop.

There is a fair amount of similarity between this model and the input–process–output (IPO) model of King (1988): the planning process (P) converts several inputs (I) from the environment into a set (O) of mission, objectives, strategies, goals, resource allocations, information architectures and strategic programmes. The main difference is that the IPO model is more prescriptive (specifying components and relationships that should exist in SISP) whereas our model is descriptive and intended to provide structure to the collection of data from interviews and company documents.

The model in Fig. 2 is based on the ideas of contextualism (Pettigrew, 1987) to consider a strategy in terms of three interrelated components: context, process and content. In contextualism, the main focus of research is to trace the dynamic interlinking between aspects of the components over time. This can be done via longitudinal studies, or, as in the present study, by in-depth retrospect analysis of case material and interviews (Orlikowsky and Baroudi, 1991; Walsham and Waema, 1994). One important link is how previous strategies affect the actual environment, and how this again influences the

Table 1
Summary of the information strategies in three insurance companies

Information strategy				
Components/aspects		In company A	In company B	In company C
Environment	Position in the industry	Second tier	Dominant/niche	Top
	Main distribution channel	Bank	Direct writer	Intermediaries
	Special factor	Recently merged	About to merge	Partner in ADN
	Company revenue	$2000M	$2000M	$3000M
	Employees	2000	2000	4000
	Business strategy	Explicit, known	Explicit, known	Explicit, known
	Internal organization	Product oriented	Market oriented	Product oriented
	Management attitude to IT	Positive	Very positive	Very positive
	IT expenditures/ revenue	< 2%	> 2%	< 2%
	Existing architecture	Central/decentral	Two tiered	Centralised
Process	Process type	Mech/problem	Political/mech	Mech/ political
	Overall methodology	No	No	No
	IT scanning	Yes	Informal	Informal
	SWOT	Informal	Occasionally	Informal
	CSF	No	Occasionally	No
	Role top management	Dominant	Active	Active
	Line management	Active	Active	Present
	IT management	Active	Dominant	Dominant
	Planning specialist	One	–	–
	External consultant	–	–	–
	Alignment	Yes	Yes	Yes
	Impact	Not clear	Yes	Yes
	Organizational learning	No	Some	Some
Form and content	Time horizon	Five years	Three years	Three years
	Scope	IS/IT	IS/IT/telecom	IS/IT
	Objectives	Very specific	Explicit	Implicit
	Systems architecture	Evolving	Extensive, clear	Implicit
	Technical architecture	Evolving	Clear	Clear
	Organizational architecture	Clear	Clear	Clear
	Rules, alliances	Implicit, few	Implicit, few	Implicit, strict
	Plans	Projects	Projects, budgets	Projects, budgets
Effects	User satisfaction	Not measured	Not measured	Not measured
	Project results	Evaluated	Evaluated	Evaluated
	Bottom line results	Not measured	Tentative	Not measured

strategy process and content. In our model, the context is split into the information strategy environment and the information strategy effects. In this way we could discriminate in our interviews between: (i) "circumstances influencing the strategy process"; (ii) "effects and impact of current and previous strategies"; and (iii) "how (ii) influences the current process".

In the case of information strategy, contextualism encompasses also the relationships between aspects of information strategy, the IT processes, the business strategy and the business processes (Fig. 1). A comparison of our model with the model in Fig. 1 shows that we focus on four components of information strategy, and that business strategy, business processes and IT processes form parts of the two (left side) components. Together these two form the context of information strategy. In Sections 3.1, 3.2, 3.3 and 3.4 the aspects of the four components of the model and the linkages are described in more detail. An overview of the aspects of the four components is given in Table 1.

3.1. The information strategy environment

The environment is defined here as all those facts and conditions which are not part of the information strategy itself, nor of the information strategy process, but that can or should influence either of those. There are two distinct views in the literature on factors that are important in the environment. One view categorizes organizations, and describing factors common to all organizations in a category. The second view does not try to group organizations, but just lists environmental factors.

The first view is, for instance, contained in the strategic grid (McFarlan, 1984), namely that conditions in the industry in which a firm operates largely set the scene for its information strategy. The external conditions in the line of industry determine the amount of strategic importance of current and future IT applications for organizations in the industry. Explicit emphasis on the environment is also described by Earl (1989), who distinguishes four types of companies with particular traits and preferences for IT, labelled as delayed, drive, dependent and delivery.

The second view in the literature encompasses those authors that search for ''success factors'' (or the inverse: ''causes for failure''), to the extent that they attempt to relate the success or failure of information strategies to external factors. Many authors pay attention to specific factors, and several authors give lists and descriptions of factors, such as ''clarity of corporate strategy'', ''IT planning resources'', ''IT budget'', ''future impact of IT'', ''present impact of IT'' (Premkumar, 1992); ''internal and external political power'', ''importance of information'', ''experience in planning'', ''attitudes to change'' (Hopstaken and Kranendonk, 1985); ''uncertainty of IS benefits'', ''availability of IT'' (Wilson, 1989).

In the context of this study it is not possible to investigate all potential influences, but we provide some structure by dividing the environment of information strategy in four aspects, as shown in Table 2:

Table 2
Four aspects of the environment of information strategy

	Technological environment	Organizational environment
External environment	IT opportunities	Position in industry
Internal environment	IT resources	Nature of the organization

IT opportunities. These do not indicate only hardware, but also the capabilities of contractors and available services. As IT expands and breaks into sub-specializations, organizations might want to use some form of technology scanning to evaluate the capabilities.

The position in the industry, also including competitive and cooperative forces at work in the industry, such as market segmentation and barriers to entry or existing EDI networks.

The nature of the organization includes simple to measure factors such as the size and the financial results of the company, but also factors more difficult to express, such as the organizational structure, the nature and clarity of the corporate strategy and the awareness and attitude of senior management towards IT.

The IT resources reflect past investments in systems, hardware, procedures and people. They are the results of previous information strategies and now determine the competence of the organization to realize the chosen strategy. A specific category is formed by the resources available for the information strategy process, in terms of time, manpower and organizational attention.

3.2. The information strategy process

The information strategy process describes the way in which the information strategy is created or changed. The process dimension of information strategy is borrowed from the step by step methodologies summarized by Theeuwes (1987), King (1988), and others. Added to this are ideas about the importance of the linkage between corporate strategy and information strategy, in the form of ''impact'' and ''alignment'' (Parker et al., 1989; Henderson and Venkatraman, 1993). This component of the model also distinguishes four main aspects.

An overriding aspect is what is called *process type* (Earl, 1993). Here we employ the typology of Schwenk (1988), who distinguishes three types of strategy processes. First, the mechanical type describes a typical mechanistic approach: strategy is the result of a systematic stepwise process, consisting of the right people in the right positions, one group being the engine and another group manipulating the steering wheel. Second, the problem-oriented type describes strategy as the result of the more informal and continuous (learning) process of seeing opportunities and solving problems. Third, the political type describes strategy as the result of personal, political power relations in the organization. A typical statement of a manager in the political model, indicating the personal power and culture, is ''IT strategy?, that is me!''.

The core of the information strategy process is defined on the one hand by *methodologies and tools* and on the other hand by *participants and their roles*. These two aspects are closely related, as methodologies often imply certain tools and roles. Methodologies, such as, for example, BSP (Zachman, 1982), typically divide the process in a number of steps and also define the tools or instruments that should be used, such as SWOT analysis (Johnson and Scholes, 1989) or CSF analysis (Rockart, 1979). An important determinant of the information strategy process is the distribution of the responsibility and the roles between the main participants in the process. A distinction is generally made between top management, IS management and line management, but participation by outsiders such as

consultants or planning specialists may also be a factor. Two other issues stand out and require attention in this context: the use and functioning of steering committees and the mechanisms used for, and the effectiveness of the linkage between business strategy and information strategy. Both issues have recently been the subject of research (Feeney and Edwards, 1992; Saaksjarvi, 1994).

The final aspect is how and to what extent *organizational learning* is explicitly recognized as part of the strategy process. Presumably, organizations will always learn something from strategic experiences. The question we asked here is whether any mechanisms such as controlled experiments, executive seminars or analysis of the results of previous strategies are part of the information strategy process? The use of such learning activities has been described by Ruohonen (1991) and Lane (1992).

3.3. The information strategy form and content

Ideas about the form and content of an information strategy were derived from several models from the literature, describing relations between IS, IT and organization. The form of the information strategy defines some formal characteristics, such as the degree of formality, regularity of the documentation, the number of documents and pages used for expressing and communicating the strategy, and the time horizon (Mintzberg, 1991).

The content describes the subject areas or "issues" for which the strategy is meant to provide solutions or directions. This is likely to be reflected in the contents page of the strategy documentation. The main aspects of the content of the information strategy are scope, objectives, architectures, rules and plans (e.g. Earl, 1989). *Scope* denotes the range of specific types of IT covered in the information strategy (for example, only transaction processing and management information systems, or also telecommunications, office automation or manual information processing) (Blumenthal, 1969; Theeuwes, 1987). *Objectives* are conceived as specific and quantified. They are the targets set for the information function, and the linkages between these targets and the business objectives (Parker et al., 1989; Scott Morton, 1991). The *architectures* can be divided into three parts: systems (or applications), technical and organizational. The applications architecture is sometimes equated to the information strategy and may indeed be the core of it. The technical architecture defines the hardware elements that support the information strategy, notably in the form of an infrastructure. The organizational architecture indicates the distribution of tasks and responsibilities for IT and IS (Theeuwes, 1987). *Rules* include guidelines and standards (or policies) which set a framework for decisions, such as a hurdle rate for investments. It also includes alliances, an increasingly important category of rules concerning make-or-buy decisions (Parker et al., 1989). *Plans* in an information strategy are normally limited to priorities and budgets and do not include detailed designs and project plans (Theeuwes, 1987).

3.4. The information strategy effects

It is important to have effective information strategy planning and effective information strategies, in order to obtain effective IT in organizations (Henderson and Sifonis, 1988; Fitzgerald, 1993; Premkumar and King, 1991). However, measuring the effects of

information strategies is very difficult, for several reasons, typically related to the evaluation of strategies in general (King, 1988).

First, there is the time aspect: effects cannot be determined reliably at one moment in time, nor over a fixed period, because the effects can vary significantly over the year(s). Secondly, there is an allocation aspect: it is very difficult to allocate the costs, benefits, people, products, etc. to the specific effects of the information strategy. Thirdly, there is an evolutionary aspect: the information strategy in organizations changes over time, and can only be examined by using "historical documents" or by "looking back interviews". Both are highly subjective sources. Fourthly, there is the scope aspect: the effects of an information strategy can be measured from several scopes of vision, such as:

- the (narrow) scope of one systems development project as result of the information strategy;
- the (narrow) scope of changes in the business strategy as results of the information strategy;
- the (intermediate) scope of the performance (quality) of the systems development function;
- the (intermediate) scope of the performance (quality) of a specific information system; and
- the (broad) scope of (all) information services in the organization (Laudon and Laudon, 1996).

The aspects for which each scope can be measured range from user satisfaction to costs and profits, or market performance of the business unit or the entire organization. We have asked the respondents "if and how the effects of information strategy are measured".

3.5. Research method

The model is an aid during the interviews, and structures the description of the information strategy in an organization. It is not a normative model, giving a prescription for the most effective strategy. The model was used to develop two questionnaires to be used in interviews with managers involved with information strategy. The first questionnaire is highly structured (along the aspects of the four components of the model as described in Sections 3.1, 3.2, 3.3 and 3.4), and contains open ended as well as "yes–no" questions. It is intended to obtain both factual and attitudinal information from people functionally involved with information strategy (typically IS managers and functional managers). The second questionnaire consists mainly of open-ended questions. It leads from questions about factual decisions taken in the previous years to the discussion of the value and appreciation of information strategy. The second questionnaire is intended to steer interviews with top-executives. These relatively open interviews are held after analysis of company documents and the interview results of the first questionnaire. The second questionnaire deals with:

- the key (IS related) decisions taken in the previous years (reasons, effects);
- the information strategy process and the roles of different parties in the organization; and
- the value of the information strategy activities.

The following procedure was followed to investigate the practice of information strategy in each insurance company.

Step 1:   Structured interviews (based on the first questionnaire) with the senior IS manager and a senior manager(s) from the business domain.

Step 2:   Analysis of written materials (information plans and business plans). The plans are also screened for approximately five specific key decisions.

Step 3:   An interview with a member of the executive board (based on the second questionnaire).

Step 4:   All collected materials were used to write a detailed case description.

Each interview was taken by two interviewers. The results of each step were returned to the respondents for comments and adjustments. The final result is a validated case description, describing and assessing the information strategy from different perspectives. This procedure resembles the Delphi procedure (Turoff, 1970), whereby several persons are interviewed individually and afterwards confronted anonymously with the variety of responses. Based on the comments, the case descriptions are adjusted several times, until it is acceptable to the parties involved. In the three cases we investigated all respondents gave feedback at least once, participated sincerely, and added notably to the case descriptions. By following these procedures a validated view is obtained from complex subjects such as strategy (Turoff, 1970).

3.6. Three cases in a competitive environment

To select suitable cases for our purpose, we looked for: (i) substantial organizations, with a vested interest in information systems, so that it may be expected that both concepts and practice of information strategy are reasonably familiar; (ii) a branch of industry or commerce where information plays a substantial role; and (iii) independent organization or business unit with complete or near complete control over its own information strategy. These criteria resulted in the selection of three organizations in the insurance industry, identified as A, B and C. To provide some background about the insurance industry, a sketch of the competitive environment is given below.

Insurance is a sizeable industry in the Netherlands. The total insurance market (excluding pension funds and health insurance) in the Netherlands is nearly $2000 per inhabitant, in total about $30 billion per year. The insurance market in the Netherlands is dominated by about 10 large firms. Insurance companies differentiate themselves through their distribution channels. An insurance company can sell its policies by means of "direct writing" (directly to the public and to professional clients), or via "agents" or independent intermediaries, such as brokers, shops or banks. In particular the bank channel has become very important due to the recent changes in Dutch legislation which has permitted closer cooperation between banks, insurance companies and other financial institutions. As a consequence of the new legislation, several insurance companies have entered into mergers or alliances with banks.

The opening of the Common Market has broadened competition amongst insurance companies in Europe. This has been a factor in the trend towards greater concentration in

the industry, as evidenced by takeovers and mergers between insurance companies on a national as well as on a European scale, combining specific (niche) markets and distribution channels.

The primary process of an insurance company relies heavily on information processing. Next to data processing in the back office, recently communication technology has also been used to link the various parties in the value chain. Of importance is the development of the "assurance data network" (ADN). ADN is a value-added wide area network between insurance companies and their intermediaries. Insurance companies are also known to experiment with and use other advanced information technologies, such as the linking of voice and data processing facilities, and the use of expert systems to support decision making.

4. Findings

In Section 4.1 we give a relatively detailed description of our findings on the information strategy in company A. In Section 4.2 we summarize the findings in the three companies.

4.1. Company A

4.1.1. The information strategy environment

Company A is a large-to-medium sized insurance company, located and active in the Netherlands and dominant in certain niche markets. In 1991 its revenue was over $2000 million and it employed over 2000 people. It has traditionally strong links with one of the large banks in the Netherlands and the offices of that bank form an important distribution channel. In 1991 the company made profits of around $70 million, and it has had a steady development of revenue and profits during the period under investigation.

The corporate position of company A has changed significantly over the last few years. The volume of business has more than doubled, partly by growth, and partly by takeover of specialist and regional competitors. In the wake of the changes in the legal framework for financial and insurance organizations in the Netherlands, the company has entered into a complex merger with a large bank, thus formalizing and intensifying the already existing cooperation. The merger has been reflected in the appointment of some new directors.

The interviewees indicated that they considered the corporate mission and objectives of the company to be clear and well known. Corporate objectives are established annually by the board of directors after an extensive and formal process of consultation. This process was instituted in 1989 and involves a cycle of documentation, conferences and review. Top-management appears to be well aware of the importance of information technology and intend to promote its use, as witnessed by the following statement in the annual report over 1991: "Information technology is of increasing importance in the financial services industry. An important competitive advantage can be created by making the company distinguish itself from other service providers by means of Information technology".

The main organizational structure of company A consists of a division life insurance and a division short-term (damages) insurance. These divisions have profit responsibility

and have their own directors. There is a department of organization and information (O&A) which has a central responsibility for information systems and automation resources. Overall responsibility rests with the Board of Directors. One of the directors holds the portfolio "automation". The incumbent has held this position since 1992.

The O&A department consists of around 150 people, including one staff position for strategic planning. A few years ago, when it was last reported, automation expenditure was 2.3% of revenue. Until 1985, the IT infrastructure consisted of large (IBM) mainframes. Since then, separate facilities for office automation have been added and a network of PCs and workstations has been installed. Recently, the data communication facilities with the offices of the partner-bank are being strengthened.

4.1.2. The information strategy process

The first impression of the information strategy process was of a mechanistic process type. The production of the annual "information plan" is part of the strictly formalized and scheduled corporate planning process. Plans are conceived and written by O&A management and are (after extensive comment by other departments) sanctioned by the board. This was the way in which O&A management saw information strategy. However, subsequent discussions brought to light that during the year many new initiatives with a highly strategic content were taken. This usually happened in response to problems or suggestions from one of the operating divisions and was debated at board level. The portfolio holder in the board of directors played an active role in this. In this sense, the information strategy process was at least partly of the problem-driven type.

Company A did not use a "commercial" methodology for information strategy, but from time to time used methods such as environmental scanning and SWOT analysis in a more or less formal manner. The O&A department participated in the information strategy process through involvement of the senior manager and of the special staff assistant. Their role was largely to analyse and to make proposals. Line managers from other departments influenced the process directly and indirectly, by making their needs and wishes known, sometimes to the point of insisting on a particular solution. The board had a very significant input and involved itself frequently and emphatically. There were no consultants involved, but there was a beginning of harmonization with the partner-bank. There was some attention to organizational learning, e.g. in the form of an evaluation of the effects of plans, but there was little evidence of conscious development or exploitation of experiences.

4.1.3. The information strategy form and content

There is much emphasis on formal documentation. Four planning documents were studied, covering the period 1986–1997, in total 218 pages. The plans cover information systems and office automation, but not telecommunication. The planning documents cover overlapping periods of 3–5 years. The plans are explicitly anchored in the corporate strategy and make reference to the corporate goals. Increasingly explicit goals and objectives are specified for the IS function, particularly in the most recent planning document. The plans give much prominence to application system development, without demonstrating a clear application architecture. Most attention goes to the production-oriented systems. There is no explicit attention to systems for competitive advantage, but implicitly this is present in attention to cost saving and close cooperation with the partner-bank. The

hardware architecture or the organizational structures form implicit parts of the plans, but are not explicitly developed. There is some apparent tension in the jurisdiction over decentralized hardware and systems staff. Over the years the responsibilities slowly shift to the operating divisions, but the manager O&A retains overall responsibility.

Rules and controls are most of the time not a point of discussion in the plans. There is no mention of a steering committee or any other rules or mechanisms to guide IS efforts. However, the last plan specifies quantitative goals that are intended to be evaluated at the end of the planning period. There is a two-vendor hardware policy, but other forms of alliances are not discussed. The increasingly close relationship with the partner-bank is accepted as fact.

To characterize the strategic issues with which the management of company A was most concerned, four key decisions that dominated the information strategy agenda in the past few years were identified. They were:

1. Continuous support for the company-specific client/server model for interaction between corporate offices and intermediaries. Though the real costs had exceeded the original budget by many millions of dollars, the company had stuck to the concept and expected to reap the benefits in terms of competitive position in the next few years.
2. Partial decentralization of control over system development resources, which gave the operating divisions control over priorities for system development, leaving the IS department in a secondary role.
3. Deviation from the in-house development tradition by purchasing a comprehensive application package for the life insurance division.
4. Initiation of discussions with the partner-bank about information strategy issues. This might eventually lead to a decrease in the level of independence of the information strategy.

Finally, the manager O&A indicated his concern about the tension over the distribution of responsibilities for IT by adopting the battle cry "Divide et impera" ("distribute and control").

4.1.4. The information strategy effects

Company A has developed a substantial IT infrastructure in the course of time. The core of the hardware architecture is formed by the central mainframes with the attached terminal network. More recently some decentralized processing capability has been added. The application architecture is extensive and has been painstakingly developed over the years. However, the application architecture no longer satisfies the requirements, and there is substantial pressure to make rapid amendments. To this end experiments with software packages have been initiated, started and managed by the operating divisions. These pressures on the application architecture are largely due to new ways of doing business, particularly through the relationship with the partner-bank. Due to these pressures, the O&A organization is also under pressure. The new demands often do not match the available capabilities and the general atmosphere is certainly not relaxed.

Company A carefully screens and justifies all IT projects. However, cost overruns do occur, causing substantial concern at board level. No formal overall evaluation is made

and opinions of users are not formally sampled. The board and the management of O&A are both aware of certain misgivings about the IT services in the company, but are convinced that IT is an essential and in the long run beneficial investment. They are somewhat more dubious about the benefits of the effort spent on the preparation of formal information planning documents.

Management does not consider it possible to relate the investments in IT directly to corporate performance. The ratio of administrative expenses to premium income has decreased a little over the last few years, but it is not considered possible to assign this to automation efforts alone. The net profit margin is currently 3%, but this tends to fluctuate under the influence of developments in damage claims.

4.1.5. Reflection

This case showed the importance of the clarification of terminology. In several interviews time needed to be taken, both at the beginning and during the discussions, to establish a common vocabulary. Without this, the wrong conclusions could easily be drawn. Also, different views on the real issues of the information strategy needed to be reconciled (in our case study research as well as in the company itself). This was inevitable, as various managers contributed to the information strategy from their own interest and expertise. Information strategy also proved to be a sensitive subject and it took some time and mutual trust before true facts and opinions came on the table.

The dominant attitude at company A appeared to be one of concern. The underlying culture was cooperative and collegial, but recent (merger) events had introduced a sense of coming change of which the direction was not yet clear.

Linkage between information strategy and business strategy appears to be assured, because of the diverse group of managers involved in the process, the high amount of time (20%) spent to information strategy by the board of directors, and partial decentralization of system development resources. The impact and importance of IT is acknowledged in the business strategy documents, but no clear examples were found of the translation of IT possibilities into business processes.

4.2. Summary of the findings

It takes considerable time and effort to break through the language and terminology barrier around information strategy. For example, in one instance it took half the first interview to establish that information strategy can mean more than the annual information plan. The various aspects of the model helped to bring the subject gradually into focus. Without a well-tuned terminology, it is easy to obtain incorrect responses. It took a period of approximately 10 weeks, and about 50 man hours work, to finish a case study (steps 1–4) for one organization. Answers and explanations given in the interviews in step 1 are clarified and adjusted in the next steps. For example, functional managers indicated that the executive board spent only about 1 day each year on information strategy. The executive board member corrected this to "more than 20% of my time". Input from multiple respondents and various levels thus contributes to an accommodated, calibrated view of information strategy.

In the previous section company A was described in detail. An overview of the findings in all three companies is given in Table 1. The companies all give IT substantial and

high-level attention, more than, perhaps, the percentage of total revenue devoted to IT would suggest. The results can be summarized as follows:

> *Environment.* Information strategy awareness is high for all parties in the organizations. Attitudes of general managers and functional managers towards IT were generally positive and deviated little from each other.
>
> *Process.* Linkage between corporate strategies and information strategies is well established, certainly in the sense of alignment to business goals, but also (though less evident) in the sense of impact of technology on corporate strategies. The use of information technology in the organizations is not an activity that is planned or ruled from one specific department or person. Information strategy is influenced by many parties, partly historically and personally based. Formal methods play a supporting role in the information strategy process. Comprehensive methodologies are not used. SWOT analysis and other techniques tend to be used periodically as building blocks. Technology scanning is seldom done formally. Information strategy typically evolves through a problem-driven process, with both top-down and bottom-up inputs from IT managers as well as from general managers.
>
> *Form and contents.* The regularly produced "information plan" serves as a means of communication within the information systems department and the rest of the organization. The annual planning cycle is a "staging post" in a continuous information strategy process. Whereas the emphasis is generally on the (application) architectures and plans, reformulation of objectives occasionally received intense attention. Policies and guidelines on aspects such as investment criteria, risk management, security standards and alliances are an essential part of the information strategy, but remain often implicit and are assumed to be known. The strategies of all three organizations are more oriented to information systems and services than to the use of technology or infrastructures.
>
> *Results.* The companies put increasing emphasis on sophisticated methods to determine and control costs and benefits at the project and implementation level of information strategy. Organizations do not (or only tentatively, in the case of company B) systematically assess the effects and consequences of an information strategy at the business level, nor at the level of a single business process.

5. Comparison with related research

Mantz et al. (1991) reports on a postal survey among about 350 Dutch organizations (both profit and non-profit). We note the following significant differences between the reported results of this survey and conclusions from our own research:

1. It is stated that in 47% of the cases the IS manager is responsible for the identification of strategic applications. We find in all cases a sharing of this responsibility between top executives, IS managers and line managers. The difference may be due to the fact that we only investigated the insurance industry, or to an underestimation of the involvement of top executives by the single respondents in the Mantz survey, as we encountered.

2. Sixty-one per cent of organizations are reported to use consultants in the information strategy process. We do not encounter this in any significant way. The confusion may have arisen as the process in the Mantz surveys also includes system development and implementation.
3. Sixty-eight per cent claim to require a formal "control concept", defining the lines and mechanisms as a prerequisite for an information strategy. We found that managers in the insurance industry involved with information strategy are intimately aware of the functioning of their company and do not require such constructs.

Premkumar and King (1991) investigated 245 US business organizations, also by mailing questionnaires. We note the following differences and similarities between our findings and those of Premkumar and King:

1. Low use of standard planning methodologies is reported (22%). We agree. Methodologies such as BSP were previously used, but were abandoned. Companies opt for a continuous and largely informal process, with great personal input from various levels.
2. Low effort spent on information strategy. We find that top executives, as well as senior IS managers in the insurance industry spend a substantial amount of time on information strategy. The survey may come to its conclusion by (implicity) only taking the effort of specialist staff into account, which is indeed a relatively low percentage.
3. A direct link is suggested between observable input to the information strategy and corporate results, such as return on investment. We find that such links are very tenuous and tend to be obscured by other factors. Senior executives do not believe in the possibility to measure such links and are not inclined to spend serious effort in quantifying them.

Conrath et al. (1992) performed a (postal) survey among 67 Canadian top companies. The following differences and similarities are noted between the results of this survey and our findings:

1. Thirty per cent of respondents say that they do not link their information strategy with business strategy. This is contrary to our experience in the insurance industry, where a clear link between the two is established, in the sense of impact as well as of alignment. The explanation may be a preoccupation with formal, written business strategies by the respondents of the survey.
2. Only few companies were found to make a comparison between plan and performance. We agree that explicit evaluation appears to be the exception rather than the rule.
3. Only few companies were found to make a formal analysis of competitors actions. This is also found in the insurance industry in the Netherlands. However, informally, competing companies tend to know each other very well. Several of the executives we interviewed were personally acquainted with each other. The explanation may be that the need for a formal analysis usually does not arise.

Saaksjarvi (1988) describes the relations between the process of information planning and the success of the planning, judged by IS managers of 100 large industrial and financial organizations in Finland. The planning process and success were measured by using a questionnaire. It was concluded that 44% of the organizations had already

integrated IS planning and corporate planning. According to the judgement of the IS managers, successful planning depends on the effective cooperation between general and IS management. In the present study we describe how general and IS management deal with information strategy, the processes and the goals they use in the insurance industry.

Summarizing, this comparison demonstrates that our model-based investigation of information strategy runs parallel to and is flanked by closely related research. However, there are significant differences between the findings in "postal surveys" and our findings in the cases. Some differences (e.g. on the use of consultants) can be explained because we focus on the insurance industry. Other differences (e.g. "linkages between information strategy and business goals", and "effort spent on information strategy") can be explained by the limited power of postal surveys to enlighten complex issues such as information strategy.

6. Conclusions

The research questions in this paper were: (i) how can the practice of information strategy in an organization be analysed; (ii) what is the actual practice in the insurance industry; and (iii) how does information strategy relate to business strategy? We also looked for possible changes in the approach to information strategy over a period of about 4 years.

With respect to the research methods employed, we conclude, in line with Earl (1993), Walsham and Waema (1994) and others, that the analysis of information strategy should not be based on the results of only one interview with one (senior) manager, nor should it be based on postal surveys alone. It requires significant effort to obtain an accurate view on information strategy in an organization, due to the complex and often implicit meaning of the concept of information strategy. Our study in a substantial and representative part of the insurance industry in the Netherlands shows significant differences with findings based on surveys reported in the literature: we found more participants involved with, and more effort spent on information strategy, and more efforts to link information strategy to business strategy and processes.

We found that information strategy is a well-known and important concept, with often an implicit meaning to the managers involved. Senior management is heavily involved in information strategy: the members of the executive board in two companies in this study spent up to 20% of their time. This is also reported by Walsham and Waema (1994), the CEO of a building company (500 employees) was for 25% of his time involved in information strategy.

We find it peculiar that the organizations spend significant efforts in information strategies but do not evaluate its effects, nor try to learn from previous information strategy planning experiences and effects. The reasons for this might be that managers are not used to evaluate strategies, and, obviously related to this, do not expect to gain useful insights.

Henderson and Venkatraman (1993) described the linkages between business strategy and information strategy in the strategic alignment model (Fig. 1). In the model they

distinguish four (linked) domains in an organization: (i) the business strategy domain; (ii) the business processes domain; (iii) the IT strategy domain; and (iv) the IT processes domain. We have found in the three cases that serious attention to information strategy is payed by various managers from all four domains. The main role can be played by the chief executive from the business strategy domain, or by the senior IT manager, but in each case all domains play an active and important role.

Of importance is how the information strategy and the business strategy are aligned, or linked (Parker et al., 1989; Henderson and Venkatraman, 1993). There are two main perspectives on how alignment can take place. In the first perspective the business strategy is the driving force for the business processes or for the IT strategy, ultimately affecting the IT processes. In the second perspective it is the other way around: the IT strategy is the driving force for the IT processing or the business strategy, ultimately affecting the business processes. In the three cases we encountered mainly the first perspective. More specifically, the business processes and (in a lesser extent) the business strategy are the driving force for the IT processes, which subsequently influence the information strategy. We have not found clear examples indicating a more immediate influence of business strategy on information strategy, or vice versa.

An added dimension on information strategy is offered by the insight in the evolution through the years of the information strategy of the three companies. We found some indications that the roles, responsibilities and influence of the various managers in the three cases change over time, but more case studies are needed to be able to look into the developments of information strategies (Smits and van der Poel, 1996). Additional research, also in other lines of business, is needed to compare and further clarify the relations between the environment, the process, the content, and the effects of information strategy.

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