Strategic IT, but not by ITself
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CHAPTER 4

MULTI-VARIATE RESEARCH:
EXPLAINING THE STRATEGIC PERFORMANCE
WITH SEVERAL VARIABLES

4.1 INTRODUCTION

In the previous chapter we have seen that bi-variate researches offer new insights into the relation between IT and the competitive position. They do not, however, lead to a consistent explanation. A possible and promising research option is the combination of the three angles (IT, strategy and structure) in one research. This is:

- possible, because the three variables do fit: bi-variate relations exist between the variables (congruence), and they share the same features;
- promising, because research that relates several variables at the same time in order to explaining competitive performance occurs in both the Information Systems literature and the Organization Studies literature.

The bi-variate studies have already been presented. Therefore, in this chapter, those conceptual theories are discussed, which state that more variables have to be studied simultaneously in order to explain organizational performance (multi-variate studies):

- in the field of Information Systems, the adjustment of IT and organizational variables has been a significant condition for the successful usage of IT. In the field of Strategic Information Systems Planning (SISP), successful IT usage is supposed to be dependent on the way the technology is used in the organization, and not on the technology itself (see also Galliers 1993, p. 287). Neglecting this fit between a number of variables causes a one-sided insight into the effect of IT on the strategic performance of organizations;
- In the field of Organization Studies, the contingency theory (CT) states that the effectiveness of an organization depends on the level of congruity or the goodness of fit between separate variables like structure and the environment of organizations (Pennings 1989, p. 4.1-8).
This chapter has the following structure. The next section handles the SISP concepts in the field of Information Systems. Subsequently section 4.3 deals with equivalent ideas regarding the field of Organization Studies, namely the contingency ideas. The final section presents a conclusion.

4.2. INFORMATION SYSTEMS THEORY LINKING DIVERSE VARIABLES: SISP ALIGNMENT MODELS

4.2.1 Introduction

In the field of Information Systems, the importance of a fit between organizational and technological constructs is manifest. The successful exploitation of IT, indicated by the competitive position, depends on the fit (also known as alignment) between IT and strategy, structure and so on (Boersma 1989, p. 165; Chan & Huff 1992, p. 196; Scott Morton 1991, p. 61). Via the fit between IT and organizational variables, the usage of IT by the organization is studied, and not merely its presence in the organization.

The organization of this section is as follows. Firstly, we explain the concept of SISP and give a definition. Then we discuss the alignment as it is imbedded in the area of strategic information systems planning (SISP). SISP and alignment are closely related to another (Hartog & Herbert 1986, p. 356). Subsequently, developments of SISP models (including the alignment issue) are discussed, resulting in models where several organizational and technological variables are involved. We use this conclusion as a basis for the theoretical research model.

4.2.2 Description and definition of SISP

SISP is concerned with the general direction (the strategy) of information services and finally results in a plan for the development of applications. Adjusting IT and organization has been a significant issue since the development of methods for planning information systems in organizations. According to Davis & Olson, alignment is a central problem in the field of information systems planning (Davis & Olson 1985, p. 443).

SISP has been the subject of differing terminology in recent years. Some of
them are mentioned below, partly based on enumerations by Stegwee and Fitzgerald (Fitzgerald 1993, p. 336; Stegwee 1992, p. 5):

- MIS Planning (Bowman et al. 1983);
- SPIS: strategic planning for information systems (King 1988);
- Information Planning (Theeuwes, 1988);
- SISP: strategic information systems planning (Earl 1993);

This enumeration is not exhaustive. In this research, we shall use with the term SISP.

Following Fitzgerald's line of reasoning, we state that SISP can have two different meanings (Fitzgerald 1993, pp. 336-337; see also Lederer & Sethi 1988, p. 446; Pruijm 1990, p. 103):

- the strategic (long-term) planning of information systems. Lederer & Sethi for instance use the following description: SISP is the process of deciding on the objectives for organizational computing and identifying potential computer applications which the organization should implement (Lederer & Sethi 1988, p. 445);
- the planning of strategic information systems that will give organizations a competitive advantage. Rackoff et al. view SISP as the planning for information systems used to support or shape the organization's competitive strategy, its plan for gaining and/or maintaining advantage (Rackoff et al. 1985, p. 285).

The first angle describes the general planning of IT, not specifically aimed at competitive advantage. The idea of gaining competitive advantage via IT is suggested by the second angle.

On the one hand, we are interested in this research on strategic IT, and not generally in the planning of information systems as such. In the literature, the fact that strategic IT is seldom planned has been recognized (Ciborra 1991, pp. 283, 287; Galliers 1993, p. 286). It merely evolves. Therefore, the second angle seems the most appropriate one. On the other hand, organizations with developed business planning and more IS department participation in the overall planning process have fewer problems realizing SISP (Lederer & Sethi 1988, p. 455). SISP can pay off (see also Baets 1992, p. 205).

In a definition of SISP, we should clarify that IT can have strategic impact on the organization and include this fact in the planning of information systems.
Fitzgerald combines these elements and he reaches the following definition based on the description of Lederer & Sethi (Fitzgerald 1993, p. 337; Lederer & Sethi 1988).

Definition: SISP is the process of identifying a portfolio of computer-based applications that will assist an organization in executing its business plans and consequently realizing its business goals and/or the process of searching for applications with a high impact and the ability to create an advantage over competitors.

An example of the planning activities and the content of an SISP plan is given (Flynn and Goleniewska 1994, pp. 294-295):

1. consider organizational goals and IT aims;
2. assess the current set of information systems;
3. identify information needs of business processes;
4. evaluate the external competitive environment;
5. assess the technological terms;
6. agree system priorities concerning old and new systems under development;
7. provide individual project planning so that each project has clearly identified factors such as a timetable, a budget and personnel;
8. involve users in the planning process;
9. gain top management support and commitment.

These activities result in the following output:

1. organizational goals and objectives;
2. information architecture;
3. application portfolio;
4. portfolio priorities;
5. IT management strategy (organizing the IT function);
6. IT strategy (technological infrastructure);
7. individual project plans.

4.2.3 The concept of alignment in the models of SISP

Alignment of IT goals with business goals has always been a central issue in SISP.
Multi-variate research

SISP resulted from a 25-year history of describing, using and evaluating the planning of information systems. In 1977, McLean & Soden gave an overview of the literature in their book ‘Strategic planning for MIS’. According to them, the relevant literature started with "the foundation-setting work" of Kriebel. In his 1968 paper ‘The strategic dimension of computer systems planning’, Kriebel stated that for a company computer strategy the corporate objectives must first be clarified. Subsequently, the computer planning objectives must be based on the corporate goals. The company computer strategy ends with an action plan for information system development (McLean & Soden 1977, pp. 14-15). The necessary element to link corporate objectives with the action plan is the information architecture. This is extensively dealt with in the work of the IBM company, which introduced business systems planning (BSP) based on their own method for the planning of information systems in 1975. This architecture is the blueprint for future data support of business with information systems (IBM 1981, pp. 14, 68). It consists of modules that will be developed as information systems. Using BSP, organizations bridge the gap between business goals and the action plan for information system development.

Having described this history, McLean & Soden linked the three parts in their Management Information System (MIS) strategic planning framework. This framework consists of the following phases (McLean & Soden 1977, pp. 23-27):

1. strategic MIS planning: the process of deciding on IT objectives, which deals with the fit with the overall organizational objectives (McLean & Soden 1977, pp. 23, 27). In addition to this fit, guidelines are given to carry out the strategic MIS plan;

2. long-range MIS planning: deciding on future MIS architecture to meet future information needs of the organization;

3. medium-range MIS planning: determining the present MIS architecture and the portfolio of prioritized information system projects;

4. short-range MIS planning: planning of the individual projects.

In this framework, the MIS architecture is dispersed over two phases (2 and 3). The application portfolio is also present in phase 3.

Bowman et al. modeled SISP and separated information architecture and applications portfolios more clearly (Davis & Olson 1985, pp. 455-468):

1. strategic planning stage (of MIS planning): the (information systems) objectives are derived from the organizational plan. A proper technique is strategic set transformation (SST). We shall elaborate on that later. This phase is comparable with strategic MIS planning from McLean & Soden
2. organizational information requirements analysis: organizational goals are obtained by performing the business functions (major organizational activities: Davis & Olson 1985, p. 460). To support the striving for organizational goals with information systems, it is necessary to know what information is required for the realization of business functions. The linkage of these classified information requirements with business functions produces the information architecture (IBM 1981, p. 68). The information systems can be identified and developed from the information architecture (IBM 1981, p. 9);

3. resource allocation: the information architecture produces a need for information systems. Because of the availability of resources impose a constraint, the development of information systems is put into a sequence: which applications will be developed and when (Davis & Olson 1985, p. 463). This prioritization is the result of the resource allocation. After this third phase, the development of the individual information systems is started.

This division of SISP into three parts has become the 'communis opinio'. In the Netherlands, writers like Theeuwes (1986) and Boersma (1989) also use this division in their description of SISP (see also Stegwee 1992, pp. 48-50). Using this separation, we reach the following SISP division:

1. general direction (strategy) of IT usage: the goals for IT usage are based on the general direction for the information services in the organization as a whole, and which should be linked to organizational goals (Theeuwes 1988, pp. 26, 52);

2. information architecture: the general direction is a guideline for this phase, the creation of the information architecture, the kernel of the information plan (Boersma 1989, p. 166). Coupling the business functions and data classes derived from the information requirements produces the information architecture. The information architecture characterizes the (future information) systems with regard to the data they create/use and with regard to the future business processes they support (IBM 1981, p. 70). The architecture is a graphically represented blueprint (matrix) into which information systems development should fit (IBM 1981, p. 68). With the information architecture, relevant areas for information system development are identified (Niederman et al. 1991); it points out the desired (information systems) situation for the information services in the
organization (Theeuwes 1988, p. 26);  
3. a prioritized portfolio of information systems: the way to reach the desired situation described in the information architecture is indicated in this last phase (Boersma 1989, p. 166; Theeuwes 1988, pp. 83, 126). A project plan (or in BSP terms: action plan) is a prioritization schedule for developing the various information systems. The order is based on various criteria (IBM 1981, p. 77). Using this schedule, the scarce resources of the organization are allocated (Theeuwes 1988, p. 114).

The alignment question is primarily relevant in the first phase of identifying the general direction of IT usage. Therefore, this stage gets more attention in this thesis than the stages on information architecture and portfolio issues.

One of the major issues in the discussion on alignment is the distinction between reactive and proactive adjustment of IT goals and the organization’s goals (Lederer & Seth 1988, p. 446):

- reactive adjustment refers to the top-down alignment of IT in the organization (Galliers 1993, p. 285). In this view, IT is an instrument to realize the organizational strategy and to seek competitive advantage with it (Flynn & Goleniewska 1993, p. 292). The SISP is principally driven by business priorities (Greveling & Kokke 1989, p. 669);

- proactive adjustment stands for changing those organizational goals by using the opportunities of the IT for competitive advantage. IT is a means to define the organizational strategy (Greveling & Kokke 1989, p. 669). The SISP is also driven by the IT opportunities; based on the potential of IT, SISP is formulated and it then influences the business strategy again (Venkatraman 1991, p. 155). Thus, this 'impact' planning starts with technological opportunities and changes the organizational strategy (Parker et al. 1989, p. 4). From the proactive point of view, there must be a certain degree of unpredictability. The success cases explained that competitive advantage with IT occurred by introducing the IT without ex ante recognizing the strategic opportunities. Some competitive advantages of IT have been realized without it being a product of ex ante SISP (Kühn Pedersen 1990, p. 195). The strategic advantage more or less evolved, often after the IT was introduced as non-strategic IT, but being transactional for instance (Galliers 1993, p. 287). IT opportunities are often tried without first being approved in the context of (business) strategy formulation (Ciborra 1991, p. 287). Strategic advantages evolve from IT opportunities that lie outside the framework of the existing business strate-
The realized advantages reflect proactive SISP if they later become a part of changed business strategy (Kühn Pedersen 1990, p. 195). This innovative and implemented IT changes organizational goals ex post (see also Earl 1991, p. 120). If SISP approves this kind of IT introduction, then SISP can affect business strategy through the potential of IT (Venkatraman 1991, p. 155).

The border between reactive and proactive is slightly blurred (see for instance the characterization of the diverse methods by Lederer & Sethi 1988, p. 449). Using the reactive angle, the opportunities of IT are also studied. However, the reactive aspect means that the business goals are the basis for the use of the IT opportunities. The IT opportunities then lie within the existing framework of business strategy (see also Figure 4.5: The contradiction between reactive SISP and proactive SISP).

### 4.2.4 Developments in the field of SISP

Now that we have explained the relevance and position of alignment in the area of SISP, the development of alignment in the literature will be presented. For this, we can use the shifting focus on SISP as pointed out by Galliers. He distinguishes two dimensions to describe the transition, as depicted in Figure 4.1 (Galliers 1992, 1993).

1. solving current situation versus directed towards future;
2. IT driven versus business driven.
The various phases of planning information systems will be described below (Galliers 1993, p. 285).

I. Isolated
The information-planning task started with the identification of potential computer applications and paid attention to the improvement of computer efficiency. This planning was realized by computer departments isolated from the rest of the organization (see also Stegwee 1992, pp. 8-9). The intention was to examine technological matters without having to take all kinds of business requirements into consideration. Alignment of information systems with organizational goals was not really considered during the planning. The technology offered opportunities to solve 'available’ problems (Galliers 1992, p. 98; 1993, p. 285).

Conclusion
There was no deliberate fit between organization and IT.

II. Reactive: current issues
After several years of experience, the management of organizations felt the need to plan the use of computers for solving existing business problems. This is obvious in one of the earlier examples of SISP methods: BSP. The major goal of BSP is to provide an integral information systems plan which, united with the
business plan, will support the goals of the business (IBM 1981, pp. 3,5). BSP consists of a number of basic concepts to realize this (see Figure 4.2). One of these is the concept of the top-down IT planning with bottom-up implementation (IBM 1981, pp. 8-9). This means that the long-range goals for IT are first established. They are the basis for the organization of all the information services of the company. Based on this organization and, aligned with the goals of the top management, information systems are built from the bottom up in modular blocks. This top-down planning will be described below.

Figure 4.2  BSP BUILDING BLOCKS

1. BSP starts with the clarification of the business goals of the organization. According to Earl, this definition of the business goals is one of the rewards of top-down SISP (Earl 1991, p. 104). Firstly, the business goals of the organization should be apparent in the business plan. If this plan is not available, these goals can be stated as a part of BSP. Although the deduction of IT goals from business goals is described as being important (IBM 1981, pp. 5, 30), the procedure to realize this actual alignment question is not formally present in BSP (see the flow of BSP study: IBM 1981, p. 13). The actual alignment is reflected in the final information architecture (IBM 1981, p. 9). BSP arranges this transformation via the building of information systems according to the architecture by means of the following steps.

2. Business processes are identified, with the aim of realizing the business goals; the business processes are the decisions and activities by which the organization manages the resources of the business to reach its goals (IBM 1981, p.31). They should be analyzed to find the key to the success of the

3. These business processes form the basis for the elicitation of information requirements (IBM 1981, p. 31). To support the business functions, the requirements are logically formed as data in data classes (IBM 1981, p. 41).

4. The business functions and data classes are related in an information architecture. As stated before, this blueprint for future information services of the business (IBM 1981, pp. 14, 68) is presented in the form of a matrix. This architecture consists of modules that will be developed into information systems (IBM 1981, p. 12).

BSP finishes with an action plan for the development and establishment of priorities in order to develop information systems geared to realizing (a part of) the information architecture. Based on the recommendations of the action plan, the bottom-up implementation follows and is no part of BSP itself.

The features of this BSP are:

1. focus on the current situation: although business goals and information needs are directed to the future, the trait of this method is to deal with existing problems instead of looking towards their future situation (Pruijm 1990, p. 69; Theeuvse 1988, p. 107). In theory, business goals are important (IBM 1981, p. 9). In practice, they do not get enough attention. Defining business goals is eliminated as a major activity and has acquired the role of a 'general business fact' under "preparing for the study" (IBM 1981, pp. 13, 22). Obviously it gets a lower priority than, for instance, defining business processes and data classes;

2. neglecting environment: Wiseman states that the environment is excluded from BSP so that all kinds of IT opportunities are not thoroughly studied (Pruijm 1990, p. 69). This observation could have the same background as the treatment of business goals. This must be a result of the usage of BSP, because the business environment is officially a major business fact (IBM 1981, p. 22);

3. reactive: the organizational situation determines the future usage of IT via the business processes and information architecture. BSP is very clearly used as a reactive method. There is no room for potential IT opportunities outside the organizational situation: first the organization, then the IT.

Conclusion
Reactive: the current business processes determine the choices on the use of the
III. Reactive: future business opportunities

Comments on BSP resulted in ideas that took the future goals of the organization more explicitly into consideration, so that organizations searched for new IT opportunities and did not use SISP solely for the solution of their current problems (Bushoff & Oosterhaven 1987, p. 231; Galliers 1992, p. 99).

This alignment of IT with future business goals receives more attention in Information Systems Planning (ISP). ISP is the first part of the information-engineering methodology (IEM), a complete method for the development of information systems (Bushoff and Oosterhaven 1987, p. 228). IEM starts with the strategic plan, produces the information architecture based on the information needs that are derived from the business processes (Bushoff & Oosterhaven 1987, p. 233), and finishes with the realization of the concrete information systems (Bushoff & Oosterhaven 1987, pp. 228-229).

The primary goal of ISP is relating organizational strategy, SISP and IT opportunities (Bushoff & Oosterhaven 1987, p. 229). Therefore, it pays more explicit attention (in comparison with BSP) to analyzing the organizational strategy and the transition from the organizational strategy to the information architecture via the information requirements (Bushoff & Oosterhaven 1987, pp. 230-234).

An explicit organizational strategy is often not available (NNC 1992). The lack of a business plan troubles SISP (Lederer & Sethi 1988, p. 449). If there is no formal strategy, organizational goals should first be established. ISP does not have an own way of defining these goals. Rockart's critical success factor (CSF) model is viewed as helpful for this (strategic) planning process (Pruijm 1990, p. 70; Rockart 1979, p. 88; Theeuwes 1988, p. 71). The approach is primarily meant to help management uncover their information needs (Rockart 1979, p. 84). In intensive interview sessions, the so-called success factors are defined. These are the limited numbers of areas relevant for competitive performance that underlie and support the organizational goals. Another source of CSFs are the environmental and internal organizational considerations (Rockart 1979, pp. 86-87). Based on the CSFs, the information requirements are elicited. They form the basis for proper information systems development (Rockart 1979, p. 92). Because of the thorough discussions on organizational strategy and the aim at the future (Rockart 1979, p. 89), the CSF approach is useful for ISP, so that higher management, in particular, can cope with it easily (Theeuwes 1988, p. 71).
The features of ISP:

1. focus on future situation (Theeuwes 1988, p. 72): in ISP, there is a distinct activity called 'analysis of organizational strategy'. At this stage, interviews with top management about the mission of the company, the organizational goals, and the possible problems are discussed (Bushoff & Oosterhaven 1987, p. 231). In that stage the CSF approach can also be used. Discussions on these topics lead to ideas on future information services. The border between BSP and ISP is, theoretically, not very concrete. In BSP too, there are interviews with top management on business objectives. And in BSP the CSF approach can also be used. In BSP however, the emphasis on (future) business objectives is smaller. The (existing) business processes and data classes are really at the center of attention. The use of BSP is more geared to the existing situation;

2. attention to environmental issues: not only do future aspects come into the attention while analyzing the organizational strategy, the environment (the industry) is also thoroughly studied (Theeuwes 1988, p. 72). This is stimulated by the use of the CSF approach where environmental factors are a source of success factors;

3. reactive: for ISP, the border between proactive and the reactive is vague. ISP, in combination with CSF approach, has opportunities for impact (Lederer & Mendelow, 1988, p. 449). IT could bring strategic advantages into the organization. The potential opportunities of IT with respect to the future functioning of the organization are considered (Bushoff & Oosterhaven 1987, p. 231). This aspect of impact, however, is not sufficient to call ISP proactive. IT could change the organizational goals, but first the formal strategy should be altered as a basis for further IT development (Bushoff & Oosterhaven 1987, p. 231). The basis for the IT goals is still the alignment with the business goals (Bushoff & Oosterhaven 1987, p. 230; Theeuwes 1988, p. 66). This top-down realization takes a long time in a general method, so that changes make the final plan irrelevant (Lederer & Mendelow 1988a, p. 75). The innovative, opportunistic, unexpected, laissez-faire feature of proactive behavior is not a part of ISP. So finally, ISP as a general method has the danger of overlooking possible strategic opportunities (Pruijm 1990, p. 71).

Conclusion
 Reactive: the goals for the use of IT are aligned from the organizational goals.
IV. Proactive

Supporting the business goals via IT and exploiting IT for competitive advantage are targets for SISP (Earl 1993, p. 1; Lederer & Sethi 1988, p. 446). All methods described so far have started with the present and future images of the organization and have aligned their information needs. Based on these needs, they have prescribed IT to satisfy them. Various researches found disappointing results of SISP: the prescribed plans were not actually implemented so that the SISP had no function for strategic IT (Earl 1993, p. 15; Lederer & Sethi 1988, pp. 453, 455; see also Flynn & Goleniewska 1993, p. 292). Although influencing the competitive position was formally included (in ISP, even in BSP, see IBM 1981, p. 5), the case studies made clear that strategic IT was not usually prescribed ex ante as being strategic. The advantages evolved, after which the business strategy was adjusted. The basis for the impact was the effect of IT on the value chain and industry.

Theories on this strategic IT are mostly descriptive; they subsequently describe why and how the strategic gains were accomplished (see chapter 1). The value of these theories can be questioned; the same cases are used repeatedly as empirical validation for different ideas (Pruijm 1990, p. 261). Formal methods to reach competitive advantage with IT are hardly generated. There are some guidelines described by Porter & Millar in 1985, but these are very broad and do not make statements on decisions about business processes, architectures and applications.

The Customer Resource Life Cycle may be the model nearest to a (SISP) method: a model that claims to support the finding of strategic IT applications (Ives & Learmonth 1984, pp. 1193, 1197). They concentrate on the single relationship between the organization and the customer. The support of information resources develops via a life cycle, just like the products of an organization. The organizations can help (and bind) their customers with the use of IT in all the 13 phases of this life cycle. The authors claim that organizations can discover strategic IT by the use of this method. Their is no empirical research linked to this statement. Other comments refer to the lack of an architecture as a basis for all applications and the lack of other kinds of applications besides the customer-aimed applications, such as applications directed towards the organization's supplier or IT for important internal use. These applications can also result in competitive advantages.

Features of impact models:

1. focus on organizational strategies and environment: in the various descriptive impact models (see chapter 1), organizational strategies have a domin-
ant role (see for instance Parsons 1983; Porter & Millar 1986; Rackoff et al. 1985). Here the strategies do not form the autonomous starting point of the theories (as in BSP, ISP) but are an integral part of the organization's business activities via the analysis of the value chain and analysis of the industry;

2. proactive: the impact models are mostly based on case studies where IT offered the organization a competitive edge. Often starting as a non-strategic information system, IT produced a competitive effect that was later explained by a combination of business functions, industry, and resulting strategic choices of the organization. IT was the trigger offering possibilities that could be used perfectly in that organizational situation (see for instance McFarlan's strategic grid (Cash et al. 1988), and the strategic opportunities framework (Benjamin et al. 1984)).

Conclusion
Proactive: the usage of IT leads to changes in the organization which, in turn, lead to adjusting organizational goals.
Table 4.1: Success of SISP
<table>
<thead>
<tr>
<th>reference</th>
<th>satisfaction</th>
<th>realization</th>
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<tr>
<td>Lederer &amp; Sethi 1988, pp. 452-455</td>
<td>32% satisfied - 53% dissatisfied carrying out SISP</td>
<td>• 24% initiated after 56% of time elapsed</td>
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<tr>
<td></td>
<td>satisfaction with:</td>
<td>• 36% of realized applications not in SISP</td>
</tr>
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<td></td>
<td>• SISP process: 3.68 (neutral = 3)</td>
<td>conclusion: no good execution of SISP (see also Runge 1995: 80% SISP ignored)</td>
</tr>
<tr>
<td></td>
<td>• SISP output 3.38</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• carrying out final SISP: 2.53</td>
<td></td>
</tr>
<tr>
<td>Mertz 1991, p. 851</td>
<td></td>
<td>• 62% needed follow-up studies (SISP does not mean: better control over information services)</td>
</tr>
<tr>
<td>Galliers 1992, pp. 100-101</td>
<td></td>
<td>• Galliers 1987: 71% (partly) successful</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wilson 1989: 73% (reasonable) successful</td>
</tr>
<tr>
<td>Earl 1993, pp. 3, 15</td>
<td>• 69% worthwhile - 31% better not doing it</td>
<td>• 14% of strategic applications derived from SISP</td>
</tr>
<tr>
<td></td>
<td>• 3.73 success score (neutral = 3)</td>
<td></td>
</tr>
<tr>
<td>Flynn &amp; Goleniewska 1993, pp. 301, 307</td>
<td>• process: 27%</td>
<td>• strategic applications from SISP: 2 (neutral = 3)</td>
</tr>
<tr>
<td></td>
<td>• output: 56%</td>
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4.2.5 Research on the strategic impact of SISP

When analyzing the success of SISP, particularly the second and the third stage are relevant. The fourth stage has a more descriptive nature. Several researchers found problems in realizing the plans and gaining strategic impact with IT when applying SISP. These results are listed Table 4.1.

Reported problems are (see also Lederer & Mendelow 1987; 1988a; 1988b; 1993; Lederer & Sethi 1993):

1. lack of knowledge about the organizational objectives:
   business objectives should be the basis for SISP (Galliers 1992, p. 101). Often there is a lack of a formal strategic plan (Lederer & Mendelow 1987, p. 392, Vitale et al. 1986). If there is a plan, IT executives are sometimes not familiar with it and the organizational goals (Lederer & Mendelow 1987, p. 392; 1988a, p. 74);

2. an absence of commitment at top management level:
   basic for SISP are the business goals, which fall within the scope of top management. Besides, SISP is very expensive and has far-stretching consequences for the organization (strategic impact, all kinds of business functions are involved). For successful SISP, it is necessary to have the support of the top management (Galliers 1992, p. 101). Convincing the top management of the strategic advantages of IT is still a problem because of the lack of awareness by top management of the strategic value of IT (Lederer & Mendelow 1988b, p. 529). Strategists are often uninformed about IT (Vitale et al. 1986, p. 268) and lack IT understanding (Lederer & Mendelow 1987, p. 392). This hampers commitment (Lederer & Sethi 1992, p. 33);

3. a failure to realize the fit between organizational goals and IT goals:
   relating organizational and IT objectives is, without doubt, one of the main issues in the field of SISP. Therefore, it is remarkable that this linkage is still rather implicitly described. A possible reason could be the separation between the participants and the processes of creating the business goals on the one hand and the IT goals on the other (Galliers 1992, p. 105). Lederer & Sethi found that organizations whose IT department participated to a lesser extent in business planning had more problems than organizations with greater IT departmental participation (Lederer & Sethi 1988, p. 455).

Using a method developed by King in 1978, the organizational set of
strategic goals can be transformed into a set of information systems goals (Theeuwes 1988). This method is called Strategy Set Transformation (SST). The method is often used reactively, starting with the organizational goals and ending with the IT goals. According to Theeuwes, this method concentrates on internal and current organizational issues, and does not take the future organization, as influenced by the IT development into consideration (Theeuwes 1988, p. 72). The interaction between the IT and the organization is not considered. The random nature of the organizational and the IT objectives is another disadvantage.

The overall consequence of these potential problems is that SISP rarely yields competitive advantage. There are two possible reactions:

1. the first reaction is approving the concept of SISP. SISP as such is a valid concept, but the elaboration is impeded by implementation problems like the need for further studies (Mantz et al. 1991, p. 851), a long and expensive planning cycle (Lederer & Sethi 1992, p. 33) and comprehensive documentation (Van Dissel & Park 1989, p. 751). These problems can eventually be solved;

2. the other reaction is disapproving the SISP concept as a means of reaching strategic advantage with IT.

In the first view, the latent usage of SISP is accepted. If it can have the desired positive results for the organization, it will be worthwhile to solve the problems mentioned with respect to SISP. There are some arguments in favor of this line of reasoning. Organizations which are used to strategic planning experience fewer problems with SISP than organizations without planning experience. The same is true for organizations with IT management participating in strategic planning (Lederer & Sethi 1988, p. 455). Thus under these circumstances, SISP will produce better results.

The other reaction, however, refers to the idea that SISP has a conceptual error so that the advantages mentioned are a matter of coincidence (Galliers 1993, p. 286). The use of SISP and the use of better controlled information services do not go together (Mantz et al. 1991, p. 851). It even seems to be the case that, where there is no SISP, information services are better organized. The information policy paradox illuminates this phenomenon of SISP (see also subsection 1.2.5):

- organizations which want to implement SISP (because their information services are poorly organized) are not capable of implementing (successful) SISP;
organizations which are capable of implementing (successful) SISP (because their management is well-organized) do not require to do so.

If organizations are not functioning well due to organizational problems, their information services are probably not properly organized either. A potential consequence might be islands of automation. Especially in those situations, there is a demand for a better organization of the information services. SISP will be tried in order to achieve better organization. However, if the management wants to tackle that problem solely by improving the information services using SISP, it neglects the general managerial problem. The situation requires a further development of SISP, by integrating SISP with the management of the organization. There are some signs of this in the literature. Johnston & Carrico find successful IT usage occurring in organizations where the management did not only concentrate on the planning of IT as such, but especially on the management of their organization and their position in the industry. This results in changed products, services, organizational structure and processes, and finally in a changed competitive position in the industry (Johnston & Carrico 1988, p. 41). Galliers also favors SISP where internal change management issues are combined with external forces. This leads to changes in business strategy, organizational structure, information services, skills and staff (see also Galliers 1992).

In the literature on business process reengineering (BPR), this idea is further elaborated. There are two major themes for BPR (Davenport & Short 1992, p. 11) as a basis for the management of the organization:

- IT opportunities: capabilities offered by hardware and software (a technological IT definition);
- business process redesign: the analysis and design of processes in and between organizations.

The combination of these two themes can result in organizational transformation in which IT opportunities are exploited (see also Nolan & Schotgerrits 1989). The planning of information systems as such is not the central issue, but the management and functioning of the company, for which IT offers important opportunities.

We made it clear that IT as such should not be the central issue, but the management and functioning of the company. SISP as a general management instrument, starting from the angle of information services, is in its infancy (Mantz et al. 1991, p. 855). Mantz et al. see a further growing role of management concepts of organiz-
ational processes as being necessary for successful SISP (Mantz et al. 1991, p. 850).

Looking back at the two possible reactions, approving or disapproving the SISP concept, our conclusion is that solving problems, such as reducing the scope of the planning cycle, is necessary to escape the paradox. However, SISP can only be successful if it is enriched with more managerial areas for solving issues on information services, as a way to deal with organizational management questions. SISP should develop a management instrument that cuts across the whole organization, through all the value chain functions; it should be integrated with imported management issues (like strategic and structural questions), and it should be backed by top management.
4.2.6 SISP as a conceptual framework for research on strategic IT

The conclusion stated above, on the conditions for successful SISP, is worked out by Earl. This development of SISP does not stop at the proactive stage. It has been recognized that elements from several stages are useful. In that way, 'multiple' SISP methods develop (Earl 1991, pp. 98-103; Galliers 1992, p. 100; Stegwee et al. 1993). These methods claim that, for SISP, reactive and proactive planning must be accomplished. In Earl's multiple method there are three views for SISP that, when integrated, combine the reactive and proactive mode of SISP:

- **top-down**: based on the objectives of the organization, the need for specific information systems is aligned using an analytical approach. Results are the clarification of organizational goals and the prioritization of the development of IT (Earl 1991, p. 103);
- **bottom-up**: the existing information systems and the planned development of future information systems are evaluated on their technical quality and value for the company. Based on this analysis, the organization finds out where IT is important for the competitive functioning, and where improvement is necessary (Earl 1991, pp. 105-108);
- **inside-out**: the top-down and bottom-up approaches give the necessary insights into the current IT situation (strengths, flaws) and the future goals for IT as a basis for further IT developments. However, this is not sufficient to explore the strategic opportunities of the IT (Earl 1991, p. 109). Therefore, the IT opportunities that lie outside the business goals are neglected. In this third aspect, new, innovative IT opportunities are studied which could be useful for the organization and could impact the organizational goals.

These reactive and proactive elements are also combined in the Enterprise-wide Information Management (EwIM) planning process from Benson & Parker (Parker et al. 1989). This model consists of 4 elements (see Figure 4.3):

- the organizational strategy;
- the business processes and structure;
- the information architecture and systems;
- the IT opportunities.

Planning activities for SISP are accomplished by repeatedly combining two adjoining elements. The resulting four planning activities should be performed circularly, counterclockwise.
The reactive element is represented by the organization's alignment. This begins with the business plan, and continues by defining a proper organizational form (business processes and structure). Subsequently, the alignment planning connects the information strategy plan with the organizational form to satisfy the information needs of the organization. The information systems architecture is the result. Thus, the role of IT is determined in order to accomplish the strategic plan (top-down).

The proactive aspect is also present. By studying the existing IT in the opportunity planning phase (bottom-up) and new technology opportunities in the impact planning phase (inside-out), the business plan is changed. Concluding: alignment and impact are both important characterizations of the model. The model attunes organizational goals and IT goals; in addition the organizational structure is a relevant element. A disadvantage of this model is the unclear position of the SISP. It seems to be present everywhere in the cycle. Therefore, the impact of SISP on business goals remains vague.

In McDonald's expanded strategic alignment process (see Figure 4.4), based on work of Henderson & Venkatraman, the SISP has a more clearly-defined posi-
tion. The four EwIM elements are also present in this model, but instead of IT opportunities the fourth element is SISP, or IT strategy (McDonald 1991, p. 162). He identifies four stages, containing three elements (Scot Morton 1991, pp. 310-322).
figure 4.4 expanded strategic alignment process
Figure 4.4 EXPANDED STRATEGIC ALIGNMENT PROCESS

- Competition and reconfiguration process
- Global information technology platform
- Competitive potential
- Technology potential
- Transformation
- Embedded technology
- Business strategy
- Information technology strategy
- Organizational infrastructure and process
- Information systems infrastructure and process
- Business value
- Service level
- Organizational change process and human resource issues
- IS implementation processes, tools, and skills
stage 1: IT strategy → business strategy → organizational structure (impact);
stage 2: business strategy → organizational structure → architecture and systems (alignment);
stage 3: organizational structure → architecture and systems → IT strategy (alignment);
stage 4: architecture and systems → IT strategy → business strategy (impact).

In the stages of this strategic alignment model (SAM), the repeated and systematic adjustment of two of the three elements is assessed. The stages are all covered twice in approximately two weeks. The fit must then be sufficiently established. Subsequently, the final IT opportunities and organizational strategies are balanced. The reactive side is clear: business activities finally determine IT development. The proactive side is also visible: business objectives can be changed according to the IT opportunities.

Both models, however, suggest that new IT opportunities should always be in line with the (new) business strategy, and should be approved by top management before the implementation because of the counterclockwise direction of the cycles. Therefore, the innovative, unpredictable side of proactive behavior is slightly ne-
glected; in real proactive impact, the emphasis is on exploring IT opportunities without thinking too much about the formal business strategy. Later, the (formal) strategy is also adjusted.

Baets maintains that these concepts are still conventional, starting from corporate strategy and aligning SISP with it (Baets 1992, p. 206). The innovative aspect of competitive advantage with IT (in Earl's terminology: inside-out) must be rewarded. Ciborra, too, claims that SISP for competitive advantages must be started as an innovative process (Ciborra 1991, p. 287). SISP must have an autonomous impetus to implement IS (Ciborra 1991, p. 287). The business strategy is influenced parallel to that (Baets 1992, p. 207). Then the proactive side of SISP is also used.

This idea is also used by Boersma. He starts by saying that in the current view SISP is aligned with the organizational strategy. Following that, he states that, in reality, SISP is not always originated by the organizational strategy. Technological, innovative developments, such as the explosive growth of PCs, can trigger SISP, and SISP again influences the business strategy. In his opinion, SISP and the organizational strategy are mutually influence one another (Boersma 1989, pp. 166-168).
Another issue is the relevance of organizational issues other than organizational strategy which influence SISP and which are influenced by SISP. He mentions two issues:

- the policy concerning the organizational structure (see also SAM, EwIM);
- the policy on the financial assets of the organizations.

The resulting BeMI model, i.e. a business administration method for information policy (in Dutch: "Bedrijfskundige methode voor informatiebeleid"), consists of the four policies that influence each other and that are the basis for future architecture (referred to as "information planning") and information system development. The policies are the result of decision processes that interact between these subjects. Therefore, it is not a circular model but an opportunistic model, the behavior of which is dependent on accidental input.

In the SISP model of Stegwee & Van Waes, previously-mentioned elements are combined (Stegwee & Van Waes 1990, pp. 93-94):

- top-down and inside-out;
- reciprocal influence.
In their model (see Figure 4.7), SISP is a key component of the managerial process in the organization. Via the integration of SISP in the annual business planning cycles, the planning and implementation should be constantly performed, so that an optimal advantage from IT applications can be expected.

Looking back on the history of SISP, we see the development of a mature management instrument for the planning of IT. In the early years, SISP was solely aimed at the planning of IT, with reactive alignment to the strategy. Nowadays, this instrument is aimed at relating the information services with strategic and structural aspects, not only in a reactive but also in a proactive way (see for instance the framework of Rockart & Scott Morton 1984). These aspects are related via the business processes of the firms, and decisions are made by the management, resulting in a situation balanced between the technology and the organization.

4.2.7 Conclusion

Discussing various SISP models, it becomes clear that next to organizational goals and IT, other organizational issues are also relevant. Scott Morton states that the
management processes will have to deal with IT, strategy, structure and people (Scott Morton 1991, p. 21). All these elements are part of the business environment, and any change in one of them will affect the others. Simon & Grover also recognize the need for managers to examine business strategy, organizations structure and environmental issues to reach a fit between these items (Simon & Grover 1993, p. 40). And in the 'NNC and VSB research 1992' the business strategy, the structure of business processes, and the IT are used as part of the research model (NNC 1992, p. 10). We can not only conclude that alignment is aimed at adjusting strategy and IT goals, but also that, at the same time, structure, culture, environment, people and so on should be balanced in the SISP to attain a successful planning of IT (Cash et al. 1988, p. 3; Davis & Olson 1985, p. 458). The proactive and reactive alignment rejects the one-way relationship between the variables, and supports the concept of the mutually reciprocal relation. The proactive and/or reactive alignment offers the management the opportunity to realize a suitable balance between the variables, dependent on the business situation (processes) and the management's point of view.

In the SISP models, the adjustment variables stay rather vague because the elements of the various models are not operationalized. This problem can be solved by borrowing insights from the field of Organization Studies, where the concept of fit is also under scrutiny.
4.3 ORGANIZATION STUDIES THEORY LINKING DIVERSE VARIABLES: CONTINGENCY THEORIES

4.3.1 Introduction

In this section, we elaborate on organizational theories that deal with relations between variables like technology, structure and environment. These relations have been studied for several decades. Ideas have been generated on the measurement of the concept of fit. These ideas are useful in our research, where the fit between IT and organizational variables is studied.

This section is has the following structure. Firstly, the general concept of the contingency theory (CT), a major theory in the field of Organizational Studies, is elucidated. Subsequently, developments in the CT, including the adjustment between variables, are discussed. Then the different measurements of fit are presented, followed by a conclusion on their usability.

4.3.2 Description of the contingency theory

The CT is not really a theory, but an approach, dealing with the relation between the organizations and their environments or, to be precise, their contextual variables (Ahaus & Kastelein 1985, p. 397). The CT started as a concept claiming that the structure must fit its context in order to be effective (Drazin & Van de Ven 1985, p. 515). For instance, the organizational structure is contingent on the environment: the environment is a contingency variable.

The research of Burns & Stalker in 1961 was one of the first examples of the CT (Lammers 1986, p. 22). They measured organizations within the British electronic industry on a scale ranging from mechanistic (bureaucratic standardization: precisely-defined tasks, coordination via clear hierarchy and control, regulations, vertical communication and regulations, rigid, centralized) to organic (continual adjustment of tasks, no rigorous definitions of functions and responsibilities, coordination via mutual adjustment using vertical and horizontal communication, flexible, decentralized). Before the second world war, when the environment was rather stable, mechanic organizations could flourish. After the war, the conditions changed: the market became more complicated and unpredictable. In this changing and dynamic environment, organic organizations become more appropriate
Multi-variate research

(Morgan 1989, pp. 50-51; Pennings 1989, p. 4.1-10; Pugh et al. 1983, pp. 52-53).

Lawrence & Lorsch brought the CT really into the center of attention in 1967 (Lawrence & Lorsch 1967, pp. 8-13; Mintzberg 1979; Morgan 1989, p. 54). In order to cope with their environment, organizations develop units. There should be departments for design, for attending to technological developments, for production, for focusing on resources like machines and materials. These units may differentiate in their goals, time orientation, interpersonal style and the formality of their structure. For instance, the level of horizontal specialization may vary between the units. To realize a good state of collaboration (the units have to work together of course), there are individual persons (managers), cross-functional teams or the organizational hierarchy. These are integrating mechanisms. The researchers found that in more uncertain environments, such as the plastics industry, the need to differentiate was greater in order to be effective. High performers in this industry were more differentiated and more integrated, compared with low performers. In more certain environments, like the container industry, there was less need for differentiation. Concluding, they stated that there is no single best structural form for all situations, and that appropriateness in the light of the contingencies is the key to well-functioning (Pugh et al. 1983, p. 48).

In the literature, contingency (context) variables other than environmental variables, have also been recognized. An example is the classical research of Woodward in 1965, who stated that technology is a contingency for the organizational structure. In a study in a region in England in the 1950s, she found that organizational structure and technical systems of production correlated in the following ways:

- mass production needs formal organizations with a complex administrative hierarchy of specialist staff and control departments;
- process technology fits with management through committees instead of with instructions down the line;
- unit technology requires a less extensive administrative control in a looser structure.

These relations were strong for the successful firms; the organizational effectiveness resulted from a match between the context and the structure (Mintzberg 1979, pp. 11, 217; Pugh et al. 1983, p. 27).

Strategy was also studied as a determining variable for organizational structure. Chandler's research is known from the famous statement "structure follows strategy” (Chandler 1962, p. 14). Strategy is viewed as defining long-term goals and adopting a course of action (Chandler 1962, p. 13). Structure is seen as the design of the administration of the organization (Chandler 1962, p. 14).
Strategies require refashioned structures to operate efficiently (Chandler 1962, p. 15). Du Pont's strategy of diversification (fabricating many different products) led to a multi-divisional decentralized structure (Chandler 1962, pp. 88, 104). The strategy is viewed as a (controllable) contingency variable for the structure. Although this strategic view uses a linear approach, Miles & Snow claim that even in Chandler's work there is no simple causal relationship between strategy and structure (Miles & Snow 1978, p. 7). Organizations spent years to develop an appropriate structure.

All the researches mentioned describe one-way alignment. The context (contingent) variables determine the organizational features. These contingency ideas have been a reaction to generally valid organizational principles (Weber, Taylor, Fayol) that favored fixed organizational structures (Pennings 1989, p. 4.1-3). Schrama states that, in the 1960s, the CT killed off the idea of universal laws for management (Schrama 1991, p. 27; see also Miles & Snow 1978, pp. 250-251; Pennings 1989, p. 4.1-3). The previously mentioned studies of Burns & Stalker, Lawrence & Lorsch and Woodward made clear that there was no single best way to organize that applied in all situations (contexts). Depending on the contingent situation, the structure (and the management) of the organization should be determined.
4.3.3 Discussions of, and developments in, the contingency theory

There are some important points of criticism on the theory (Ahaus & Kastelein 1985, pp. 399-400). These criticisms have their roots in other organizational theories, as classified by Astley & Van de Ven. They describe four views on organization and management, as depicted in Figure 4.8 (Astley & Van de Ven 1983, pp. 248-251):

- systems-structural view: the theories in this view, on the analysis level of individual organizations, share a common deterministic orientation. Organizational behavior is determined by constraints. The manager's role is a reactive one, responding to changing environments by rearranging the internal organizational structure to achieve effectiveness. The authors place the CT in this view;

- strategic choice view: there is a choice available in the design of the organizational structure. These theories are present at the level of organizations too. Internal political considerations are relevant here. Obviously there is slack in organizations which enables them to select between alternatives: not all the choices concern the survival of the organization. Another point is the opportunity to manipulate the environment. This view is well-known, having been expressed by Child (strategic choice) and Pfeffer & Salancik (influencing the environment);

- natural selection view: this macro-view on organizations focuses on structural and demographic characteristics of populations of organizations. The available resources are present in so-called niches and are relatively intractable for individual organizations. The view is deterministic: there
is no room for choices outside these niches. Organizations do not have the ability to adapt their structure according to the requirements of the particular niche: inertia. Population ecology ideas belong to this group; collective action view: also at the macro-level, these theories emphasize collective survival via collaboration between organizations by means of constructing a regulated and controlled social environment as an interface with the natural environment. Inter-organizational networks exist, in which there is room for the participants to bargain, negotiate and so on.

The CT is criticized from the adjacent points of view, namely from the angle of the strategic choice and from the angle of natural selection.

The debate between CT and strategic point of view focuses on 'the strong deterministic bias that largely ignores the important variable of managerial choice' (Miles & Snow 1978, p. 259; Morgan 1989, p. 74). According to Schreyogg, the CT states that (Schreyogg 1980):

- there is only one best structure related to a specific context without a choice among alternative structures;
- the environment is considered as a given circumstance and the organization is not able to influence or control its environment;
- the organization has to achieve a certain externally determined level of economic performance to survive.

According to these remarks, management has no choice, other than to follow the external constraints for organizational survival. This CT approach proposed by Schreyogg is contrary to Child's ideas of strategic choice for the management of organizations:

- organizational decision-makers have more autonomy than suggested in the deterministic approach. There may be a variety of structures possible in the (given) environment. Not all the management choices are relevant to organizational survival;
- organizations can select niches and can change their environment (Aldrich & Pfeffer 1976, p. 90; Child 1972, p. 97). Firms try to influence governments to realize restrictions for the entry of new organizations into their markets and to stabilize market prices (Aldrich & Pfeffer 1976, p. 91). Although organizations have these opportunities, influencing their position in the environment is difficult. Entry barriers, for instance, limit organizational choice (Aldrich & Pfeffer 1976, p. 94). Influencing the state government is only possible for the big enterprises (Aldrich & Pfeffer
1976, p. 94). However, on a local scale, smaller organizations can also put pressure on their environment, such as the city councils for instance.

- organizations do not operate at the limits of their efficiency. Furthermore, economic performance is only one of the multiple points of reference for management. Besides, organizational structure might influence the performance levels, but the strength of the linkage between structural arrangements and performance variation is questionable. Therefore, managerial decision-making is not only determined by structural features (Aldrich & Pfeffer 1976, p. 90; Astley & Van de Ven 1983, p. 253; Child 1972, pp. 98-100). However, especially under heavy competition, economic performance is the bottom line, and every element that supports the performance is relevant.

Ending the criticism from the strategic choice angle, it is clear that there is room (slack) to maneuver between structural forms in organizations. Not all the structural decisions seem relevant to survival. Internal political conditions therefore become relevant to organizational decisions (Child 1972, p. 101).

The second point of criticism comes from a different perspective, namely the population-ecological theories (Pennings 1985). Where the CT gives the management the opportunity for internal changes, the population theory states that the environment only selects those populations of organizations that are congruent with the environment. This congruence makes the organizations successful (Aldrich & Pfeffer 1976, p. 81). Population ecology attacks CT, for its notion on ability of management to make structural changes in organizations. Population ecology states that survival is determined by the environment, and not by decisions of the management. Organizations are inert, and under changing conditions they are hardly (if not) able to change to a new organizational form (Pennings 1989, p. 4.1-6; see also Astley & Van de Ven 1983, p. 253). Only in situations with severe problems are there enough incentives for radical organizational redesign. In a later version of the population theory, redesign became possible but it was seen as the start of a new organization (Pennings 1989, p. 4.1-27). Therefore, we can state that management, even under this theory, can make decisions with fit as an important criterion.

The question raised by these criticisms is whether the CT should be abandoned or perhaps could be adjusted. The argument of the population ecology (it would not be possible to adjust the organization to a changing environment) has faded because of the change opportunities that are integrated within the adjusted theory. The arguments of the strategic choice can be integrated in the CT as well.
Donaldson defended the CT by admitting the presence of strategic choice and recognizing that more than one structure was appropriate under the same contingencies (Ahau & Kastelein 1985, p. 400). Child attempted to combine strategic choice and CT by admitting that the goodness of fit may have performance implications (Astley & Van de Ven 1983, p. 253). Although Child attacked determinism and stated that organizations reach fits thanks to internal processes, the difference between strategic choice and CT is not that great (Pennings 1989, pp. 4.1-23, 24). The reason for this deterministic bias is probably that the descriptive studies at meso-level obtained a normative value at micro-level. The fact that most organizations behave in a certain way does not mean per se that there are no other possibilities to maneuver. Volberda describes the adjustments of the CT as relaxing some of the unrealistic assumptions of the static CT (Volberda 1992, p. 55). Miles & Snow developed the neo-contingent perspective, combining the CT with the managerial role (see also dynamic CT: Volberda 1992, p. 57):

1. the managerial choice is the link between the organization and the environment (Miles & Snow 1976, pp. 260, 263). Managerial choices shape the structure (Miles & Snow 1976, p. 7);
2. the management has the ability to create, learn and manage the environment. It not only responds, but acts to create and/or enact its environment (Miles & Snow 1976, p. 5);
3. the CT encompasses the many ways to respond to environmental conditions.

The CT is not always confirmed by empirical results (Ahau & Kastelein 1985, p. 401; Drazin & Van de Ven 1985, p. 514; Pennings 1989, pp. 4.1-18, 19). Mintzberg indicates that, although there is a lot of empirical support for the contingency theory, synthesis is still lacking (Mintzberg 1979, pp. 11-12). The reason for this is found in the lack of conceptual foundation of the concept of fit. Drazin & Van de Ven indicate that this fit, the basis for the CT, is central to the development of theory, collection of data and statistical analyses (Drazin & Van de Ven 1985, p. 515). This fit lacks a precise definition (Drazin & Van de Ven 1985, p. 514; Schoonhoven 1981: lack of clarity; Venkatraman 1989, p. 423). Therefore, a comparison between empirical results is hindered.
4.3.4 The concept of fit elaborated in the contingency theory

Basically the ideas on fit (and thus the CT) can be divided into two schools (Drazin & Van de Ven 1985, p. 519; Mintzberg 1979, p. 219).

1. A fit is a configuration of various variables clustering together (configuration hypothesis: see for instance the structural configurations in subsection 2.3.4.3)

In this first stream, the variables of, for instance, the organizational structure are related with each other (Miller 1986, pp. 235-237; Mintzberg 1979, pp. 299-304). In addition, elements of strategy and environment often join to form a small group of certain types (see also Drazin & Van de Ven 1985, p. 521; Venkatraman 1989, p. 432). There are no dependent or independent variables; every variable depends on the others. Configurations consist of mutually supportive elements. The presence of certain elements can lead to a prediction of the remaining ones. This view is called a systems view (Drazin & Van de Ven 1985, p. 519; Mintzberg 1979, p. 303). Drazin & Van de Ven found support for the systems view. It was shown that a fit between organizational variables was a significant predictor of performance (Drazin & Van de Ven 1985, pp. 534-535). This relation is first seen in the previously described work of Khandwallah in 1977.

2. A fit describes the presence of a relation between single contextual variables and structural variables (congruence hypothesis: see for instance the relations between strategy and structure in subsection 3.4.2).

The second stream deals with relating single variables of the context and the organization. The literature recognizes:

- studying the fit without examining performance implications:
  Drazin & Van de Ven state that the early CT researches the congruence between environment variables like complexity, and organizational variables like centralization, without examining the consequences for the performance (Drazin & Van de Ven 1985, p. 516). They refer to it as the selection approach, based on the terminology of population ecologists (see also Venkatraman's match approach). Nevertheless, the necessity of fit for the organization's performance becomes relevant in this way. In the selection approach, organizations survive because they fit into the environment
via a process of variation, selection and retention (Aldrich & Pfeffer 1976). This survival is an implicit indicator of good performance;

- explicitly relating the fit and the organizational performance: interaction effects between contextual and organizational variables explain the performance (see also Pennings 1989, p. 4.1-22; Schoonhoven 1981, p. 351). In this form, there is no assumption of causality between the contingency and the organizational variables; the adjustment between those variables has no clear direction (Pennings 1989, p. 4.1-21; Venkatraman 1989, p. 425). Therefore, Venkatraman's fit as mediation is not appropriate for use in this situation because the organizational variable is seen as an intervening mechanism between the contingency variable and the performance. Indeed, this approach suggests a clear order in influencing variables, as if the contingencies affect the organization, and not vice versa.

In the moderator (interaction) approach, the adjustment between several variables correlates with a higher performance. This effect is known as synergy. This joint effect is seen via interaction tests: the combination between variables leads to higher results than expected only on the basis of the single variables (Venkatraman 1989a, p. 425). Maxwell & Delaney gave the following example: only when people use diet and therapy does medicine produce a lower blood pressure (Maxwell & Delaney 1990). Another example is the effect of the fit between sun, rain and soil nutrients on the returns from crop fields (Drazin & Van de Ven 1985, p. 517). Venkatraman recognized the approach of fit as moderation as being appropriate in this situation. The fit between predictor and moderator determines the performance. Hypotheses for this kind of research state that the performance outcome is jointly determined by the interaction between predictor and moderator variables (Venkatraman 1989a, p. 426). Two kinds of analysis are suggested:

- this kind of hypotheses can be tested while using a regression analysis with interaction terms;

- analyses of variance (ANOVA) are suggested to test interaction effects (Venkatraman 1989a, p. 432). According to Drazin & Van de Ven, the use of ANOVA is the most common way (Drazin & Van de Ven 1985, p. 530). The advantage of ANOVA is the automatically generated interaction terms. This is especially handy for higher-order interactions. The advantage of regression analyses is its higher level of measurement.
The variables in an ANOVA are measured at nominal level, and in a regression analysis at least at interval level. Therefore, the ANOVAs are weaker. However, when interaction effects are found, interaction is really present.

The empirical support for the interaction approach is mixed (Drazin & Van de Ven 1985, pp. 517, 518, 532). In some studies, the interaction effects are clear, but this is not always the case. Drazin & Van de Ven could not support the interaction approach in their research. Jauch et al. also found no significant interactions (Venkatraman 1989a, p. 428). Does this mean that the interaction approach is not valid for testing the effect of fit? Not automatically, because:

- there is the question of precise operationalization: have the theoretical variables been properly measured?
- there is the problem of multi-collinearity: the predictive and moderate variables correlate too much with each other to draw conclusions on their interaction (Drazin & Van de Ven 1985, p. 519; Venkatraman 1989a, pp. 426-427);
- there is the lack of a theoretical basis for the interaction hypotheses (Venkatraman 1989, p. 428). By using a reductionistic technique, single variables of organizations and environment are analyzed, without taking the internal consistency between variables of a single construct as a theoretical point of departure (Drazin & Van de Ven 1985, p. 519; Venkatraman 1989a, p. 432). This third problem can be solved by combining the configurational and congruence approaches (see for instance the extended configuration hypothesis: effective structuring requires a consistency among the design parameters and contingency factors: Mintzberg 1979, p. 220).

Research should start with recognizing ‘Gestalts’ for the variables selected. These configurations are theoretically based (see for instance: Leifer 1988; Miller 1986; Mintzberg 1979). Based on those configurations, concrete hypotheses are designed, relating the appropriate contextual variables and organizational variables. Starting with configurations, the most reasonable fits are logically aligned and researched. If the interaction tests were to detect fits, then these findings would be of a great practical value. The interaction approach can be used as a support for the systems approach (Drazin & Van de Ven 1985, p. 523).
4.3.5 Conclusion

Looking at the CT in the field of Organization Studies, the following features become clear:

1. the contingencies and the organizational variables have to be in balance for a good performance of the firm;
2. the relations between the variables are based on aspects of organizational functioning;
3. the CT used to state that contextual factors affected organizational factors. The distinction between contingency variables and organizational variables has become less relevant because there is no clear causal direction. The relationship between contingencies and organizational factors is reciprocal (Ciborra 1991, p. 285; Hall & Saias 1980, p. 261; Miles & Snow 1978, p. 8; Miller 1988, p. 281). Organizations also influence their environment, and structure also determines strategy;
4. it is the task of the management of the organization to find situations of balance (fit). The management has the possibility to make strategic choices concerning the contingencies and the organizational factors. Child states that there is slack for choices, and that therefore internal processes are relevant (Child 1972);
5. there is no single best way of organizing, sometimes not even under the same contingencies. Within the current contingencies, there are more situations in balance. There is also slack available in the organization in order to maneuver around a situation of balance (fit).

The CT makes clear that a number of variables have to be studied on their mutual relationships in order to understand organizational functioning, and offers methods to study this claim.

4.4 CONCLUSION ON MULTI-VARIATE RESEARCH

Comparing the CT and SISP, the following similarities appear:

- the fit between a number of variables is important for the organizational performance;
- theories on the CT and SISP developed from one-way mechanism to mutually-influencing mechanisms;
managerial choices on business processes are seen as enablers for the final values of the variables;

- there is no one single fit, not even under the same contingencies. There is slack in the organizations to choose between different situations, thus political considerations are important as well.

Both schools of thought introduce the relationship between several variables at the same moment. The CT, however, operationalized the fit concept that resides implicitly in the SISP ideas. The fit mechanism as proposed in the Organizational Studies literature, can be used to test the SISP fit empirically. Via the SISP fit, the three variables are integrated into one research design. The next chapter is devoted to that integration.