THE RELATIONSHIP BETWEEN
THE USE OF INFORMATION SYSTEMS
AND THE PERFORMANCE OF
STRATEGIC DECISION-MAKING PROCESSES

An empirical analysis

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ABSTRACT

Strategic decision makers typically use a wide range of communication and information media in complex, uncertain and often ambiguous or politically charged organizational contexts. However, little help is available in ensuring that their information behaviour is efficient and effective. This study evaluates the use of information systems (IS) as communication media in strategic decision-making processes (SDMPs), focusing on strategic information processing, and how context affects its performance.

The analysed strategic decisions ($n = 113$) were taken in the time period between 2000 and 2008 in large Western organisations. The aim of this investigation was to look at the link between the use of IS during the decision-making process and the performance of the SDMP, taking into account internal and external contextual factors. Using existing information processing theory and research on the SDMP as a theoretical basis, hypotheses were developed and environmental contingencies and political information behaviour were selected as moderating effects on the relationship of IS use and the performance of strategic decisions. A survey and complementary semi-structured interviews were conducted, which studied particular strategic decisions through quantitative and qualitative methods.

Results provide support for a number of the study’s hypotheses; however, several interesting findings regarding contextual factors, such as information anarchy and environmental munificence/hostility, do not support the hypotheses. Implications for theory and practice concerning information behaviour and its context are discussed.

Keywords: Decision making, information systems, performance, information behaviour, information politics, environmental munificence/hostility
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Foreword

This PhD thesis evolved from my M.A. dissertation about self-assessment in an organisational context, based on the performance model of the European Foundation for Quality Management (EFQM). Through my participation in the activities at the European Centre for Total Quality Management (ECTQM) and through discussions with colleagues at the Operations and Information Management Group at the University of Bradford, I acquired a new focus. Initially, based on my background in industry (banking, telecommunications, software and consultancy) and training (e.g. in database systems, Six Sigma and EFQM), the question emerged of how organisations can sustain strategic flexibility within the limitations and possibly rigid structures of information technologies. These strands of thought were brought together and contextualised within the framework of an extensive literature study, which also revealed a gap between the description of processes and the use of information systems in the literature on strategic decision making. These findings encouraged the author to pursue the question further, embarking on this PhD research.

Dedication

This thesis is dedicated to my late father Alfred and my mother Irmengard. I would like to thank them for all that they have done and been for me; their love, patience, support, and the inspiration they have always and are giving me.
Acknowledgements

The research presented in this thesis has been carried out at the University of Bradford School of Management. I would like to express my gratitude for the sponsorship I was awarded and the support of the research community at Bradford and far beyond. Especially, I want to thank my two supervisors, Dr Roger Beach and Prof Margaret Taylor, and my tutor, Prof Rosz Haniffa, for their support and guidance throughout this project, the Doctoral Research Board of the School of Management provided the framework and monitoring for this thesis, and my committee including Dr David Spicer and Prof Amir Sharif for the discussion in the viva and their feedback. I would also like to thank my department, the Operations and Information Management group. I appreciate the support from many colleagues and academics, the discussions (e.g. at the Graduate School) and the exchanges at various research meetings, conferences and seminars. Among these, the participation at the EDEN Doctoral Programme at the European Institute for Advanced Studies in Management (EIASM) in Brussels as well as the Doctoral Conference at the British Academy of Management (BAM) in Belfast have been especially useful. My sincere thanks go to the participating professors and colleagues.

Finally, I would like to give tribute to all those who have supported, inspired and assisted me in the completion of this research and during the journey of this research. Especially, I want to thank my dear wife Lydia and my family, brothers and cousins, and my friends. And, last but not least, I would like to acknowledge the participants of the survey and the interviewees for this research for their time and contributions.
## Glossary of terms used in this research

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<tr>
<th>Abbreviation</th>
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<tr>
<td>CRM</td>
<td>Customer Relationship Management</td>
</tr>
<tr>
<td>EFA</td>
<td>Exploratory Factor Analysis</td>
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<tr>
<td>ENV_DYN</td>
<td>Environmental dynamics</td>
</tr>
<tr>
<td>ENV_MUNI1</td>
<td>Environmental munificence of markets</td>
</tr>
<tr>
<td>ENV_MUNI2</td>
<td>Environmental munificence due to government action</td>
</tr>
<tr>
<td>ERP</td>
<td>Enterprise resource planning software</td>
</tr>
<tr>
<td>ERP I</td>
<td>First generation of ERP software</td>
</tr>
<tr>
<td>ERP II</td>
<td>Second generation of ERP software</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and communication technologies</td>
</tr>
<tr>
<td>IND</td>
<td>Industry sector of case companies</td>
</tr>
<tr>
<td>INFO_ANARCH</td>
<td>Information anarchy, i.e. a special type of political information behaviour</td>
</tr>
<tr>
<td>IS_USE</td>
<td>The use of information systems in SDMPs</td>
</tr>
<tr>
<td>KPI</td>
<td>Key performance indicator</td>
</tr>
<tr>
<td>M &amp; A</td>
<td>Merger and acquisition</td>
</tr>
<tr>
<td>MLR</td>
<td>Multiple Linear Regression</td>
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<tr>
<td>n.s.</td>
<td>not significant</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>POWER</td>
<td>Political influence of organizational actors and stakeholders</td>
</tr>
<tr>
<td>RQ</td>
<td>Research question</td>
</tr>
<tr>
<td>SBU</td>
<td>Strategic Business Unit</td>
</tr>
<tr>
<td>SD_COMPLEX</td>
<td>The complexity of strategic decisions</td>
</tr>
<tr>
<td>SD_DURATION</td>
<td>The duration of strategic decisions</td>
</tr>
<tr>
<td>SD_FORMAL</td>
<td>The level of formality of strategic decisions</td>
</tr>
<tr>
<td>SDPERCO</td>
<td>The performance of strategic decisions in terms of cost</td>
</tr>
<tr>
<td>SDPERSPE</td>
<td>The performance of strategic decisions regarding speed</td>
</tr>
<tr>
<td>SDPEROPT</td>
<td>The performance of strategic decisions regarding the generation of strategic options</td>
</tr>
<tr>
<td>SDPERSKH</td>
<td>The performance of strategic decisions regarding the satisfaction of involved stakeholders</td>
</tr>
<tr>
<td>SDM</td>
<td>Strategic decision making</td>
</tr>
<tr>
<td>SDMP(s)</td>
<td>Strategic decision-making process(es)</td>
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1 Introduction

This chapter opens with a description of the research topic and the research problem under investigation including the organizational background of strategic decision making that provides context to the research. In section 1.2, the research objectives and research questions are explained. Section 1.3 shows how the thesis is organized, and section 1.4 gives the definitions for some special terms used in this study.

1.1 Research problem and background

Organisations provide a range of IS for the use of their top managers in strategic decision making and the related organisational communication. This study attempts to contribute to the debate of strategic decision-making effectiveness and explores whether and how IS can be used to improve SDMPs.

1.1.1 Use of information systems (IS) in strategic decision making

In today’s corporate world, decision makers can choose between many different IS as communication media to process information in the context of strategic decision making (SDM) ranging from traditional or ‘old’ media to so-called ‘new’ media. 

Traditional media include direct personal contacts involving the physical presence of the communicating partners during formal and informal meetings and other long-established means of communication such as telephone or videoconferencing. The so-called ‘new’ media cover corporate intranets connected to the Internet, mobile technologies such as mobile phones, personal digital assistants (more commonly called PDAs or smartphones), pagers and instant messaging (Nardi et al., 2000; Belanger and Watson-Manheim, 2006). The ‘quest for instant connections and
enhanced communication’ (Cameron and Webster, 2005:100) has led to the ‘adoption of a multitude of technologies designed to speed up organizational activities’.

Access to email and the internet has become a business critical application for most organisations (Naylor, 2010). ICT skills in OECD countries (i.e. where the case companies for this research are based; see Section 5.1) are now ‘spread widely across the economy’ with ‘over 20% of the employment […] in intensive ICT-using occupations’ (OECD, 2008:2). Information and communication technologies (ICT) have itself become an ‘important contributor to growth’ and the magnitude of investment in this area can be judged for example by the amount of sales of ICT of the top 250 ICT firms which reached USD 3.8 trillion (i.e. 2.05 trillion GBP)\(^1\) in 2008.

In the workplace, the desire for instant feedback leads to phenomenona such as ‘multicommunicating’ (Cameron and Webster, 2005; Reinsch et al., 2008), i.e. a 'specific form of multitasking' which involves 'engaging in multiple conversations at any one time' (Turner and Reinsch, 2007:37) or ‘polychronicity’, i.e. ‘the communication itself may be performed simultaneously with other tasks’ (Cameron and Webster, 2005:99). As the first of its three research questions (RQ1, see section 1.2), this study investigates the selection and processes how different IS are used as communication media in SDMP.

1.1.2 The nature of strategic decisions and IS evaluation

Decisions can be categorized as strategic or routine. To understand the nature of strategic decisions, it can be useful to have a look at the opposite of strategic

\(^1\) USD converted to GBP using a currency exchange rate of 0.54022 following the official exchange rate information for 31st December 2008 provided by HM Revenue & Customs (2010).
decisions, i.e. **routine decisions**. They are typically reiterated tasks, i.e. the processes of routine decision making are usually repeated frequently or periodically, and can be observed and optimized over time by the decision makers in coordination with their line managers.

In contrast, **strategic decisions** are characterized by their uniqueness and rarity (i.e. being unusual; Hickson *et al.*, 1986:35; Cray *et al.*, 1991), and represent a special kind of decision making under uncertainty (Schwenk, 1984). Some strategic decisions happen so rarely that they may arise once every few years, e.g. a merger or acquisition or the decision to open a new plant, which means that the decision situation is unique each time. Unlike more routine decisions, strategic decisions typically involve a higher degree of complexity leading to important trade-offs between many factors with substantial consequences.

In practice, strategic decision makers face limitations of time, information and cognitive capacity (bounded rationality; Simon, 1979) when solving strategic problems. Additionally, the SDMP involves the upper echelons of an organisation, i.e. the ranks of top executives and senior managers, who have to take decisions affecting the whole of the organisation.

However, while the evaluation of information behaviour and information systems (IS) is seen by practitioners as ‘one of the top issues of concern’ (Irani and Love, 2008:xiv), ‘too often systems’ justification is seen and treated as a ritual which has to be complied with but which is manipulated to achieve intended outcomes’ (Irani and Love, 2008:xv). All the above factors let SDMPs become a complex topic and increase the challenges of any evaluation efforts.
1.1.3 The need to evaluate IS use within the SDMP

To be able to deal with the challenges associated with high-stakes decisions, strategic decision makers must use adequate communication practices and know about the likely relevance of contextual factors to make effective use of IS. Considering the possible impact of such IS use, there can be both positive and negative effects. While anticipated consequences can be managed, it is difficult to evaluate disbenefits of unanticipated and ‘unintended consequences’ (Cameron and Webster, 2005) because unexpected outcomes of technology and organisation may cause ‘side-effects’ (Ciborra and Hanseth 2000) that can seriously inhibit the effectiveness of the SDMP when ‘people tend to consider the technical and financial rather than the human and organisational risks’ (Bannister, 2008:110).

In practice, it is difficult to observe, evaluate and quantify existing ongoing disbenefits because of their often unexpected and unwanted nature. However, the use of email is a ‘particularly good example of mixed benefits’ (Bannister, 2008:102). On the one hand, email systems are a communication medium with enormous benefits, enabling easy, rapid and direct access between email users (e.g. key decision makers; Markus, 1994). On the other hand, persistent interruptions and data overload (see section 3.1.5) can be severe downsides. Additionally, Naylor (2010:5) warns of employees who are disgruntled or intend to leave as ‘they may seek to use the email system to remove confidential information from the business to be used for their own purposes at a later date’. Another example is the possibly overzealous use of PC-based presentation tools (Microsoft PowerPoint, Microsoft Excel and other such tools) encouraging ‘users to indulge in quasi desktop publishing, sometimes at the expense of efficiency, content and effective communication’ (Bannister, 2008:101), for example through overly simplified presentational visualisations (e.g. Griffin and
Whiteside, 1984) which can become dangerous when complex causal relationships of specific strategic decisions are obscured by simple graphic representations, and consequentially neglected. A third example is the phenomenon of information filtering or mismanagement, whether deliberate or through negligence, which can create new risks, for example those ‘created by ICT (which) include business, personnel or legal risks’ (Bannister, 2008:101). Naturally, strategic decisions impact the interests of stakeholders representing power centres with concerns both within and beyond the organisation. Therefore, when conceived as a stepped process for identifying issues of strategic relevance to the organisation and the stakeholders, the SDMP also encompasses a political dimension.

A main contribution of this research is therefore the conceptualization of performance addressing the issue of how to adequately measure the performance of strategic decision making processes. A second main contribution of this research is the question of how IS use influences different dimensions of SD performance (RQ 2, see 1.2), and if this influence is changing in certain contexts, e.g. politically charged situations or dynamic organisational environments. Choosing an effective and appropriate evaluation approach is ‘inevitably context dependant’ (Irani, 2008:89), as the nature and the context of the decision process are key factors in IS evaluation. Better understanding of how contextual factors influence the effectiveness of their use of IS in the strategic decision-making process (SDMP) is seen to improve the performance and benefits associated with strategic decision making (SDM) as it takes into account the social and political embeddedness of strategic decision making and its effects on IS use within the SMDP.

In sum, all these situative conditions, i.e. the politicality of the decision making environment, the favourablitiy of markets and governments to the organisation, and
environmental stability (see Section 3.4 for more detail) are likely to be relevant as contextual factors. As the literature review in Chapter 2 will demonstrate in detail, research on IS regarding the evaluation of IS use and information behaviour has so far mainly concentrated on questions such as how to justify the implementation of information technology (IT) from an operational point of view (e.g. Gunasekaran et al., 2006), how the relating financial investments can be assessed ex ante (Irani and Love, 2001; 2002; 2008; Irani, 2002), and how these IS are accepted by management and the workforce (e.g. DeLone and McLean, 2003). Research is scarce, however, on the factors that influence the relationship between IS use and its benefits in the SDMP; this is the focus of the present study (RQ 3, see section 1.2) taking into account the likely influence of these contextual factors on the link between IS use and SD performance.
1.2 Research objectives and research questions

Against the backdrop described in the previous section, this thesis combines research on the SDMP with information processing theory to investigate the influence of a series of theoretically derived factors on the relationship between IS use and different facets of SD performance.

In particular, this study will address the following three research questions in detail:

RQ 1: What are the processes of information processing in SDMPs, and what communication media are used to enable these processes?

RQ 2: What is the nature of the relationship between the use of IS (IS use) in SDMPs and the benefits achieved through this use (SD performance)?

RQ 3: To what extent is this relationship affected by contextual characteristics of the environment of the specific decision-making process?

The study investigates these questions empirically using quantitative data gathered by means of a questionnaire survey administered to senior managers, reporting on discrete instances of the use of IS in specific strategic decisions in which they had been involved. Additionally, interviews were conducted with selected respondents to complement and triangulate the survey with qualitative data. This will be explained in greater detail in the methodology section in Chapter 4.
1.3 Organisation of the thesis

The thesis is structured as follows. To identify the gaps in research that this study addresses, Chapter 2 provides the rationale for combining the two bodies of literature on strategic decision-making process (SDMP) and information systems (IS) research. It critically reviews first literature on the SDMPs, followed by, IS research, respectively. Based on the review of these bodies of literature, Chapter 3 presents a conceptual research framework relating IS use to SD performance and linking a number of moderating factors to the strength of this relationship. Chapter 4 explains the selection of an explanatory research design and the use of quantitative empirical data for investigating the focal relationships. Additionally, the gathering of qualitative data through conducting interviews is explained. In Chapter 5, the findings are presented, analysed and discussed. The empirical data are interpreted and related to the findings of prior research. Chapter 6 concludes this thesis with a brief summary including the results of hypotheses testing, a discussion of the contribution and implications of the results for research and practice, a discussion of the limitations of this study, and some suggestions concerning future research.
1.4 Definitions used in this study

This section presents the definitions used in this study.

1.4.1 Stakeholders of strategic decisions

This study adopts Nutt and Backoff’s definition of stakeholders as ‘all parties who will be affected by or will affect [the organisation’s] strategy’ (1992:439). This is a typical definition within the strategic decision-making literature and is a variant tailored to strategic decision making based on the earlier and more general definition of a stakeholder given by Freeman (1984:46): ‘a stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization’s objectives’.

1.4.2 Information systems (IS), information technology (IT) and the term information

Information systems (IS) are defined in this research as communication media for organisational information processing. The notion of IS in this research covers both traditional and ‘new’ media, including all forms of information and communication technology (ICT) and also more abstract kinds of communication such as reporting based on key performance indicators (KPIs). This very broad definition of IS is deliberately at odds with the dichotomic use of the terms old (e.g. face-to-face communication, telephone) and new media (e.g. email, voicemail or one-to-one video conferences; Rice et al., 1984; Markus, 1994), which, it is claimed, hinders an awareness of the complexity of the simultaneous use of multiple IS, which creates a web of interwoven communication processes called organisational communication.
Following Porter and Millar, information technologies (IT) are defined broadly in this thesis, as encompassing ‘the information that businesses create and use as well as a wide spectrum of increasingly convergent and linked technologies that process the information’ (Porter and Millar, 1985:149). IT therefore includes all technologies used for information and communication, and is synonymous with the term ‘information and communication technologies’ (ICT).

Information is also defined broadly, after Daft and Macintosh, as ‘that which alters a mental representation. If a message is received but the meaning is already known or cannot be interpreted, no information is conveyed. A variety of cues and sources, including verbal languages, touch, visual observations, and computer output, may convey information if they add to the receiver's mental image’ (1981:209-210). This definition of information is potentially flawed from an operational perspective, in that it is hard to measure. Daft and Macintosh (1981:210) suggest therefore, in the tradition of the information processing literature, to use the notion of ‘amount of information’.

In the present study, information and data are conceived as ‘artefacts that add to our sum of knowledge on a particular issue’ (Emmitt and Gorse, 2003:24). People involved in SDMPs will usually have a common understanding of the information used, but because strategic problems can be highly complex, political, and embedded in a fast-changing context, information becomes more specialised and ‘the ability to achieve a common understanding among all parties becomes more difficult and requires more effort’ (Emmitt and Gorse, 2003:24). For example, while the financial position of an organisation can be estimated from an overview of accounting figures (detailing assets, performance figures and financial ratios) and information in the public domain (share prices and statements to shareholders), a detailed judgment might depend on specialist
information such as due diligence research. The characteristics of different information processing approaches used in SDMPs, such as business intelligence (BI), are discussed by Frishammar (2002). More detailed research focusing on decision support systems is presented in the following section.

1.4.3 Performance and effectiveness

The notion of performance is often used synonymously with other terms such as efficiency, effectiveness, accountability, success, improvement, ability and productivity (Cameron and Whetten, 1983:2). Despite the nuances of these terms, the concept of effectiveness is seen as the underlying issue and essential to the debate of performance (Cameron and Whetten, 1983:7). For the purposes of this study, the terms performance and effectiveness are used interchangeably because one of the major contributions of this study (see section 6.1.2) is the conceptualization of the performance of the SDMP (see section 2.7) focusing both on operational dimensions of performance (such as cost effectiveness and speed) and strategic dimensions (such as the creation of alternative strategic options and satisfaction of stakeholders).

In the following Chapter 2, the two bodies of literature relevant for this research are reviewed in detail, namely literature on the SDMP and the use of IS within the SDMP.
2 Review of the literature

The introduction to this research began in Chapter 1 with a description of the research topic and the research problem under investigation, the research objectives and research questions. Section 1.3 showed how the thesis is organized, and section 1.4 defined the terms used.

This second chapter critically reviews the bodies of literature that are directly related to the issues under investigation: the strategic decision-making process (SDMP), information systems (IS), and related phenomena. In section 2.1 the function of this literature review is stated. Section 2.2 provides an overview of the relevant literature. Section 2.3 introduces the decision-making perspective of organisational research. This is followed by section 2.4, in which the information processing perspective is examined. Section 2.5 looks at the organizational context of SDMP and IS, and section 2.6 presents different conceptualizations of performance and effectiveness of SDMPs. Finally, Section 2.8 presents a summary of gaps found in the literature.

2.1 The function of the literature review

The general function of the literature review is to examine prior research in order to find theoretical perspectives on the research question and the concepts it uses. However, while technical consideration of research design properly belongs in Chapter 4, it is appropriate to discuss at this point some important philosophical assumptions which were present in this study from its inception, and which informed not only the process of selecting and reviewing the two bodies of literature (i.e. IS and SDMP), but also the development of this chapter’s argument.
It would be naïve to assume that any literature review, no matter how exhaustive, could furnish an *objectively optimal* conceptualisation of the SDMP and of IS use. Instead, the researcher seeks a conceptualization which is *optimally useful* in achieving the specific objectives of the present study. This means that the researcher’s assumptions and preferences about doing research need to be examined and justified at the start of the research process. The importance of such examination to the nomological integrity of this research is that it serves as a means by which a defensible critical perspective can be established, from which the selection and review of literature can be undertaken.

The ‘worldview elements’ identified by Creswell (2003) and refined by Creswell and Plano Clark (2007) provide a useful scheme for organizing and examining research assumptions. They comprise a five-fold distinction of *ontology* (what is the nature of reality?), *epistemology* (what is the relationship between the researcher and that being researched?), *axiology* (what role is played by the researcher’s values?), *methodology* (what are the implications of the proposed research design?), and *rhetoric* (what is the language of research?).

Starting with the assertion that the present study will seek empirically to examine the effects use of IS use within the SDMP, it is evident from an *ontological perspective* that that this requires ‘something [to be] available for observation, study and analysis’ (Blumer, 1969: 21).

The intention to choose the strategic decision as this ‘something’ is only a first step: the literature must deductively yield
(i) support for the existence of strategic decision phenomena which can be made susceptible to empirical investigation through separation from the context(s) in which they occur, and

(ii) support for strategic decisions to be treated as discrete within an overarching entity or process of strategy.

Furthermore, since this study seeks in explanatory vein to develop a methodology for identifying and analysing the effects of IS use on the SDMP, it is not sufficient for strategic decisions to be rendered visible and susceptible to empirical observation: the literature must also provide

- support for the context of strategic decisions to be operationalised, so that the effects on the SDMP of variables other than IS use can be controlled for.

Both research on the SDMP (Van de Ven, 1992) and on IS ‘draw upon a very wide range of disciplines’ (Mingers, 2001:240), and this has two important epistemological implications for the present study:

- the sheer volume and quality of exploratory and descriptive peer-reviewed studies on IS use and the SDMP, and the detailed nomological framework that can be extracted from them, gives rise to some optimism that an explanatory work, including the setting and rigorous testing of relational hypotheses, will be possible
- but in line with the above-stated principles of optimal utility and sufficiency, it will be necessary to adopt an organising perspective on the literature, especially with respect to the SDMP literature which is
arguably the more conceptually challenging and methodologically diverse.

In order to ‘reduce confusion in the literature’, Van de Ven (1992:169) suggests a focus on the SDMP as a process. The rationale for combining the two literatures of the SDMP and information processing is bolstered by the process perspective (Pettigrew, 1997; Pye and Pettigrew, 2005; Elbanna, 2006) because it is widely deployed by researchers in both research streams (see the reviews of Van de Ven, (1992) for SDMP and Wilson (1997) for IS research). Accordingly, in this study the nature of strategic decision making is understood from a process perspective with different actors as key informants.

The objectivist aim of gathering data about phenomena in order to accept or reject hypotheses about them is consistent with the neutralist axiology required by scientific positivism, but it is submitted that a more subtle and arguably more transparent approach to values is called for. While the researcher fully intends to adopt a neutralist axiology in the gathering of data and the quantitative analysis of findings, this in itself amounts to an axiological preference given that it will necessarily involve consideration of political, behavioural, environmental and other contextual artefacts which many researchers have deemed suitable for investigation only through inductive, interpretivist methodologies which downplay the importance of axiological neutrality or deny its very possibility (Smircich and Stubbart, 1985; Thomas and McDaniel, 1990; Phillips and Brown, 1993).

To this extent, the methodological and axiological assumptions of the present study are closely linked, and both contribute strongly to its rhetoric. In general terms, the rhetorical aims of doctoral work are stipulated by the rubric: making a persuasive case
for a study’s novelty and its contribution to the field. It is submitted that for the present study, arguing the effectiveness of a rigorously hypothetico-deductive, quantitative and axiologically neutral approach to the explanation of an organisational phenomenon of some complexity, is a vital precursor to these general rhetorical aims.

A summary of the worldview elements adopted would usually be provided by the selection and justification of a philosophical paradigm, but the researcher shares with Maxwell (2012: ix) a scepticism of paradigms, and on similar grounds to his: it is preferable for researchers rigorously to examine the philosophical foundations of their work from first principles, without succumbing to the inflexible and prescriptive thinking to which paradigm-centred approaches tend. Furthermore, the approach laid out in this section is probably capable of reconciling or overcoming at least some of the philosophical incompatibilities which monolithic paradigms were designed to separate.

### 2.2 Taxonomy of relevant literature

Before critically reviewing the literature, it is useful to consider the broad topology of the fields under examination. The **topic of this study** is situated in two broad fields: first, in the rich literature of the SDMP, and secondly, in the literature of IS with a focus on information processing in the SDMP. The SDMP is seen by many authors as a key element of management-centred conceptions of organisations (e.g. Astley and Van de Ven, 1983; Dean and Sharfman, 1996). On the other hand, the SDMP is closely linked to information processing; for example, Boland (1984:868) calls the SDMP, the design and monitoring of the related IS used within the SDMP and organisational designs in
general the ‘three interrelated problems that must be addressed by any organization’. This link between decision making and information processing is given utmost importance by Simon (1973:269–270), who stated that the question of ‘how to organize to make decisions – that is to process information’ is the central problem of organisations in a post-industrial society.

The mutual influence and interdependence of the SDMP and strategic information processing (SIP) becomes obvious when a specific discrete strategic decision at the level of the firm is taken as the unit of analysis. On one hand, according to rational theories (see Section 2.4.1.1), the SDMP is dependent on the flow of information through communication media feeding into the information search and analysis which is the common basis of all formal decisions. On the other hand, according to contingency theory and political perspectives (see Section 2.4.1.2) and behavioural ones (see Section 2.4.1.3), the selection of information processing media by the upper echelons of an organisation are strongly influenced by the specific needs and traits of the SDMP in question, and by the preferences of individuals.

The following Table 2.1 presents an overview of these perspectives and their application to the three main research areas covered in this study: First, research on the SDMP (see also Section 2.4 for more detail); secondly, IS research (which is discussed in Section 2.5); and performance approaches to conceptualize SDMP effectiveness (which is discussed in Section 2.7).
As can be seen from the above Table 2.1, the focus on the rational perspective complemented by rational and behavioural views allows a comprehensive conceptualization of SD performance integrating five different performance approaches (see for more details Section 2.7). In the following, the above perspectives are discussed in a conspective way (conspective meaning 'seeing together') with regard to research on the SDMP and IS. Looking at both literatures of SDMP and IS research facilitates ‘to weave them together in a way that allows each to illuminate the other’ (March, 2002:10) enabling a more complex conceptualization of the SDMP.
because the use of IS is seen in a strategic context, and which is a major contribution of this study. Considering such different perspectives is in line with Wilson (1997:551), who reports on interdisciplinary research efforts studying information behaviour which combines different disciplines, e.g. organisational decision-making theory and information systems design. Given that each discipline has its own reasons to study information behaviour, Wilson (1997) claims that it is possible to integrate studies based on a general model of information-seeking behaviour applicable, for example, to information processing (Wilson, 1997:551–552) and to channels of communication (Wilson, 1997:562). The relevance of this approach for the present study is further strengthened by the concept of choice, which is a main driver both for the dynamics of the SDMP (Child, 1997) and for the principles of media selection and media usage (Daft et al., 1987). Pye and Pettigrew (2005:S27) explicitly encourage research that ‘seeks to go beyond the board and addresses their impact and effectiveness in the broader organizational context’, which this study intends to produce by focusing on the performance of media usage by top managers involved in the SDMP.

In the following, after some clarification of the characteristics and the concept of strategic decisions (Section 2.3), theoretical perspectives on the main research areas are discussed: first, on the SDMP (Section 2.4); secondly, on information processing (which is discussed in Section 2.5); thirdly, on the organisational context of SDMP and IS (see Section 2.6), and, fourthly, on the conceptualization of the performance link between the two constructs of IS use and the SDMP (which is discussed in Section 2.7).
2.3 **The decision-making perspective on organisational research**

In his comprehensive overview of themes and topics that have emerged in research published over fifty years in the journal *Management Science*, Boudreau (2004) identifies a strand of literature which regards organisations as decision-making entities (Simon, 1973; Huber and McDaniel, 1986; Daft and Lengel, 1986). The common assumption of these authors is that decision making has become the central organisational activity (Simon, 1973). The resulting decision-making paradigm (Huber and McDaniel, 1986) holds as its focal concept that the principal task of organizational design should be the creation of structures and processes which facilitate the making of organisational decisions (i.e. decisions made within and on behalf of the organisation via its representatives and collective executive organs). The organisational effectiveness criterion implied by the decision-making paradigm is maximization of the quality of organisational decisions, quality being very broadly measured against the satisfaction of time planning, legal and budgetary concerns. High-quality decisions are thus the prime criterion of effective organisations, although the efficiency of production and services ‘will always remain an important consideration’ (Simon, 1973:269–270). According to Huber and McDaniel (1986:573), the decision-making paradigm serves four purposes: it is (1) a framework for organizing research and observations, and defining the paradigm’s conceptual boundaries; (2) a basis for developing working hypotheses prior to observation; (3) a communication aid; and (4) a source of guidelines for organisational design. For the purpose of this study, the second aspect is important for the development of the study’s hypotheses, presented in sections 4.2 and 4.3. Taking into account the concern
of the decision-making paradigm with improving the quality of SDMPs, section 2.4 reviews literature on the performance of the SDMP.

The decision-making paradigm has been deployed, in particular, in the field of strategic management. Decision-making research has a long-standing tradition of investigating strategic decision-making processes empirically (e.g. Mintzberg et al., 1976; Hickson et al., 1986, 2003; Nutt, 1984, 1993, 1997, 2000) which demonstrates that it has been possible to separate discrete strategic decisions from their contexts and use the ‘decision’ as a unit of analysis, as the present study proposes.

2.3.1 What is a strategic decision?

2.3.1.1 Characteristics of a strategic decision

A number of perspectives on, and definitions of, the strategic decision have been developed. These definitions, which are presented and discussed in this section, are based on distinct and partly competing theoretical approaches. It will be shown that the adoption of a certain definition has implications for conceptualizing the related decision-making process and strategic information processing – a critical decision for the present study –, in which individual strategic decisions form the units of analysis. Again, it is not the business of this literature review to choose an objectively optimal definition of the strategic decision, but merely to select one which is both defensible within the state of the art and which supports the methodological requirements of the present study.

A strategic decision can be conceptualized by defining its characteristics. In the literature, a number of characteristics have been identified, namely precursiveness, rarity, consequentiality, involvement and time horizon:
(1) Precursiveness is the extent to which a decision will set precedents for later decisions, and produce ramifications under which other more small-scale decisions are taken (Hickson et al., 1986:41; Rowe, 1989:45). This is disputed by some scholars (Mintzberg and Waters, 1990) who point out that the relationship between discrete decisions and strategic consequences cannot always be established. Additionally, it is ‘conceivable that some decisions are reflexive and some actions are initiated without prior collective […] decision’ (Chakravarthy and White, 2002:190). However, the precursiveness characteristic should be considered when a set of organizational actions (which is wider than a discrete decision) leads to strategy outcomes and ramifies into further decisions.

(2) Rarity is the extent to which a strategic decision is unusual, i.e. the ‘infrequency with which similar topics have arisen in the organisation’ (Hickson et al., 1986:35; see also Cray et al., 1991). This characteristic emphasizes the differences between strategic decisions and routine decisions. Some types of strategic decisions (such as changing location or building new plants) can be so rare that they need be considered only once within the lifecycle of a business.

(3) Consequentiality (Hickson et al., 1986:37) refers to the level of impact a decision will have, i.e. the gravity of its consequences. The location of strategic impact has been also been defined at the level of a single business (Porter 1980; 1996), multi-business and/or corporate level (Chandler, 1962).

(4) Involvement (Hickson et al., 1986:44) is the degree to which various interests and actors become involved, both within and outside the organisation. Also, strategic decision makers 'exercise influence and authority’ (Simon, 1976: 3) over the entire organisation and its reporting lines. The more actors are involved, the more complex a decision becomes (Hickson et al., 1986).
(5) Time horizon. In addition to the above four characteristics, ‘time is an important dimension for all elements’ of strategic decisions (Chakravarthy and White, 2002:184) because it 'may enable firms in dynamic and not-dynamic environments to exploit opportunities before they disappear’ (Baum and Wally, 2003:1109).

One further characteristics is the embeddedness of discrete strategic decisions in a strategy process and the resulting conception of strategic decision making as a process will be discussed separately in section 2.3.2 below.

2.3.1.2 Nondecisions

In addition to decisions, so-called nondecisions have to be taken into account as most real-world decisions have a status quo alternative: doing nothing or maintaining one’s current position (Bachrach and Baratz, 1963). The phenomenon of nondecisions is sometimes refered to in the literature under the name of ‘status quo bias’ (Samuelson and Zeckhauser, 1988; Ritov and Baron, 1992). Nondecisions become highly important when critical strategic issues are inadvertently or deliberately neglected.

Empirical research (e.g. Samuelson and Zeckhauser, 1988) found, in a series of decision-making experiments, that individuals disproportionately stick with the status quo, i.e. ‘faced with new options, decision makers often stick with the status quo alternative’ (Samuelson and Zeckhauser, 1988:8). This is confirmed by research by Spranca et al. (1991) showing that harmful omissions are preferred over equally harmful commissions. On the other hand, seen from a more political point of view, nondecisions can be used as tactical means in conjunction with unobtrusive power (Hardy, 1985), with the result that internal or external strategic issues are deliberately excluded from debate (i.e. quiescence).
In sum, nondecisions are an important phenomenon because they can result in inactivity and negligence in responding to strategic issues. The following section will present a typology of the content of strategic decisions based on empirical research.

2.3.1.3 Types of strategic decisions

The type of strategic decisions needs to be considered because the nature of the problem might have an effect on SDMPs (Pettigrew, 1990; Elbanna and Child, 2007). In the literature on SDMPs, the typology of strategic decisions as developed empirically by the Bradford studies (Hickson et al., 1986) is the dominant typology to categorize strategic decisions. The eight types of strategic decisions are:

1. Strategic decisions about technologies
2. Reorganisations
3. Personnel policy
4. Marketing
5. Internal operations/controls
6. Products/services
7. Financing, and
8. Location and buildings.

Other studies have focused on particular subtypes of these eight decision types, e.g. on reorganisations in the form of mergers and acquisitions (e.g. Pablo, 1994) and strategic alliance building (e.g. Thomas and Trevino, 1993). Concerning financing, other authors have concentrated on strategic investment decisions (SIDs; e.g. Carr and Harris, 2004), exploring the issue of convergence and diversity in SDMPs of SIDs. Cray et al. (1994) analysed asset mix decisions as programmable strategic decisions.

In sum, the scheme of eight types of strategic decisions as suggested by Hickson et al. (1986) can be used as a classification system because it covers all types of strategic decisions discussed in the literature. Furthermore, it can serve to evaluate the adequacy of a sampling by comparing the distribution of decision types to the Bradford studies as a benchmark.
2.3.1.4 Boundaries of discrete decisions

The boundaries of a discrete strategic decision can be difficult to describe. The ‘point of decision’ approach considers an ‘instantaneous action, a choice between two or more known alternatives, made by individuals or groups’ to be ‘decision making at its simplest’ (McGee et al., 2005:503-504). Clearly, this level of simplicity is unlikely to be found within the SDMP, where in the majority of cases (excluding the self-evidently discrete decisions taken within strategic finance), a “decision” is only one step in a long sequence of decisions and actions that culminates in a strategy (Chakravarthy and White, 2002: 184). The question of whether it is possible to separate the phenomena of the information processing involved with taking a decision from its organizational context is discussed in section 2.5.

2.3.1.5 The quality of strategic decisions

The quality of a strategic decision is an important aspect of SD performance. The quality of a decision is defined and measured against organisational goals (e.g. Dooley and Fryxell, 1999:392). Practices used to evaluate goals and alternative goals as part of a decision-making process are described in the literature (e.g. Witte, 1972; Mintzberg et al., 1976; Hickson et al., 1986; Nutt, 1984, 2000).

Smart and Vertinsky (1977) have modelled the process of decision making with quality of decisions as one evaluative variable. Decision quality is influenced by the quality of information inputs, which is influenced by the ability effectively to communicate through organisational information systems. The importance of the quality of information inputs is confirmed, for example, by the research of Dooley and Fryxell (1999). However, concerning the effectiveness of the SDMP, some authors (e.g. Molloy and Schwenk, 1995:283–284) emphasise how improving the quality of strategic decisions is problematic because they often involve choices which have not
been encountered before, and for which ‘no predetermined, explicit set of ordered responses exist[s] in the organisation’. Novelty in no way detracts from their importance (strategic value) in terms of resources committed or precedents set (Mintzberg et al., 1976; Mitroff and Emshoff, 1979; Narayanan and Fahey, 1982). Strategic decisions are often quite complex, a problem which is ‘exacerbated by the lack of precedence or predetermined responses’ (Molloy and Schwenk, 1995:284) and by environmental uncertainty. Furthermore, the quality of strategic decisions depends on the degree of demonstrable compliance with mandatory requirements. This is discussed in the following section.

2.3.1.6 Compliance with laws and regulations

The duty of organisations to integrate corporate and social responsibility concerns into their information processing is ‘a mounting burden on organizations’ (Voo, 2006:125). There are ‘around 5,000 regulations that affect companies around the globe’ (Voo, 2006:125), challenging organisations ‘to identify exactly what their particular compliance requirements are, [and to] devise a strategy for addressing them’ (Voo, 2006:125). Organisations are required to comply with legislation and regulations concerning the combat of corporate fraud and money laundering; anticompetitive practices; the protection of employees; and safeguards for customers, shareholders and citizens. Such requirements can be, firstly, of an external nature, e.g. laws and regulations applicable to the decision-making process; and secondly, requirements can be internal, e.g. compliance with internal rules of documentation or objectives set by the decision group. External regulations for listed companies include the U.S. Sarbanes-Oxley Act of 2002 (SOX; U.S. Congress, 2002; Kaarst-Brown and Kelly, 2005) and the U.K. Turnbull Guidance (FRC, 2005), requiring communication procedures for strategically relevant issues and their expected financial consequences.
The impact on the SDMP is shown using the example of SOX (U.S. Congress, 2002; Kaarst-Brown and Kelly, 2005), which applies to companies registered on the New York Stock Exchange (NYSE; such as most of the case companies considered in this study), because many European public companies have multiple listings on the London Stock Exchange (LSE), the Deutsche Börse in Frankfurt, and/or the EuroNext in Amsterdam. There are few estimates about the costs of compliance, e.g. Bhamornsiri *et al.* (2009) have compared the increases in the costs of audit fees. Voo estimates that the ‘average cost per [listed] company of ensuring compliance with SOX alone is GBP 4.4 million’ per year (2006:125).

The impact on strategic information processing is that electronic data documenting communication exchanges within the SDMP (such as corporate emails and digitised documents) need to be stored both for internal and external use. There are also regulations stipulating that data must be kept for certain time periods so that it can serve as evidence for financial and tax authorities, but also, in certain cases, that the data ‘should be available within just 24 hours. Therefore, [computerised] storage solutions must address how data is kept, protected, shared, and retrieved’ (Voo, 2006:125).

As a consequence, organisations must be prepared, if required, to respond to a specific request for information around a given strategic issue, perhaps to aid an investigation into fraud, e.g. insider information or money laundering, being conducted by external authorities. According to Voo, ‘at this point, it is imperative for the organisation to be able to locate all relevant information rapidly to meet the request – and the more requests an organization faces, the more important it is to have a streamlined response process’ (2006:126). Computerized high-performance document management systems are the means to provide a technical basis to implement any compliance strategies in...
large organisations. Furthermore, people must be trained to understand these requirements and their responsibilities, e.g. when processing information in the form of email. However, the obligation of compliance can also become a driver to redesign business processes and align them with IT to support the SDMP (Kaarst-Brown and Kelly, 2005; Voo, 2006).

2.3.1.7 The key actors in the SDMP: senior managers and their advisors

The locus of strategic decision making is the upper echelons (UEs) of an organisation. The authority to take strategic decisions is given by law (e.g. corporation law) and through contracts (e.g. employment contracts) to senior managers as the executives in the organisational hierarchy. Being a ‘senior manager’ is a matter of definition relative to the individual’s position in the hierarchy of an organisation (e.g. top or middle management). Senior in the context of this study is defined as being a senior manager in the business unit and relatively senior in the broader organisation. Senior, as opposed to junior, means having a role as a superior in the organisational hierarchy, e.g. board member, director, head of unit and so on. Senior advisor is defined as a person in the role of advisor to senior managers as well as one occupying a senior position in either an external consultancy or an internal consulting unit. Welch et al. categorize a senior manager from top or middle management as an ‘elite interviewee’: an ‘informant who occupies a senior or middle management position; has functional responsibility in an area which enjoys high status in accordance with corporate values; has considerable industry experience and frequently also long tenure with the company; possesses a broad network of personal relationships; and has considerable international exposure’ (2002:613).

While these key actors are at the locus of strategic decision making, there are other stakeholders. This is discussed in the following sub-section.
2.3.1.8 Stakeholders of strategic decisions

Stakeholders (or ‘constituencies’; Ansoff, 1980; Zammuto, 1984) of strategic decisions are by definition ‘all parties who will be affected by or will affect [the organization’s] strategy’ (Nutt and Backoff, 1992:439; see section 1.4). In practice, some authors (e.g. Huber et al., 2004:136) claim that stakeholder management has become ‘decisive in determining whether a company is successful in the medium term or not’. Similarly, Zammuto has linked the organizational capability to satisfy ‘the preferences of the most important organizational constituencies’ (Zammuto, 1984:608) to the effectiveness of organisations. Strategic issue management, discussed in more detail in section 2.4.3.2, is a systematic organisational approach to identifying the ‘important trends and events which impact on the firm’ (Ansoff, 1980:131) emerging or perceived by the constituencies of the organisation.

One critique of stakeholder theory (e.g. Steinberg, 1997) holds that the term stakeholder as defined by Freeman (1984) has such broad application that it undermines both private property and accountability because ultimately, the number of stakeholders (‘secondary stakeholders’) would be innumerable. However, this broad definition of social responsibility (e.g. Mitchell et al., 1997) beyond the primary stakeholders is based on the recognition that organisations can be affected by or affect almost anyone. In contrast, authors such as Eden and Ackermann (1998:117) define stakeholders more narrowly as ‘people or small groups with the power to respond to, negotiate with, and change the strategic future of the organization’ (i.e. primary stakeholders). Following Hillman and Keim (2001:128–129), this study acknowledges ‘the absence of direct ties to the relationships between the firm and its primary stakeholders’ as the fundamental difference between social issue participation and stakeholder management.
In sum, the primary stakeholders who are involved in strategic decision making are an important set of actors because their judgments and degree of satisfaction decide, ultimately, the perceived success or failure of a particular strategic decision. However, the strategic issues of secondary stakeholders need to be managed according to their power and interest in the organization (see section 2.4.3.2).

The following section discusses the distinction between the content of strategic decisions and the processes of decision making.

2.3.2 The content-process divide

For the purpose of this study the process of strategic decision making will be based on the definition of strategy as 'a pattern in a stream of decisions' (Mintzberg, 1973, 1978; Mintzberg and Waters, 1985; Mintzberg et al., 1978, 1997) because of the focus and objectives of this research outlined in the previous section 1.2. Traditionally, research into the link between strategic decision making and performance issues has distinguished between the content and the process of strategic decision making, resulting in a divide between strategy content and SDMP research (Cray et al., 1988). Both theoretical strands are interested in the improvement of performance but ‘emphasize different aspects of the general manager’s problem’ (Chakravarthy and Doz, 1992:5). Strategy content research examines the ‘strategic positions of the firm [that] lead to optimal performance under varying environmental contexts. In contrast, strategy process research is concerned with how a firm’s administrative systems and decision processes influence its strategic positions’ (Chakravarthy and Doz, 1992:5).

In the literature, there are two positions toward this divide: first, an integrative perspective (e.g. Mintzberg and Waters, 1985; Pondy and Huff, 1985; Van de Ven, 1986; Huff and Reger, 1987) suggests that strategic content perspectives should be
incorporated in process studies; secondly, proponents of the process strand (Chakravarthy and Doz, 1992; Pettigrew, 1992a; Johnson et al., 2003; Olson et al., 2007), while being aware of the limitations, suggest the two bodies of literature be developed separately.

First, supporting an integrative perspective, Huff and Reger (1987:211) argue, in their review of SDMP literature, that the traditional distinction between strategic content and strategic process since the 1960s (e.g. Chandler, 1962; Ansoff, 1965; Andrew, 1971) has become an ‘impediment to research progress’. Accordingly, in strategic process research, some researchers use an integrative perspective (Mintzberg and Waters, 1985; Pondy and Huff, 1985; Van de Ven, 1986) combining the otherwise polar approaches (Huff and Reger, 1987:213). For example, a process perspective can be deployed in the research fields of both strategy content and strategy process (Van de Ven, 1992; Wilson, 1997). This is supported by empirical research (e.g. Summer et al., 1990) showing that the explanation of performance of strategic decision making can be significantly enhanced by including both strategy process and strategic content interactions because both strategy process and strategy content are significantly related to performance, while context is an important moderator of these relationships.

Secondly, in contrast, Chakravarthy and Doz (1992) support the separation of the discipline, as the divide reflects fundamental differences between content research and process research deriving from the focus of analysis, methodology and applied theories as well as contributing basic sciences. Hickson et al. (1986) conceptualize the SDMP as being influenced less by strategic content than by the complexity and context of the strategic problem. Mohr (1982:158) contends that the relationship between process and decision outcome is so intimate that ‘the process is itself an outcome’. Chakravarthy and Doz (1992) assume a continuing separate development of
the two bodies of literature. However, proponents of the process strand (e.g. Pettigrew, 1992a; Johnson et al., 2003:11–13) are clearly aware of the limitations of the process tradition. Arguing for an activity-based view of strategy, Johnson et al. (2003:6) critique traditional strategy content research as too abstract, concerned with ‘broad categories and lifeless concepts’. They suggest focusing on the microlevel of strategic decision making, confronting ‘the complexities of managerial and organizational action’ (Johnson et al., 2003:6). Methodologically, they make the point that traditional process research has been ‘reluctant to query the role of managerial agency (Pettigrew, 1985)’ (Johnson et al., 2003:12).

Addressing this issue, this study has opted for a strategy process position. Focusing on SIP and the SDMP regardless of the strategic content, it applies a process perspective (Johnson et al., 2003; Pye and Pettigrew, 2005; Elbanna, 2006) using microconcepts from media richness theory.

In the following sections, distinct general theoretical perspectives based on the decision-making paradigm are reviewed and linked to relevant empirical findings.

### 2.4 Theoretical perspectives on the SDMP

The field of strategic management research is ‘strongly theory based’ (Hoskisson et al., 1999:417), and there are several general theoretical perspectives in the literature on SDMPs (e.g. Astley and Van de Ven, 1983; March, 1996, 2002; Volberda, 2004). Knowledge about SDMPs is important for decision makers because it gives them a greater chance to ‘predict and perhaps influence what is going on’ (McGee et al., 2005:512) through understanding how decisions might be configured in an organization.
The following table presents a typology of decision types which can help understanding the various assumptions underlying the categories of strategic decision making:

<table>
<thead>
<tr>
<th>Planning/coherence</th>
<th>Chaos/anarchy</th>
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<tr>
<td><strong>Problem solving</strong></td>
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<tr>
<td>Rational perspective:</td>
<td>Contingency views:</td>
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<tr>
<td>Intended strategic decision making (means related to ends)</td>
<td>Uncoupled strategic decision making (means unrelated to ends)</td>
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<td>I</td>
<td>I I</td>
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<td><strong>Political process</strong></td>
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<td>Behavioural and political perspectives:</td>
<td>IV</td>
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<tr>
<td>Incremental strategic decision making (step by step, mutual adjustment to stakeholders)</td>
<td>Interpretive perspective:</td>
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<tr>
<td>I I I</td>
<td>Uncontrolled, random strategic decision making</td>
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TABLE 2.2: A Typology of Decision Processes

Source: McGee *et al.* (2005:512), adapted from Cummings and Wilson (2003). [For the purpose of this study, the axes of the original diagram by McGee *et al.* were swapped.]

These general perspectives are based on countervailing assumptions about the very nature of decision making. They emerge in discrete theoretical strands within the literature, which can be placed within the four quadrants of the above table.
First, the *rational perspective* conceives the SDMP as well-defined decision steps towards the rational solution of strategic problems. Secondly, *contingency views* see SDMPs as processes that are accidentally influenced by contextual factors (contingencies). Thirdly, the *behavioural perspective* conceptualises the SDMP as an informal process which is shaped by political interests. Finally, *interpretive perspectives* focus on the symbolic meanings of the SDMP which are interpreted by actors and observers.

It is not surprising, then, that these different perspectives have developed competing conceptualizations and definitions of the strategic decision with divergent emphases such as environmental determinism or the existence of strategic choice. Several authors have argued that an ‘integration of the factors identified by the different perspectives on strategic decision making would contribute to a better understanding of what influences the SDMP’ (Elbanna and Child, 2007:562). As a theoretical contribution, this study seeks to confirm the overall utility of the rational model over competing perspectives. The other perspectives are used to analyze potential moderating effects of factors such as power or the environment. Some discussion of these different perspectives is merited within a study which seeks to confirm the overall utility of the rational model over competing theories.

The next sections will discuss in more detail these different theoretical perspectives of organisational behaviour used in the literature on the SDMP, together with the related empirical research.
2.4.1 Rational theories of decision-making

The rational perspective is central in the literature on the SDMP (e.g. Miller et al., 1999; Elbanna and Child, 2007). Based on rational-normative models, the SDMP is viewed as a rational choice between alternatives (e.g. Blankenship and Miles, 1968; Mintzberg et al., 1976; Nutt, 1984; Shrivastava and Grant, 1985; Lechner and Mueller-Stewens, 2000). In the following sub-section, the key assumptions of the rational perspective are presented.

2.4.1.1 Key assumptions of the rational perspective

There are four key assumptions of the rational perspective. First, the rational perspective conceptualizes the SDMP as a sequence of interrelated rational decision steps. The rational approach presumes that decisions are the primary outcome of a decision-making process and that decisions can be examined by an analysis of the steps and substeps leading to a formal decision.

Furthermore, the rational perspective is based on the assumption that ‘decision processes are related to strategic choices’ (Dean and Sharfman, 1996:369) and that decision-making is governed by intention. Lovas and Ghoshal (2000:885) emphasize this principle of intentionality: ‘through a clearly articulated strategic intent, top management communicates what they see as the preferred future position of the firm, and this preference is assumed to guide the actions by the sources of variations and the agents of selection and retention’. Accordingly, Dahl (1960, as quoted in Bachrach and Baratz, 1970: 39) defines the strategic decision as a ‘set of actions related to and including the choice of one alternative rather than another’.

Thirdly, the rational model of decision making describes strategy formulation as a set of procedures, i.e. the identification of current strategy; analysis of environment, resources and gaps; identification and evaluation of strategy options and strategic
choice; and concluding with strategy implementation (e.g. Andrews, 1971; King and Cleland, 1978; Lechner and Mueller-Stewens, 2000).

Fourthly, decision makers are conceptualized as rational actors dealing with the information available to them.

2.4.1.2 The SDMP as a sequence of stages leading to a formal decision

In describing the SDMP, an established school of authors (e.g. Blankenship and Miles, 1968; Mintzberg et al, 1976; Nutt, 1984; Shrivastava and Grant, 1985) have conceptualized strategic decision making as a sequence of stages leading to a formal decision. However, the steps of the resulting sequential model are described in varying terms. For example, Blankenship and Miles (1968:107–108) found in a review that there are numerous descriptions, ‘each one differing minutely from another in terms of the words used to label the sub-steps or the number of sub-steps mentioned’.

Blankenship and Miles (1968:107) propose, therefore, the definition of decision making as ‘a complex process in which an individual or a group of individuals moves through a series of interrelated sub-steps’, including (1) the identification of a strategic issue recognized as a problem requiring some response; (2) the investigation of the problem and its environment in an effort to collect relevant information, to diagnose the strategic issue (e.g. Dutton et al., 1983), including recursive evaluation cycles (Dutton et al., 1983:312), and to generate, ideally, several alternative solutions; and (3) the ‘selection of a course of action based on an analysis of the available information and solutions’ (Blankenship and Miles, 1968:107). Mintzberg et al (1976) attempted to find, in a field study of 25 SDMPs in organisations, the basic structure underlying these ‘unstructured’ decision processes. Nutt profiled 78 case studies (1984) and examined 376 strategic decisions made in U.S. organisations (2000) to identify the nature of the process of decision making.
Table 2.3 below shows the decision stages included in these rational models dividing the SDMP into *a priori* stages or phases (e.g. Simon, 1960; Witte, 1972; Mintzberg *et al*., 1976; Bridge, 1989; Fredrickson and Iaquinto, 1989:822; Hill, 1989; Carroll and Johnson, 1990; Gore *et al*., 1992):

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<tr>
<td>1. Set objectives</td>
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<td>2. Problem recognition</td>
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<td>3. Problem definition</td>
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<td>4. Information search</td>
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<td>5. Develop alternatives</td>
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<td>6. Evaluate alternatives</td>
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<td>7. Choice</td>
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<td>8. Implementation</td>
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<td>9. Monitoring/Follow-up/Feedback</td>
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</table>

TABLE 2.3: Decision Process Stages Mentioned by Different Authors
Source: By the author
The variety of stage models demonstrated in Table 2.3 shows that the decision process does not naturally fall into discrete stages. However, Mason and Mitroff (1981) argue in favour of a rational process model that it is nevertheless important for management to insist on the guiding function of the strategic information search and analysis process. In the absence of a model to guide this process, any special interest oriented unit may identify only those data that support a favoured position or outcome. Mitroff and Emshoff (1979) state that

‘given the wealth of data that abounds in virtually all large-scale organisations, a committed proponent or particular point of view can almost always find and thereby muster significant empirical support for his policy by consciously and unconsciously selecting the evidence most favourable to his case. Selective use of data contained in most organisations can be used to build a strong case for virtually any strategy that might be proposed for any decision the organisation might make.’ (1979:3)

The following diagram presents an ideal type of decision making (Figure 2.1) that contains all possible stages of such a strategic information search and analysis process.

FIGURE 2.1 : The Ideal Type of Decision Process
Source: Gore et al. (1992:11)
With regard to information processing, the ideal type of decision process offered by Gore et al. (1992) presents the possibility of feedback to any of the decision phases, and consequently, the possibility of an iteration of phases.

2.4.1.3 Rationality and SDMP performance

Scholars use differing constructs of rationality, as Elbanna (2006) has shown, resulting in countervailing predictions about the effectiveness of the SDMP (e.g. Kuvaas, 2002; Cameron, 2005). A substantial body of literature suggests a positive relationship between decision process rationality and organisational performance, suggesting that the quest for the optimal content of a strategic decision should be organized based on a rational model of decision making. Some researchers (Fredrickson and Mitchell, 1984; Fredrickson, 1984) have examined the comprehensiveness of the process of making and integrating strategic decisions. Comprehensiveness is straightforward, ‘a measure of rationality [which] refers to the extent to which organisations attempt to be exhaustive or inclusive in the making or integrating of decisions’ (Fredrickson and Mitchell, 1984:399). Kukalls (1991) finds reasons for the contradictions between his results and those of Fredrickson and Mitchell (1984) in the use of a different conceptualization of the planning comprehensiveness construct. In their comparison of six prior studies concerning the relationship between rationality and firm performance, Priem et al. (1995) found wide differences between these studies in the operationalisation of both rationality and performance (Elbanna, 2006). Hence rational rules and the maxim of utility maximization are only rough and approximate explanations of human behaviour. By contrast, several authors claim that there is compelling evidence for a negative relationship between decision process rationality and organisational performance (e.g. Argyris and Schon, 1974; Narayanan and Fahey, 1982; Mueller et al., 2007).
Fredrickson and Iaquinto (1989) identify inertia and creeping rationality as reasons for this. These different predictions about the effectiveness of the SDMP are a potential weakness of rational-normative model. Other criticisms are discussed in the next sub-section.

2.4.1.4 Criticism of the rational-normative model

The rational-normative model of decision-making (i.e. identifying problem issues and goals, conducting an information search, predicting the consequences, evaluating the alternatives and finally selecting the best course of action: Anderson, 1983; Weick, 1987; Stubbart and Smalley, 1999) has been criticised for two central weaknesses. First, it overestimates the information processing capacity of individuals, which is bound by limitations of time, information and cognitive capability (bounded rationality; Simon 1979); and secondly, it under-represents the social nature of decisions in an organisational context. Thirdly, a critique of the a priori definition of process phases is that they often ‘derive from the researchers’ logic rather than from empirical observation of events over time’ (Sabherwal and Robey, 1993:550). This means that the temporal order of events in real life may not fit the model (Witte, 1972) or that phases will overlap, as such models assume that the stages occur every time in the same order, ignoring the possibility of iterative loops and alternative sequences (Mintzberg et al., 1976).

To conclude, the rational perspective and its stage-phased SDMP model is useful as it provides an ideal type of decision making which can be used as a blueprint to compare real-life phenomena, which are often messy and less structured. However, it does not cover the irrational realities of the SMDP. Therefore the following sections review perspectives that expand conventional rational models with additional dimensions.
2.4.2 Behavioural approaches to decision making

Researchers of organisational behaviour (OB), inspired by the early work of the Carnegie school (Simon, 1957; March and Simon, 1958; Cyert and March, 1963 – see Augier, 2004), have developed two approaches for studying decision making from a behavioural perspective, mirroring the underlying debate in organisational theory about whether ‘organizational behavior [is] principally concerned with individual or collective action’ (Astley and Van de Ven, 1983:245).

First, researchers in micro organisational behaviour (i.e. with a focus on individual decision-making) base their work on the psychological strand of behavioural decision research (bounded rationality; Simon, 1976); and secondly, researchers in macro organisational behaviour (i.e. with a focus on organisational decision making) are rooted in the work of James G. March (March and Shapira, 1982; March, 1994). This is important, as highlighted by Bazerman (1999:176), because there is a ‘central (implicit) debate’ between individual and organisational decision making concerning the relevant level of analysis in decision making research, i.e. whether individual ‘decision processes hold the key to the understanding of organizational phenomena’ (Simon, 1976: xi) or whether organisational decision making is a topic separate from individual decision making (March and Shapira, 1982; March, 1994).

From a moderating position, Payne (2002: 370) stresses the ‘links between individual and organisational decision making from the perspective of cognitive psychology’ because the concept of bounded rationality applies to both the nature of human information processing systems and their cognitive limits. He suggests that various levels of analysis (‘the individual decision maker, the small group, and the organization as a whole’; Payne, 2002: 369) and a variety of perspectives (economics, sociology, psychology, etc.) should be integrated if the SDMP is to be understood.
more completely. An example of such an integrated perspective is the work of Ciborra and Hanseth (2000). The following diagram depicts the forces within the context of the SDMP while the centre (with a light blue colour underlying) the SDMP itself is represented.

![Diagram showing the forces within the context of the SDMP.]

**FIGURE 2.2:** Mapping the Dynamism of the SDMP and its Context  
Source: Ciborra and Hanseth (2000: 4)

For the purposes of this study this integrated perspective is especially useful as it allows the analysis of both SDMP and IS phenomena to be combined.

The criticism that behavioural research has not developed a coherent model as an alternative to the rational model of decision making is ‘only partly justified’ (Kahneman, 2003:1449). On the level of individual decision-making, ‘psychological theories of intuitive thinking cannot match the elegance and precision of formal normative models of belief and choice, but this is just another way of saying that rational models are psychologically unrealistic’ (Kahneman, 2003:1449). Mid-level generalizations and the integrative concepts offered by psychologists cannot approach
the simplicity and precision of rational models, but they are useful to ‘explain ostensibly different phenomena in diverse domains’ (Kahneman, 2003:1449).

2.4.3 The political perspective on the SDMP

The political perspective is established within the literature on organisational decision-making (e.g. Cyert and March, 1963; Pfeffer, 1981; Hickson et al., 1986; Bourgeois and Eisenhardt, 1988; Yukl and Falbe, 1991; Eisenhardt and Zbaracki, 1992; Mintzberg, 1994; Ford and Gioia, 2000). The micropolitical view of the behaviour of key actors implies the use of political techniques (e.g. Bacharach and Lawler, 1980; Pfeffer, 1981) and exerted social power. Research into micro-politics such as Eisenhardt and Zbaracki (1992:35) portray organisations as political systems in which strategic decision makers have partially conflicting objectives and limited cognitive capability. Several authors (e.g. Tushman, 1977; Keen, 1981; Bacharach et al., 1995; Silva, 2007) have therefore identified the need for researchers to take a political perspective on decision making. The study of organisational politics is seen as fundamental for understanding the SDMP (e.g. Eisenhardt and Zbaracki, 1992; Schwenk, 1995).

The importance of the political perspective in complementing a rational model that assumes rational actors with complete information, with a dimension of politically motivated behaviour (of rationally-bounded actors using information for personal and political reasons that are not relevant to the organisation as a whole) is emphasized by Hickson et al. (1986) highlighting the influence of politicality (i.e. political information behaviour). With regard to the SDMP, the concept of nondecision-making power, which is ‘the less apparent but nonetheless extremely important face of power’ was developed by Bachrach and Baratz (1962, 1970: 9). They explain that influence occurs when the issues raised in relevant decision-making arenas are filtered, using
the term ‘mobilization of bias’ to explain that ‘some issues are organised into politics while others are organised out’ (Schattschneider, 1960:71). Criticising Dahl’s (1960) definition of power for ignoring such nondecisions, Bachrach and Baratz (1970) developed a concern with identifying nondecision makers and investigating how the political process functions to eliminate some issues from arenas of decisions. They suggest that situations of nonbehaviour or nondecision making are important to the concept of power because they can be used as effective tactics in defending the status quo, by keeping issues away from the decision-making arena. McCalla-Chen (2000) has further systematized and empirically operationalised the concept of nondecisions. Another political concept, organisational gossip, plays a central role in the production of interorganisational power dynamics according to Van Iterson and Clegg (2008) who recently examined the effects of gossip at the organisational level, e.g. spreading fact-based rumours to counter strategic initiatives.

The micropolitics within SDMPs can be studied at different levels of analysis – individual, group and organisation (e.g. Mintzberg et al., 1976; Quinn, 1980; Narayanan and Fahey, 1982; Walter et al., 2008). The political perspective conceptualizes strategic decision-making as a process which solves conflicts by balancing the different interests of organisational actors. Issues under investigation include bureaucracy (e.g. Crozier, 1964; Crozier and Friedburg, 1980; Walton, 2005), interdepartmental decisions (e.g. Lindblom, 1959; Wildavsky, 1979), intrafirm power (e.g. Cyert and March, 1963; Pfeffer, 1981) and external linkages (e.g. Granovetter, 1973; Dutton and Ashford, 1993). Pfeffer and Salancik (1974) have presented a paradigm and analytical strategy for examining the political dimension of organisational decision-making. Several researchers (e.g. Hickson et al., 1986; Dean and Sharfman, 1996) have focused inside the organisation when describing political
processes, on the positions, interests and activities of involved actors in organisational networks (e.g. Simpson and Borch, 2005).

Concerning the power relationships in these organisational networks, Raven and French (1958) and French and Raven (1959) have conceptualized five bases for social power used in political processes as the following table 2.4 shows.

<table>
<thead>
<tr>
<th>Type of Power</th>
<th>Description of Power Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reward power</td>
<td>The perception by the individual that the agent can mediate rewards for him.</td>
</tr>
<tr>
<td>2. Coercive power</td>
<td>Based on the perception by the individual that the agent has the ability to mediate punishments for him.</td>
</tr>
<tr>
<td>3. Legitimate power</td>
<td>The perception by the individual that the agent has a legitimate right to prescribe some behaviour for him.</td>
</tr>
<tr>
<td>4. Referent power</td>
<td>Power based on the identification of the individual with the agent.</td>
</tr>
<tr>
<td>5. Expert power</td>
<td>The perception by the individual that the agent has some special knowledge or expertise.</td>
</tr>
</tbody>
</table>

TABLE 2.4: Five bases for social power used in political processes
Source: Raven and French (1958:83)

Hickson et al. (1986:239) offer a new typology of the SDMP, in which ‘decision-making is no longer just a muddled, complex, political affair, but one which varies discernibly in process, in complexity, and in politicality’. They offer a model of decision-making (Hickson et al., 1986:166) that distinguishes three different modes of strategic decision processes, based on past descriptive frameworks of the SDMP (Hickson et al., 1986:234–235), e.g. coalition guided (Cyert and March, 1963), incremental (Lindblom, 1959), circuitous (Mintzberg et al., 1976) and political (March and Olsen, 1976). Modelling the SDMP in two dimensions, decision
complexity and decision interests (politicality), they have identified three main variables of politicality: (1) intervention (i.e. the extent of external influence); (2) imbalance (i.e. the degree of uneven influence); and (3) contention of objectives (i.e. the extent of disagreement over objectives).

The political perspective views decision-making processes through the lens of organisational micropolitics, such as the evolution of coalitions (Narayanan and Fahey, 1982) or power-dependence relationships such as managers’ accountability to others (Bacharach and Lawler, 1980; Mainiero, 1986). These relationships are typical in organisational hierarchies and can lead to social bases of power which decision makers use tactically to shape and justify decisions (Raven and French, 1958; Yukl and Falbe, 1991). The high degree of unpredictability in strategic decision-making is explained by these researchers through power-related characteristics of individuals and their interaction with others.

The literature shows a degree of ambivalence in handling the concept of power. In his classic paper, Keen (1981:31–32) describes the tension between the negative reputation and the pragmatic usefulness of politics:

*Unfortunately, ’politics’ have been equated with evil, corruption and, worst of all, blasphemy in the presence of the Rational Ideal, but politics are the process of getting commitment, or building support, or creating momentum for change; they are inevitable . . . A political perspective on information systems is needed in research. It will of necessity be based on comparative field studies that illustrate theoretical concepts . . . It can immensely add to our understanding both of the implications of information technology and the dynamics of effective implementation.*

The negative side of organisational politics is described as ‘illegitimate power’ (e.g. Mintzberg, 1983) and the ‘dark side of power’ (Hirschheim and Klein, 1994). The ‘hidden and strategic nature of power’ (Silva, 2007: 165) and its informal dimension,
i.e. politics, has been ruled illegitimate (Clegg, 1989) in a rational-legal organisation (Weber, 1947), to avoid decisions being influenced by personal interests that are quintessentially irrational from the goal-oriented perspective of the organisation (Simon, 1976; Perrow, 1986). Methodologically, negative connotations may bias researchers and create an ‘epistemological challenge for studying organizational politics’ coming ‘from the belief that power is “dark” or illegitimate’ (Silva, 2007:166).

However, results of empirical studies are mixed. Bacharach et al. (1995:468) confirmed the claims of several authors (e.g. March and Simon, 1958) that variation in the SDMP among executives in the same organisation ‘is often the rule rather than the exception’. Bacharach et al. (1995) have analysed the decision criteria used in the SDMP. One of the variables – political expediency – was found to be a distinguishing factor explaining the behaviour of powerful and less powerful managers. The political perspective examines the influence of organisational context and traces how micropolitics can ‘determine or modify strategy content’ (Narayanan and Fahey, 1982:33) and the decision-making process itself. Power has traditionally been associated with formal power flowing from positions of authority (e.g. Weber, 1947). Pfeffer and Salancik (1974) have examined organisational decision making by associating it with the allocation of budget resources to subunits within an organisation. In line with these findings, Jones (1990:63) has examined the degree to which the strategic information process, the budgeting process and performance evaluation and reward systems are linked to organisational goals related to the level of internal politics. Jones (1990) shows also that the strategic information search process is related to the level of internal politics and is open to political games, played by the involved decision makers and other relevant stakeholders.
'One of the most consistent findings in the social science literature is that whom you know often has a great deal to do with what you come to know' (Cross et al., 2003:8). Strategic decision makers typically spend a substantial part of their time handling and processing information. The percentages reported in the literature vary from about 40 per cent (Kakabadse et al., 1988) to 78 per cent (Mintzberg 1975:166). He contends that 'managers strongly favor verbal media, telephone calls and meetings, over documents'. Mintzberg (1975:166) also reports that managers seem to 'cherish 'soft' information, especially gossip, hearsay, and speculation', and relates this preference to the "timeliness" of soft information, as 'today's gossip may be tomorrow's fact'. Within this context, the management of informal communication networks between enterprise staff becomes strategically significant (Berglind and Scales, 1987; Davenport and Prusak, 1998; Cross et al., 2003). Understanding the information-processing dynamics of board and advisor network interaction requires examination of the wider network of people involved in making strategic decisions, looking beyond the CEO to the communication between top executives and their advice networks.

Including the organisational interests of multiple constituencies enables an analysis of the micropolitical context of the institutional decision-making framework and the SDMPs of organisations integrating ‘the negotiations and bargaining between separate interests to the meta-power exercised by institutions’ (Astley et al., 1982:359). To summarise, the political perspective suggests that existing traditional rational models should be expanded to include political dimensions formerly excluded.

The following sections review research of contingency and interpretive views to define this gap more in detail.
2.4.4 Contingency views of decision making

Contingency views highlight the importance of the context from which the SDMPs have emerged and in which these processes are embedded (Mintzberg, 1978, 1994; Butler, 1998; Pettigrew, 2003). Building on the research of the behavioural and descriptive approaches, contingency approaches argue that an organisation’s decision-making processes vary and should vary by other aspects of the organisation (i.e. contingencies).

Several contingencies are suggested in the literature to have an impact on SDMPs, e.g. external determinants of the environment (e.g. Hannan and Freeman, 1989) or internal contextual factors such as complexity or decomplexity (e.g. March and Olson, 1976), politicality (Hickson et al., 1986), technology (i.e. redesigning the internal information processing capabilities through structures and technologies; Lawrence and Lorsch, 1969; Galbraith, 1977; Tushman and Nadler, 1978) or others. Pettigrew (2003) and Volberda (1998) propose three facets for this contextualization: first, the external environment of an organisation; secondly, the internal environment (i.e. firm characteristics); and thirdly, decision-specific characteristics. Pye and Pettigrew (2005) distinguish inner and outer contexts of the SDMP, where inner context refers to factors from within the organisation, e.g. structure, power and political characteristics, and outer context refers to factors external to the organisation, e.g. industry sector, political, economic, social and technological contexts.

There are several paradigms for analyzing the relationship between organisations and their environments. The natural selection model (e.g. Aldrich, 1971; Hannan and Freeman, 1976) holds that the selection criterion for success of organisations is the best fit of internal characteristics to environmental factors. Other complementary models, such as the political economy model (Benson, 1975), the resource dependence
model (Pfeffer, 1972) or co-evolutionary models (e.g. Lewin and Volberda, 1999), put greater emphasis on internal processes and the possibility of actively managing adaptation processes. However, all types of open systems models agree on ‘the importance of organizational environments for understanding organizational decisions and structures’ (Aldrich and Pfeffer, 1976:79). So far, this issue of environmental factors of the SDMP and their potential moderating effects (e.g. through contextual factors such as environmental dynamics) have not been adequately addressed in research on the SDMP.

To conclude, the gap in empirical research about the influence of contextual factors on strategic decision making is still existing despite the call of a long tradition of researchers (e.g. Pearce et al., 1987:670–672; Papadakis and Barwise, 1998; Nutt, 2000:78; Elbanna, 2006; Elbanna and Child, 2007; Miller, 2008) to address this underexplored area.

2.4.5 Interpretive theories and symbolic information processing
The interpretive tradition conceptualizes the SDMP as a communication process. Communication acts occur both within the organisation and across and beyond its boundaries. Proponents of this perspective (e.g. Smircich and Stubbart, 1985; Thomas and McDaniel, 1990; Phillips and Brown, 1993) focus on strategic decisions as communication acts to examine the role of meaning in SDMPs as symbolic phenomena. The symbolic value of SDMPs was long underemphasized in strategic management literature (Narayanan and Fahey, 1982:32). However, Deal and Kennedy (1982) have popularized the idea that strong organisational cultures impact on success through their symbolic effects on behaviour. Today, there is a substantial body of literature on the subject (e.g. Gioia and Chittipeddi, 1991; Hatch, 1993; Weick, 2005).
Concerning strategic decision making, Cohen et al. (1976:25) suggest that ‘an organization is a set of procedures for argumentation and interpretations as well as for solving problems and making decisions’. This view is supported by Smircich and Stubbart (1985), who maintain that organisational environments are enacted, as opposed to being objective or only perceived, because the interpretivist view looks at the social sphere as being the result of a hermeneutical interplay between emotions, desires, norms and actions (Burrell and Morgan, 1979). Organisations are understood as ‘speech communities sharing socially constructed systems of meaning that allow members to make sense of their immediate, and perhaps not so immediate, environment’ (Barley, 1983:393) to ‘create or sustain preferred patterns of social relations’ (Phillips and Brown, 1993:1547). Strategic decisions as organisationally relevant communication acts are interpreted through ‘texts’ (Phillips and Brown, 1993:1548) that represent them, including ‘documents of various kinds, speeches, stories, ceremonies, architecture, [and] press releases’ (Phillips and Brown, 1993:1548). For example ceremonies (i.e. rituals of power) within the SDMP create the needed attention, status, authority and a feeling of importance. Chaffee (1985:94) highlights that in interpretive strategy, ‘organisational representatives convey meanings that are intended to motivate stakeholders in ways that favor the organisation’.

Some researchers in the interpretive tradition (e.g. Clegg, 1989; Hendry, 2000; Silva, 2007) criticize the limitations of the behavioural approach. For example, drawing on the concept of mobilization of bias developed by Bachrach and Baratz (1962, 1970; see Section 2.2.3.1), Clegg (1989) claims for researchers from an interpretive perspective the role of ‘interpreter’ – translating, penetrating and investigating different modes of rationality to explore the symbolic dimension of strategic decisions.
– as a contribution to a better understanding of the context of SDMPs. With regard to the political context of the SDMP, consequently, Silva (2007:168) argues against censoring power and politics as they represent important aspects of the SDMP which have to be examined and taken into account, e.g. through the process of communication, in which interested actors present their particular world views (Phillips and Brown, 1993). For example the findings of an interpretive analysis conducted by Thomas and McDaniel (1990:286) indicate that both strategy and information processing structure are related to how strategic decision makers ‘label strategic situations and the range of variables they use during interpretation’, e.g. labels such as threat or opportunity. Accordingly, modelling the SDMP as a communication process reduced to the transmission of symbols of communication (i.e. the ‘technical problem’ of communication; Ackoff, 1958:218) from a sender to a receiver (i.e. the sender–message–receiver model; Shannon and Weaver, 1949) is criticized by behavioural and interpretivist researchers as neglecting the role of meaning (i.e. the ‘semantic problem’ of communication; Ackoff, 1958:218). The question of ‘how effectively does the received meaning affect conduct in the desired way’ is the focus of a behavioural theory of communication (i.e. the ‘effectiveness problem’ of communication; Ackoff, 1958:219). However, an understanding of organisations as interpretation systems (Daft and Weick, 1984), allowing, for example, the analysis of the impact of power and politics in SDMPs through textual analysis, requires an extended model of communication which includes the semantic dimension of meaning, claimed to be one of the most essential aspects of human communication (Axley, 1984; Fairhurst, 2005).
2.4.6 *Empirical research on the SMDP*

The core of case-based studies in strategic decision making research are shown in Table 2.5 below.

<table>
<thead>
<tr>
<th>#</th>
<th>Researchers</th>
<th>Year</th>
<th>Research nationality</th>
<th>Research location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lindblom</td>
<td>1959</td>
<td>American (U.S.)</td>
<td>U.S. public administration</td>
</tr>
<tr>
<td>2</td>
<td>Simon</td>
<td>1960</td>
<td>American (U.S.)</td>
<td>U.S., mainly business</td>
</tr>
<tr>
<td>3</td>
<td>Cyert and March</td>
<td>1963</td>
<td>American (U.S.)</td>
<td>American (U.S.)</td>
</tr>
<tr>
<td>4</td>
<td>Allison</td>
<td>1969, 1971</td>
<td>American (U.S.)</td>
<td>U.S. government</td>
</tr>
<tr>
<td>5</td>
<td>Cohen <em>et al.</em></td>
<td>1972</td>
<td>American (U.S.), Norwegian</td>
<td>Scandinavian and U.S. organisations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Olsen)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Pettigrew</td>
<td>1972, 1973</td>
<td>British</td>
<td>British firms</td>
</tr>
<tr>
<td>7</td>
<td>Mintzberg <em>et al.</em></td>
<td>1976</td>
<td>Canadian, Indian (Raisinghani)</td>
<td>Diverse U.S.- Canadian organisations</td>
</tr>
<tr>
<td>8</td>
<td>Heller <em>et al.</em></td>
<td>1977</td>
<td>British (Heller), Dutch, Yugoslavian (Rus)</td>
<td>British, Dutch and Yugoslavian organisations</td>
</tr>
<tr>
<td>9</td>
<td>Quinn</td>
<td>1978, 1980</td>
<td>American (U.S.)</td>
<td>U.S. and European firms</td>
</tr>
<tr>
<td>11</td>
<td>Hickson <em>et al.</em></td>
<td>1986</td>
<td>British, American (U.S.) (Cray), Swedish (Axelsson)</td>
<td>Diverse organisations in England</td>
</tr>
<tr>
<td>12</td>
<td>Knight <em>et al.</em></td>
<td>1991, 1992</td>
<td>British</td>
<td>British firms</td>
</tr>
<tr>
<td>13</td>
<td>Butler <em>et al.</em></td>
<td>1993</td>
<td>British</td>
<td>British firms</td>
</tr>
<tr>
<td>14</td>
<td>Dean and Sharfman</td>
<td>1996</td>
<td>American (U.S.) companies</td>
<td>16 manufacturing industries such as electronics, steel, apparel, footwear, paint and coatings and chemicals</td>
</tr>
<tr>
<td>15</td>
<td>Wan and Hoskisson</td>
<td>2003</td>
<td>West European firms</td>
<td>6 organisations</td>
</tr>
<tr>
<td>16</td>
<td>Walter <em>et al.</em></td>
<td>2008</td>
<td>European high-technology firms</td>
<td>106 organisations</td>
</tr>
<tr>
<td>17</td>
<td>Nutt</td>
<td>2008</td>
<td>American companies (U.S.)</td>
<td>224 decisions</td>
</tr>
</tbody>
</table>

**TABLE 2.5: Main Empirical Research on the SDMP**

Source: Author and Miller *et al.* (1999:57)
Table 2.5 above shows the focus of SDMP research on Western organisations (Miller et al., 1999). Only a few studies are available for ‘non-northern/Western’ organisations (e.g. from countries in Asia, Latin America, Africa and the Middle East). This study has opted to focus on large organisations from Western countries to facilitate comparisons across case companies assuming similar ‘culture free’ IS use within the SDMP. The potential effect of national culture when conducting research on strategic decisions in different cultures is discussed in section 6.3.3.

The importance of the SDMP has been highlighted by the so-called Bradford studies which comprise a large-scale U.K. study (Cray et al., 1988, 1991; Miller et al., 1999; Hickson et al., 1986, 2000) of the SDMPs of 150 decisions in 30 organisations; the study was extended by a second long-term phase of research on a subset of 55 decisions in 14 organisations (Hickson et al., 2003). Regarding the research location, most case companies are located in what is ‘loosely called the “West”’ (Miller et al., 1999:58) that can be described geographically as the highly industrialized North America and Europe, i.e. countries such as the United States, Canada, Britain and Scandinavia, and also other European countries, e.g. Germany (Witte, 1972).

Empirically, political conflict has been found to slow down decision-making processes (Eisenhardt and Bourgeois, 1988). Dean and Sharfman (1996:389) found that managers ‘who engaged in the use of power or pushed hidden agendas were less effective than those who did not’. Castrogiovanni and Macy (1990:313) examined the impact of employee participation on organisational information processing and found ‘changes in information processing for employees having different degrees of participation (direct, indirect, or no participation)’. The reason why the organisational interest perspective is well suited to explain the actual behaviour of individual-, group- and organisational-level information processing in SDMPs is that it reflects the
interests of multiple constituencies or stakeholders, consistent with a strategic choice perspective (e.g. Astley and Van de Ven, 1983). The organisational interest perspective (Guth and McMillan, 1986; Dutton and Webster, 1988; Rich and Oh, 2000) sees strategic decisions as being made within a complex social system of multiple leaders with multiple (personal and public) agendas. Empirical research based on the political perspective on the SDMP (e.g. Astley et al., 1982; Eisenhardt and Zbaracki, 1992) establishes therefore the need to identify the interests involved in SDMP.

2.4.7 Review of general SDMP perspectives: Summary and gap in the literature

According to the general perspectives presented in this chapter, the SDMP can be seen in differing ways: (1) by the rational perspective, as a generic, incremental decision-making process based on a rational model including well-defined decision steps, with its origin either in strategic planning or as an emerging strategic issue within the organisation; (2) by the behavioural perspective, as a process that ignores formal planning methodologies and is shaped by actual individual and organisational behaviour (such as political interests); (3) by contingency views, as a process that occurs accidentally influenced by contextual factors (contingencies); and (4) by interpretive perspectives, as a process in which communication acts are given meaning by actors and observers, requiring further interpretation.

None of these perspectives on the SDMP is sufficient: following Sabherwal and King (1995:178), ‘no one process should be considered universally applicable’. Instead, the different perspectives on the SDMP should be understood as supplementing and depending on the specific circumstances of a strategic decision situation, representing

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a practical categorization of empirical studies rather than a theoretically rigorous definition. The preceding review of contributions of distinct perspectives on the SDMP (rational, behavioural, contingency and interpretive views) has shown that there is a ‘myriad of perspectives currently available’ (Schoemaker, 1993:107). Several authors (e.g. Allison, 1969; Barney and Ouchi, 1986; Schoemaker, 1993:107; Volberda, 2004) have expressed the need to synthesize this wide range of approaches. As yet, none of these attempts has achieved wide support, and the gap caused by the lack of a unifying approach persists. However, it is difficult to move toward a metamodel to indicate the views which apply under particular assumptions, and for which purpose – either prescriptive or descriptive. Volberda (2004) explains this as the fragmentation-integration dilemma.

2.5 The information processing perspective

The information processing perspective is a long-standing theoretical tradition originating with Galbraith (1973, 1974), who integrated earlier research related to the traditional environmental contingency model of organisations (e.g. Burns and Stalker, 1961; Lawrence and Lorsch, 1967) under the focus of organisational information processing. In the tradition of the Carnegie school (Simon, March and Cyert), the organisation is viewed as an ‘information processing system’ (Egelhoff, 1982:436). The information processing approach translates the basic categories of the contingency view, i.e. the situation (strategic conditions) and the organisational structure, into the constructs of need and capability. However, there is no agreement about the operationalisation of the proposed constructs of information needs and information-processing capabilities.
The information processing perspective is based on two main assumptions about why organisations process information (Galbraith, 1974; Daft and Lengel, 1986): firstly, to reduce uncertainty; and secondly, to reduce equivocality or ambiguity. Accordingly, concepts developed by Galbraith (1973) and Weick (1979) are integrated into these two information tasks. Galbraith (1973) has developed the concept of organisations processing a sufficient amount of information to reduce uncertainty. The concept of information richness has been developed to indicate how to ‘provide information mechanisms to both reduce uncertainty and resolve equivocality’ (Daft and Lengel, 1986:554). Originally, this question was interpreted in a prescriptive way, but over time, researchers have changed to more descriptive research on how actual media choices are made by managers (e.g. Daft et al., 1987; Russ et al., 1990; Markus, 1994; Dennis and Valacich, 1999) focusing on the level of individual information processing.

To capture the whole range of information processing in organisations, the term information processing needs to be broadly understood in the way conceptualized by Driver et al. (1996:43): ‘information is not only processed by the structural mechanism of the organization but also by the individuals who make up the organization’. Following Driver et al. (1996), information processing is for the purposes of this study broadly conceived by both human and technical information systems.

The premise of the literature on information processing is that the accomplishment of information tasks and the ultimate success of the organisation are related to the balance of information richness used in the organisation. The match of organisational information capabilities and information needs is expressed in a fit-relationship (Tushman and Nadler, 1978; Egelhoff, 1982; Keller, 1994). A variety of fit models
(e.g. Daft and Lengel, 1986; Umanath, 2003) with a balancing function between information needs and information processing capabilities were theoretically established. Similarly, contingency theory ‘makes at least one very explicit proposition’ (Rice, 1992:476): performance is not assured by a particular organisational design, but rather, it is contingent on an appropriate match between contextual variables (e.g. task demands on the SDMP). This argument of contingency theory is based on the need that organisations must respond to new and changing environmental conditions by redesigning their internal processing capabilities through structures and technologies (Lawrence and Lorsch, 1969; Galbraith, 1977; Tushman and Nadler, 1978).

In an expansion of information richness theory, Trevino et al. (1987) have included two more reasons for media choice: situational constraints (e.g. time and location) and symbolic considerations (e.g. the desire to convey authority). The resulting symbolic interactionist perspective is an important theoretical contribution to the development of information processing theory. Today, it covers more categories, enabling a better and more complete understanding of the manifold nuances of media choice. To understand the underlying issues and the consequences for strategic information processing, the following sections review the main requirements of information processing theory in more detail: uncertainty reduction, the reduction of equivocality, situational constraints, and symbolic considerations.

2.5.1 Strategic information processing (SIP) under uncertainty

Generally, strategic decisions are taken against a backdrop of uncertainty owing to their long-term orientation, propensity to changing future circumstances, and uncertain consequences (Hickson et al., 1986:43). Decisions under the condition of uncertainty (Tversky and Kahneman, 1974) are judgements based on beliefs
concerning the probability of events in the future, but for many organisations, ‘it is hard to see the connections between organizational actions and their consequences’ (March and Olsen, 1976:12). A perception of uncertainty about the environment (Milliken, 1987) is the ‘fundamental problem with which top-level organizational administrators must cope’ (Thompson, 1967:159).

From an information processing perspective, uncertainty has been defined as the difference between the information needed to perform a task (e.g. making a strategic decision) and the information available (Galbraith, 1973). Information processing theory stresses the need to match information needs with information requirements (Daft and Lengel, 1986). Organisations may respond to uncertainty in a number of ways such as processing additional information, decreasing the need for information processing through redesign, improving organisational coordination or using new information systems. An example of processing additional information given by Rice and Shook (1990:197) would be to discuss a printed report listing financial information from a computerized database as part of a decision-making process. The information processing perspective (Galbraith, 1974; Daft and Lengel, 1986) understands a decision as a choice between alternatives which functions as a precedent for future decisions, thereby reducing uncertainty.

However, despite the importance of the concept of uncertainty in the organisational literature, empirical research is seen as inconsistent and often yielding ‘difficult-to-interpret results’ (Milliken, 1987:133). Milliken has therefore re-examined the construct of perceived environmental uncertainty, hypothesizing three types of perceptions about uncertainty to explain confusing findings of earlier empirical studies through a failure to distinguish between these three types, namely state uncertainty (or perceived environmental uncertainty), effect uncertainty and response uncertainty.
This distinction of three types of uncertainty is important because these three modes have distinct consequences for SIP, as explained in the following sections.

2.5.1.1 Uncertainty of an organisation about the state of its environment

State uncertainty (or perceived environmental uncertainty) is the inability to assign probabilities as to the likelihood of future events (e.g. Duncan, 1972; Pfeffer and Salancik, 1978). Uncertainty about the state of the environment may affect the SDMP in two ways: firstly, by spending ‘a greater amount of time and resources on environmental scanning and forecasting than administrators who are more confident that they understand their environment’ (Milliken, 1987:140). The purpose of these scanning efforts is to clarify the understanding of the probabilities of various events or changes in the environment. Administrators ‘who are quite certain that they understand the industry environment will scan less, regardless of the “objective” characteristics of that environment’ (Milliken, 1987:139), because the time and resources devoted to scanning are hypothesized to be a function of how uncertain the environment is perceived to be. It also seems likely that modes of strategic thinking, such as ‘muddling through’ (Lindblom, 1959) and the so-called ‘garbage can’ approach to decision making (Cohen et al., 1972), would be more prevalent when administrators are faced with a great deal of state uncertainty. If administrators have a high degree of uncertainty about the nature of the organisation’s environment, it will be very difficult for them to go through the steps outlined in most linear models of the strategy formulation process (i.e. Hofer and Schendel, 1978). If one is uncertain about the nature of environmental changes, for example, it will be extremely difficult to identify threats and opportunities with any degree of confidence. Nevertheless, because of the value attached to the idea of strategic planning, administrators may proceed with their strategic planning endeavours, but the strategic planning is likely to
resemble more closely a ‘muddling through’ mode than a linear mode. The substance of an organisation’s strategic choices also may be affected by the amount of uncertainty administrators have about the state of the organisational environment. Given the fact that the environmental context is not well understood and the capacity for rational evaluation of strategic alternatives is limited, the perception of state uncertainty is probably linked to several generic strategies designed to protect key functions of the organisation. Protective responses, such as the creation of slack resources (Cyert and March, 1963), may be common under these circumstances. Also, one might expect that diversification-type responses are likely in these circumstances, as administrators seek to diminish the organisation’s vulnerability to a set of environmental conditions that are poorly understood by the organisation’s decision makers. Both these strategies serve to insulate the organisation from sudden, unexpected shifts in the environment, but they do not commit the organisation’s resources to a particular strategic direction.

2.5.1.2 Effect uncertainty
Effect uncertainty is a lack of information about cause-effect relationships (Lawrence and Lorsch, 1967; Duncan, 1972; March and Olsen, 1976). In comparison to state uncertainty, effect uncertainty is much more specific because the experience of uncertainty involves an inability to understand the impact of events on the organisation, rather than an inability to predict the external environment. Some level of certainty about the effect of an environmental change may be necessary to motivate the search for an effective strategic response to counteract or, alternatively, capitalize on the effect. Proponents of a ‘status quo bias’ (e.g. Samuelson and Zeckhauser, 1988; Ritov and Baron, 1992; Hambrick et al., 1993) argue that an organisation’s decision makers generally do not respond to events or changes in the organisational
environment unless they perceive these events or changes as likely to represent
significant threats or opportunities. It is likely that effect uncertainty will be salient
during the ‘identification of environmental threats and opportunities’ phase of the
strategic planning process.

The concept of causality and its application to performance has been problematic for
researchers of effect uncertainty. The direction of causality is highly controversial. In
their review of strategic process literature, Huff and Reger (1987:220) conclude that
‘it is just as possible to believe superior performers have the slack resources necessary
to undertake elaborate strategic planning systems as it is to believe superior planning
leads to superior performance’. Another position in this debate claims that strong
performance can have negative effects: the so-called ‘Icarus complex’ in which strong
performance ‘triggers a defensive mindset, where the focus is on the potential for loss.
That mindset produces subtle biases in subsequent decision processes that can sow the
seeds of future poor decisions’ (Amason and Mooney, 2008:408). It is clear that
claims of cause-effect relationships need to be based on sound argumentation and
detailed description.

The cyclic nature of some strategic phenomena creates a special challenge to the
identification of cause-effect relationships in the SDMP. The cyclic view
conceptualizes decision making as dynamic developmental processes embedded
within a mutually reinforcing web of relationships. In such a context, it is very
difficult clearly to identify the direction of causality and the relevant leading or
lagging factors. For example it is debatable whether performance targets are the result
or the cause of organisational activities. Some researchers hold that incentive systems
for top management can lead to information asymmetry in the principal-agent
relationship, disadvantaging stakeholders (Jacobides and Croson, 2001). Regarding
the focus on current or past performance, research by Greve (2002), on the time perspective of managers, offers some complementary findings. In an experiment using a simulation model of aspiration-level learning and change under uncertainty, Greve (2002) found that managers evaluate organisational performance by comparing it with historical aspiration levels and are more likely to allow changes with performance below the aspiration level. Historical aspiration levels can be updated with different speeds, where a focus on current performance will lead to quickly adjusting aspiration levels, while a focus on past performance will lead to slowly adjusting performance levels.

In practice, decision makers seek, in a diagnosis phase, ‘to determine cause-effect relationships for the decision situation’ (Mintzberg et al., 1976:253). Concerning its impact on SDMPs, effect uncertainty may have a slowing down, or even paralyzing effect, as strategic decision makers argue about ‘whether and how significantly their organisation is likely to be affected by various environmental changes’ (Milliken, 1987:140). To balance effect uncertainty in the SDMP, common means are the development of scenarios and contingency plans.

2.5.1.3 Response uncertainty

Response uncertainty is the inability accurately to predict the outcomes of a decision (Hickson et al., 1971, 1986; Duncan, 1972; Downey and Slocum, 1975; Schmidt and Cummings, 1976). It is experienced by decision makers attempting to discover ‘the range of strategic responses open to them and to evaluate the relative utility of possible options’ (Milliken, 1987:140). The more dynamic the environment, the greater the uncertainty and the greater the information processing and decision making demands placed on an organisation’s strategic decision makers (Kotter, 1982). Decision response uncertainty represents an inability to predict the consequences of a
specific decision deriving from the ignorance and risks perceived in making individual
decisions (Milliken, 1987).
Thus the focus of response uncertainty is different from either of the aforementioned
types. It is likely that the need to take action or to make an immediate decision is a
critical precondition to making response uncertainty salient. High levels of response
uncertainty may be countered by the following strategic responses: delaying the
SDMP; increasing information acquisition activities; monitoring the strategic
responses deployed by other organizations to evaluate the benefits of imitation
(DiMaggio and Powell, 1983); and the use of techniques, e.g. forecasting and
scenarios, that would allow modelling of the consequences of various strategic
responses under varying circumstances.
In summary, it is important to recognize that there are three different types of
uncertainty as their impact on the SDMP and information processing evokes distinct
strategic responses by top-level decision makers.

2.5.2 Equivocality or ambiguity versus information clarity
Equivocality may be said to compound uncertainty, but with a different focus. Defined
by Daft and Weick (1984:291) as ‘the extent to which data are unclear and suggest
multiple interpretations about the environment . . . equivocality is reduced through
shared observations and discussion until a common grammar and course of action can
be agreed on’. Weick (1979) and Weick et al. (2005) have posited that the reduction
of equivocality is a basic reason for organizing as sense making. An example given by
Weick (1979) is the case of a strategic decision with high equivocality, in which new
data may not resolve anything. As a consequence, decision makers are more likely to
reduce equivocality by talking things over and defining or creating an answer rather
than investing in further data collection (Weick 1979; Daft and Macintosh, 1981), i.e. managers prefer ‘ultimately to enact a solution’ (Daft and Lengel, 1986:554).

Strategic decisions represent a special type within a wide range of decision-making tasks, because they are ‘more rare and non-routine than most’ (Hickson et al., 1986:28). Typically, they are ‘comparatively novel’ and complex as they involve many factors and have wide-ranging consequences, with no data of similar situations available (Hickson et al., 1986:28). Accordingly, the reduction of equivocality (i.e. ambiguity) is a typical requirement for strategic decision-makers (Weick, 1979; Daft and Lengel, 1986:554).

Empirical research has hypothesized and confirmed the link between the cognitive abilities of a decision group and the ability to articulate objectives and goals clearly (Smart and Vertinsky, 1977; Dooley and Fryxell, 1999). A positive impact on the articulation of goals is hypothesized if the group of decision makers is able to interpret the situation, create options and choose between alternatives. Additionally, a low degree of ‘groupthink’ (Janis and Mann, 1977), such as a decision-making process conducted without risk bias, is found to have a positive impact on clarity of information and articulation of objectives.

In summary, equivocality presumes a messy, unclear state in which new data may be confusing, and may even increase uncertainty. An information stimulus may have several interpretations (ambiguity), resulting in an equivocal articulation of decision-making objectives. As Teece and Winter emphasize, ‘most management problems are ill-structured’ because they are ‘messy, involving complex interdependencies, multiple goals, and considerable ambiguity’ (1984:117). This is also in line with the findings of Mintzberg et al. (1976), of ‘unstructured decision processes’, and Mitroff and Mason (1980), of ill-structured policy issues.
2.5.3 Strategic information processing (SIP)

The role of IS in SDMPs is cognate with the notion of strategic information processing (SIP; Egelhoff, 1982), based on the distinction between the subject of information processing (companywide or global vs product) and its purpose and perspective (strategic vs tactical). Table 2.6 shows the categorization developed by Egelhoff (1982).

<table>
<thead>
<tr>
<th>Purpose and Perspective of Information Processing</th>
<th>Subject of Information Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>Company &amp; Country Matters</td>
</tr>
<tr>
<td>Tactical</td>
<td>Product Matters</td>
</tr>
<tr>
<td></td>
<td>Tactical information processing for company &amp; country matters</td>
</tr>
<tr>
<td></td>
<td>Tactical information processing for product matters</td>
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<tr>
<td></td>
<td>Strategic information processing for company &amp; country matters</td>
</tr>
<tr>
<td></td>
<td>Strategic information processing for product matters</td>
</tr>
</tbody>
</table>

TABLE 2.6: Typology for Categorizing Information Processing
Source: Egelhoff (1982:438)

The focus of the present study is information processing from the perspective of strategic decision making (the left lower quadrant of the above table 3.1, i.e. companywide strategic information processing). The information processed is of a strategic nature: it is related to strategic issues, and accordingly, the next section examines how strategic issues have been conceptualized.
2.5.3.1 Effects of information and communication technology on SDMPs

In the literature, disagreement exists about the effects of ICT on the processes of the SDMP. This section will review this literature, concentrating firstly on the different positions in this debate, and secondly on the contingency factors that affect the use of IS within the SDMP. Generally, three main positions in this debate can be identified: (1) it is methodologically impossible to identify the impacts of ICT; (2) there is little, if any, effect; and (3) IS will affect the SDMP.

Firstly, one extreme position in this debate claims that it is methodologically impossible to identify the impacts of IT, as they are intangible. For example Tallon et al. (2000:145) report the inability of organisation-level analysis to account fully for the intangible impacts of IT.

Secondly, other authors (e.g. Dearden, 1983; Wildavsky, 1983; King, 1985; Drucker, 1992) have argued that the use of ICT will have little, if any, effect on senior management activities and on the SDMP. King (1985) argued for the extreme case of no usage of IT at all by CEOs. Similarly, some researchers (Mintzberg, 1975; Kotter, 1982; El Sawy, 1985) contend that the soft, personal information often used by top management is not easily captured by a computer-based system (Ackerman, 2000). Focusing on the relevant strategic information, Drucker (1992) has argued that the impact of IT on strategic decision making is limited by the inability of the IT to access the strategically relevant information which generally exists outside the company.

Thirdly, in contrast, other researchers (Isenberg, 1984; Huber, 1984, 1990; DeSanctis and Poole, 1994; Hedelin and Allwood, 2002) have argued that the use of IT will affect strategic decision making. Concerning IS use in the SDMP, several authors report that traditional IS such as committees, task forces or project teams, integrative personnel, reporting schemes or computer systems supporting organisational
communication, are important factors in decision making (Galbraith, 1973; Miller and Friesen, 1982:7; Volberda, 1998). Focusing on external relations, Clemons et al. (1993) have examined the value of IT in co-ordinating with outside agents. They found that IT reduces risks traditionally associated with sharing information with ‘outsiders’ because of its lower relationship specificity and superior monitoring capability. Their findings can be transferred to the SDMP and the coordination with external actors (strategic advisors of external consultancies, members of steering committees, etc.) through IT.

Empirical evidence is mixed. The first empirical study systematically to address the impact of IT on the SDMP was conducted by Molloy and Schwenk (1995), based on the earlier theoretical work of Huber (1990). Their study examined eight decisions in four case companies and focused on the effects of IT during the major phases of the SDMP. They found that while the use of IT within the SDMP ‘had a strong positive effect on overall decision performance’ (Molloy and Schwenk, 1995:293), IT was not used equally in all decision phases. Molloy and Schwenk (1995) recommend distinguishing between problem decisions and crisis decisions because IT is used to a much lesser extent in crises than in other, more ‘normal’ strategic decisions.

Empirical studies (e.g. Powell and Dent-Micallef, 1997; Eisenhardt and Martin, 2000; Andersen, 2001) suggest that the effectiveness of the SDMP is related to information processing. It strengthens the management approaches and decision structures inherent to an organization, creating competitive advantage by ‘enhancing idiosyncratic information processing capabilities’ (Andersen, 2001:102). For example, strategic decision making is an important dynamic capability (Eisenhardt and Martin, 2000:1106) which involves information sharing between members of the SDMP.
group, including reporting and discussing the decision data they or their staff have gathered (Daft and Weick, 1984).

The underlying information processes of the SDMP are mostly enabled by ICT. However, Powell and Dent-Micallef (1997:375) found that ICTs have not ‘brought in and of themselves’ any sustained performance advantages, owing to imitation by competitors. The ‘strategic necessity hypothesis’ (Clemons and Row, 1991) therefore suggests, in line with the data of Powell and Dent-Micallef (1997), that the advantage which computer-based information processing creates is based on ‘leveraging or exploiting preexisting, complementary human and business resources’ (Powell and Dent-Micallef, 1997:375). This resource-based view (RBV) of information processing capabilities coincides with information processing research (e.g. Daft and Lengel, 1986). Researchers expected that IT would increase the amount of information available for strategic decision making. However, the soft, personal information often used by management (Mintzberg, 1975; Kotter, 1982; El Sawy, 1985) is not easily captured by a computer-based system (Ackerman, 2000).

In the literature, there are contradicting claims about the effect of ICT on groups working face-to-face, whether synchronously or asynchronously. Some researchers (e.g. Fulk et al., 1995; Burris, 1998; DiMaggio et al., 2001; Webster and Wong, 2008) argue that IT transforms teamwork. However, this transformation may be equally true for all types of teams because many of the technologies employees use today (e.g. email, shared workspaces, shared databases) are used equally by face-to-face employees. For instance Burke and Chidambaram (1995) found no differences in social presence between groups working face-to-face, synchronously or asynchronously with an electronic meeting system.
Concerning the use of information technology for information gathering, it is argued that IT expands the limits of human information processing and communication by improving the quantity, quality and efficiency of data collection and storage, processing and communication (Cyert et al., 1956; Mintzberg, 1973; Jaques, 1976; Kotter, 1982; Bakos and Treacy, 1986). For example Cyert et al. (1956) found that the largest share of time in the decision process was devoted to gathering information in order to determine the consequences of alternatives. Similarly, Mintzberg (1973) argues that the manager’s ‘monitoring’ role requires gathering a wide variety of information. He found that the ability of information technology quickly to acquire and store large amounts of information can clearly improve performance of this activity.

With regard to strategic choice, Collins et al. (1999:35) examined computer-based technology with a focus on the locus of decision-making power. They distinguished between strategic and operating decisions, and found ‘that operational decisions are decentralized, while strategic decisions remain unchanged with operational uses of computers’. In their research, Bakos and Treacy (1986) provide a structured model for studying the effects of information technology on the SDMP and suggest that the use of information technology leads to faster and better decisions.

Information technology may improve managers’ understanding of problems. As noted by Huber (1984), information technology may allow more efficient scanning of quantitative data, allowing managers more time personally to gather soft, qualitative data. Jaques (1976) and Mintzberg (1973) both note the importance of executives’ mental models in the processing of information. Mintzberg (1973:90) states that ‘the effectiveness of the manager’s decisions is largely dependent on the quality of his models’. Huber (1990) argues that information technology can improve managers’
understanding of problems through its ability to process large amounts of data and test complex models, which should reduce biases in managers’ conceptions of strategic problems. Bawden (1986) has argued that IS can stimulate the creativity of managers.

Finally, IT may improve problem-related communication. Kotter (1982) notes two key executive processes: agenda setting and network building. Network building often requires extensive communication to provide the information necessary for the development and implementation of the executive’s agenda. The ability of information technology to efficiently and effectively communicate information should be expected to expand the human limits of communication.

To overcome the simple dichotomy of so-called ‘old’ and ‘new’ media, the wide range of communication media is organised in this study according to three categories of IS: direct, mass media, and abstract measures. The first category encompasses IS used in a direct manner between individuals, such as direct conversation in traditional face-to-face meetings with physical presence or by telephone. Direct media can also be ‘new media’ (Rice et al., 1984; Markus, 1994), for example email, voicemail or one-to-one video conferences. Second are IS with a mass distribution character supported by technical means such as email lists, intranet or enterprise resource planning (ERP) software. Third are IS of an abstract nature, transferring abstract information such as financial measures or performance indicators, conventional ERP I systems conceived after Weston (2003:52) as software platforms providing functionality to integrate front- and back-office IS with interfaces for human-computer interaction. Increasingly, a new second generation of ERP systems, coined ERP II (Møller, 2005), connects an organisation with its suppliers and customers in an end-to-end integration (Weston, 2003:52; Hayes et al., 2005), expanding IS infrastructure beyond the boundaries of the organisation. Such enterprise-wide IT can be supplemented with
features for strategic usage of information (Brignall and Ballantine, 2004), e.g. strategic enterprise management (e.g. Meier et al., 2003) or metrics-driven business process management (e.g. Golfarelli et al., 2004).

2.5.3.2 Strategic issues management

The concept of strategic issues (e.g. Ansoff, 1980; Dutton and Webster, 1988; Schoemaker, 1993; Fairhurst, 2005) is closely linked to the processual understanding of strategic decisions as ‘intentional choices or programmed responses about issues that materially affect the survival prospects, well-being and nature of the organisation’ (the SDMP understanding: Schoemaker, 1993:107). Issues are events, developments or trends with potential consequences for an organisation (Dutton and Webster, 1988:663). Issues become strategic issues when ‘they may have a significant effect on the current functioning and future interests of the entire corporation’ (Johnson, 1983:22). Accordingly, Ansoff has proposed that organisations need systematically to identify strong and weak signals of ‘important trends and events which impact on the firm’ and to enable a ‘fast response’ on the part of the organisation through its SDMP (1980:131). The importance of an organisation’s response to strategic issues is shared by many authors (e.g. Ansoff, 1975; Chase, 1982; Johnson, 1983; Greening and Gray, 1994). However, the question appears where the SDMP should focus on to identify such strategic issues, either externally or interally, because they are embedded in multiple layers both of the organisation’s environment and the organization itself. Strategic issues are seen as a complex subject ‘open to framing’ (Fairhurst, 2005:165), and two schools of thought have been developed around the issue of the external or internal focus of strategic issues management, first, the public policy approach (e.g.
First, the public policy approach (e.g. Chase, 1982; Heath and Coombs, 2006) is specifically designed to enable organisations to ‘participate in, and not simply respond to, public policy issues which have the potential to impact the organization’ (Jaques, 2009:282). Accordingly, Chase describes this requirement as an organisation’s ‘capacity to understand, mobilize, coordinate and direct all strategic and planning functions, and all public affairs/public relations skills, toward achievement of one objective: meaningful participation in creation of public policy that affects personal and institutional destiny’ (1982: 1–2).

Secondly, and in contrast to the public policy approach, the internal process approach has evolved a focus within the organization, seeing information processing as a means of co-ordinating a range of management activities and functions related to strategic issues (Wartick and Rude, 1986; Heath and Palenchar, 2008).

Despite this ongoing debate ‘about the merits of the different ways to define issues’ (Jaques, 2009:3), three distinct constructs are undisputed between the two schools of thought: (1) the controversy or disputation construct (‘an issue as a contestable difference of opinion’; Jaques, 2009:3); (2) the expectational gap construct (an issue as a ‘gap between the actions of an organization and the expectations of its shareholders’; Jaques, 2009:3); and (3) the impact construct (an issue as an ‘event, trend or condition which creates, or has the potential to create, a significant impact affecting the organization’; Jaques, 2009:3).

The following table presents a typology of four types of issues developed by Bartha (1988):
Strategic issues are also closely linked to stakeholder management. Stakeholders’ interests evolve around issues (Dutton and Webster, 1988:663), consciously or unconsciously, as ‘decision makers become interested in and involved with some issues and ignore others’. There is a range of empirical research on strategic issues and the underlying interests relevant for the S-DMP. For example Guth and McMillan (1986) describe how the interests of middle management are important in widening the narrow focus on UEs to include middle managers as stakeholders. Interests can be actively pursued by ‘issue selling’. In their research, Dutton and Ashford (1993) found the selling of issues to top management to be an important activity in decision making processes. No issue can be considered inherently strategic, so it must be ‘sold’ to top management, with a view to convincing them that the issue has the potential to affect organisational performance. In the words of Dutton and Ashford (1993:397), ‘the time and attention of top management in an organization are critical, but limited, resources’. Middle-level managers typically attempt to influence the identification of issues for strategic decision making. When the issue is recognized, i.e. ‘opportunities,
problems, and crises are recognized and evoke decision activity’, a phase of diagnosis follows, in which top managers seek ‘to comprehend the evoking stimuli’ (Mintzberg et al., 1976:253). From the perspective of issue management, strategic issues need to be managed once they are identified. However, Johnson (1983:22) holds that the very term issues management is misleading: strategic issues cannot in general be managed, given the difficulty of controlling their dynamics. He argues that, because organizations are in practice ‘limited [to] issue monitoring and the implementation of communication strategies’, it is only the corporate response to issues that can truly be managed – not the issues themselves (Johnson, 1983: 22).

In sum, the interests related to strategic issues are ‘consequential for both the processes and the outcomes’ (Dutton and Webster, 1988:663) of the SDMP and therefore have to be taken care of – both in practice (e.g. by strategic issues management; Dutton and Ottensmeyer, 1987) and in empirical research. However, if the successful management of strategic issues is measured against stakeholder satisfaction and the effectiveness of the SDMP, there remains a lack of understanding about the contribution of IS to this process.

2.5.4  Information systems (IS) as communication media

This section discusses the characteristics and function of IS as communication media with regard to their dependency or autonomy of place and time. In the next sub-section, a matrix is presented to categorize information media into four types of media. Then, the four resulting quadrants are discussed in more detail including empirical research on the respective information media.
2.5.4.1 Situational contingencies of media choice: Information richness and time-place matrix

This section presents a categorization of communication media in order to understand their dependency or autonomy of space and time. The choice of a certain IS in a specific situation usually depends on the attributes of media which need to fit to the personal communication needs. Theoretically, these media attributes are conceptualized as information richness (or ‘media richness’; Daft and Lengel, 1984; Dennis and Kinney, 1998), i.e. (1) the cues and channels available, (2) the capacity for immediate feedback, (3) language variety, and (4) the degree to which intent can be focused on the recipient by the media. The capacity or information richness of the media can be manipulated by changing these media attributes. Media richness theory (Daft and Lengel, 1984) suggests that choice of communication medium is crucial because different media possess varying degrees of information carrying capacity: For example, ‘richer’ media are capable of transferring more cues that ‘leaner’ media.

The below Table 2.8 shows the matrix developed by Bowditch and Buono (2001) containing four quadrants where place and time of communication events and the used information media are either the same or different.
<table>
<thead>
<tr>
<th>TIME</th>
<th>PLACE</th>
<th>Same</th>
<th>Different</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Co-located/Synchronous</td>
<td>Distributed/Synchronous</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Face-to-face meetings</td>
<td>• Audio (telephone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Technography</td>
<td>• Videoconferencing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decision-support rooms</td>
<td>• Distance whiteboarding</td>
</tr>
<tr>
<td>Same</td>
<td></td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Co-located/Asynchronous</td>
<td>Distributed/Asynchronous</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Resource centre</td>
<td>• Voice mail, e-mail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Team rooms</td>
<td>• Computer conferencing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ‘War’ room</td>
<td>• Groupware &amp; intranets</td>
</tr>
<tr>
<td>Different</td>
<td></td>
<td>III</td>
<td>IV</td>
</tr>
</tbody>
</table>

|      |       | Co-located/Asynchronous                                              | Distributed/Asynchronous                                 |
|      |       | • Resource centre                                                    | • Voice mail, e-mail                                    |
|      |       | • Team rooms                                                         | • Computer conferencing                                 |
|      |       | • ‘War’ room                                                         | • Groupware & intranets                                 |

TABLE 2.8: Time and place dimensions of team information exchange  
Source: Bowditch and Buono (2001:170)

However, constraints other than leanness exist: they need not inhere solely within the medium. They may also derive from context, especially if urgency overrides richness as a selection criterion (for example, when communicating from out-of-office spaces like airports or hotel rooms). New advances in ICT render communication independent of time and location. For example, communication using mobile devices allows access to decision makers on a global level. Computer platforms and the Internet enable communications (voice, video and data) at all times, because messages can be stored for recipients who are not online and downloaded later.
The following sections review literature which addresses the information media of the above four quadrants (see Table 2.9) in more detail.

2.5.4.2 Quadrant 1: Co-located/Synchronous information media

Co-located/Synchronous

- Face-to-face meetings
- Technography
- Decision-support rooms

Face-to-face contact between human beings requires physical presence, being at the same time (i.e. synchronous) at the same location (i.e. co-located), e.g. in the form of meetings (e.g. Fiol and O'Connor, 2005).

In business, meetings are usually organized for the purpose of providing and exchanging information (Mintzberg, 1975; Daft and Macintosh, 1981). Among the advantages that can be created by meeting in the same physical location, is the ease with which participants of a meeting can simultaneously exchange information about others. This helps to reduce uncertainty. For instance, local participants 'tend to rely on a wide variety of physical cues to reduce uncertainty when they meet face to face' (Fiol and O'Connor, 2005:22); for example static cues such as one’s type of dress and dynamic cues such as smiles or nods. These advantages are also relevant for face-to-face dyadic conversations between two individuals, which can be both structured and formal, and unstructured and informal. Face-to-face communication can be dyadic (between two partners), triadic (between three partners), or a group meeting (between multiple participants). All may be formal or informal in nature. The distinction between less structured interpersonal communication, such as informal dyadic conversations, and more structured interpersonal communication, such as formal
meetings, is important as these forms can vary in their degree of social presence and information richness.

The importance of the face-to-face meeting as a communication medium is highlighted by Weick (1987, 2005): since strategic decisions are taken by human beings, who are ‘the medium through which reliability is accomplished, signals relevant to reliability flow through them. When those people are both trusted and dealt with face to face, more information is conveyed’ (2005:335). Face-to-face communication can enhance requisite variety (Ashby, 1956) for two reasons: firstly, ‘face-to-face contact makes it easier to assess and build trust and trustworthiness’ (Weick, 1987:117); and secondly, ‘face-to-face contact makes it easier to get more complete data once trust and trustworthiness have been established’ (Weick, 1987:117). This may lead to an earlier detection of strategic issues in the SDMP and more effective collaboration among strategic decision makers.

Meetings may involve more social presence than dyadic conversation because of the availability of multiple views, multiple directions of interaction and greater challenges to achieving convergence upon a common interpretation (Daft and Weick, 1984; Rice et al., 1984). Meetings may have greater information richness because they provide more opportunities for developing ‘shared meanings, beliefs, and commitment to the organization’ (Hannaway, 1987:126). Meetings are used for a wide range of tasks within the SDMP. Kefalas and Schoderbek (1973) found that meetings were used more frequently by managers in dynamic environments than in stable ones. McLeod and Jones (1987:100) found that ‘the average value of information gained in scheduled meetings was the highest of all media […], followed by unscheduled meetings’. Westley (1990:337–338) emphasizes the importance of meetings as
‘strategic conversations’, defined as ‘verbal interactions within superior-subordinate dyads focusing on strategic generalities’.

2.5.4.3 Quadrant 2: Distributed/Synchronous information media

Distributed/Synchronous
- Audio (telephone)
- Videoconferencing
- Distance whiteboarding

The telephone conversation is the preferred communication medium of top managers as it provides not only immediate access to communication partners during the process of strategic decision making, but also ‘soft’ information (Mintzberg, 1975:166) by ‘word of mouth’ (Mintzberg, 1975:167). This communication channel facilitates the intuitive assessment and immediate grasp of a situation through the rich cues of the human voice of the communication partner (Fish et al., 1992). A benefit as well as a potential downside is that there is no documentation of the phone call and the transferred information, except in the rare cases when it is recorded (which legally requires the agreement of the speaker). It is therefore perceived to be well suited to a rapid and usually informal exchange of questions and opinions.

Research on email correspondence related to the SDMP is principally concerned with the ‘question of how and why managers, especially senior managers, use [. . .] electronic mail’ (Markus, 1994:502). Fish et al. (1992) see communication media according in two dimensions: firstly, their degree of interactivity; and secondly, the amount of information exchanged through a medium in a typical communication. Firstly, concerning the degree of interactivity, written personal correspondence (handwritten notes, memos and printed documents such as facsimiles) is perceived as less interactive than group meetings, email and telephone conversations, ‘which are
seen as being highly interactive’ (Fish et al., 1992:43). Secondly, concerning the amount of information exchanged through a medium in a typical communication, Fish et al. (1992:43) found that users believed that ‘in one-on-one face-to-face meetings a great deal of information is transmitted while much less is transmitted in the typical telephone call or answering machine message’. Markus (1994:502) found executives to perceive various media in ways ‘relatively consistent with information richness theory, but to use email more and differently than the theory predicted’; in particular, ‘effective senior managers were found to use email heavily and even for equivocal communications tasks’ (Markus, 1994:502). This finding contradicts the precepts of information richness theory and cannot be explained by ‘simple modifications of the theory’ (Markus, 1994:502). However, as suggested by Markus (1994:502), the ‘adoption, use, and consequences of media in organizations can be powerfully shaped by social processes such as sponsorship, socialization, and social control’. Using behavioural and political perspectives can augment our understanding of the media behaviour of strategic decision makers.

2.5.4.4 Quadrant 3: Co-located/Asynchronous information media

Co-located/Asynchronous
- Resource centre
- Team rooms
- ‘War’ room

Several authors (e.g. Rice and Shook, 1990) have expanded research on conventional meetings by focusing on meetings enabled by electronic communications such as computer conferencing, video conferencing, voice messaging and video telephony. They found that these electronically-enabled meetings may also take the form of traditional meetings; however, these forms of organisational media are not as yet very
common (Rice and Shook, 1990:199). Problems may arise when inadequate infrastructure exists to support cross-team collaboration. However, new technologies offer easily accessible and less expensive video conferencing capabilities through video telephony or web conferencing (i.e. video conferencing based on Internet technologies, especially the World Wide Web). Video and web conferencing allow travel to be minimized, while still providing face-to-face experiences with off-site users, external advisors or regional managers, and may be used as an alternative to face-to-face meetings when travel is restricted by security or cost considerations. In summary, video conferencing (e.g. Kahai and Cooper, 2003; Webster and Wong, 2008) and video telephony (e.g. Kraut et al., 1998) can help to achieve lean business communication, improving operational efficiency and security by enabling secure and efficient collaboration between geographically distant decision makers.

2.5.4.5 Quadrant 4: Distributed/Asynchronous information media

Distributed/Asynchronous

- Voice mail, e-mail
- Computer conferencing, Groupware & intranets

Distributed/asynchronous information systems can be used independently of location or time. They can have amass communication character using the capability of mass distribution, i.e. to send a message to a smaller or greater number of people, known or unknown (e.g. members of a list of recipients or a wider audience such as all employees through the corporate intranet) irrespective of whether the recipients are momentarily connected to the information system (e.g. online or offline status) because the messages are stored digitally until they are retrieved by the recipient (at their workplace or through mobile devices).
Emailing lists are a special feature facilitating the sending of one email to a list of recipients such as the members of a steering committee or project team. The administration of the list of recipients can be delegated, which helps to reduce the workload of managers.

A corporate portal or intranet portal is technically a corporate website interconnected with databases within the corporate computer network whose ‘main purpose is to provide easy access to enterprise digital information’ (Dias, 2001:269). Its importance is highlighted by Detlor (2000), who defines it as an organisation’s central information infrastructure. An intranet portal has a wide range of applications: it can be used to provide documentation, functioning as a ‘single gateway to all information and knowledge resources’ (Dias, 2001:269), and it can perform formal reporting functions across the organisation. It can also be used to distribute information through company newsletters and reports.

2.5.4.6 Abstract information media

Abstract information media are ways of communication using an abstract code such as numbers, for example performance measures. Usually the abstract codes need to be graphically depicted, e.g. on computer screens or so-called one-pagers (i.e. a one page report of strategically relevant data), or in ‘situation rooms’ of corporate headquarters on ‘performance dashboards’. Typically, there is an underlying technical structure for these information media.

Performance measurement systems use key performance indicators (KPI) to indicate specific aspects of an organisation’s performance derived from aggregated data (e.g. financial data from Accounting, customer data from Sales and Marketing, internal data from Personnel, Operations and other departments), for example facilitated by various kinds of balanced score cards.
An executive information system (EIS) is defined as a computer-based information system providing senior managers with access to information relevant to their management activities (Leidner and Elam, 1994), giving competitive advantage to the organisation (Porter and Millar, 1985). Sabberwal and King adduce several examples of strategic IS applications: plant information management systems, mobile technology with hand-held computers for a sales force, integration of the customer's point of sale data into the company's computer system, an executive information system for the president and his reporting managers allowing access to strategic and competitive information in operations (Sabherwal and King, 1995). The advantages achieved through these IS applications are described as ‘real-time companywide access to information concerning the company’s activities and interests’ (Sabherwal and King, 1995:210–212).

Enterprise strategy management systems (Smith, 2002; Wagner, 2004) ‘promise better planning support for senior management, but are still in their infancy’ (Wagner, 2004:105) and there is a 'lack of appropriate software tools' (Wagner, 2004:107).

The field of strategic and competitive information systems has made considerable progress since the landmark papers of Parsons (1983) and McFarlan (1984), who introduced the concept of IT as an instrument of competition. Concerning the organisational value chain, Porter and Millar (1985:152) described how IT transforms all levels of the value chain, stating that the information revolution transforms the nature of competition by creating new competitive advantages and new information flows.

The strategic nature of an IS application is defined by Sabherwal and King (1995:179) as significantly affecting the company’s success and destiny, either by shaping its business strategy or playing a direct role in the implementation or support of the
business strategy. The purposes of using IS in the SDMP are manifold (Molloy and Schwenk, 1995).

Chakravarthy (1987) found in practice that strategic planning systems are poorly tailored to the organisation’s context; however, he shares the position that these systems should be ‘continuously tailored both to an organization's external and internal contexts’ Chakravarthy (1987:517). In the past, Fowler (1979) claimed that a proper design strategy for providing managers with relevant information for choosing courses of action will recognize the principle of variety reduction, and that human beings have unique and peculiar ways of reducing variety in noisy information circumstances. However, Fowler (1979) remains sceptical toward structured reporting systems, assuming that the distinguishing feature, beyond luck, of the successful ‘executive’ versus ‘controller’ is creativity, including novel and non-structured uses of information, and implying that structured reporting will fail to meet the needs of strategic decision makers.

2.5.4.7 IS as decision support systems (DSS)

To integrate ‘the dynamic, temporal aspects of information acquisition’, Saunders and Jones (1990:40) have examined the link between choice of medium and the characteristics of the decision making process. Research on decision support systems (DSS) focuses on ‘supporting and improving managerial decision-making’ (Arnott and Pervan, 2005:67). Arnott and Pervan (2005) found, in a review of over 1,000 publications in 14 major journals between 1990 and 2003, that research into DSS peaked in 1994 and has fallen steadily since then, with ‘the current publication rate … at early 1990s levels’ (Arnott and Pervan, 2005:67). The areas covered by DSS research are personal DSS (e.g. Belanger and Watson-Manheim, 2006), negotiation support systems and group support systems (Christensen and Fjermestad, 1997),
intelligent DSS (Tu and Hsiang, 2000), knowledge management-based DSS (Gregor and Benbasat, 1999), executive information systems/business intelligence (Brignall and Ballantine, 2004), and data warehousing (Cooper et al., 2000; Golfarelli et al., 2004).

2.5.4.8 The Internet as a multimedium

With regard to the typology presented above, the complex nature of the internet makes it difficult to categorize its many aspects. For example, Adams and Clark (2001:29) describe the internet as possessing a hybrid nature based on its double role both as a macromedium (comprehensive in scope and global in size, disseminating the shortest messages to the smallest audience) and also as a metamedium (a platform for older media like text files, images, sound and video files). Following Jankowski and Hanssen (1996) and Fidler (1997:25), the present study understands the internet as a multimedium, i.e. a combination of these two categories which spawns significant submedia such as email and the World Wide Web. The internet enables virtual decision making for users in diverse locations, by providing the capability for conference and collaboration in a virtual dimension. Over the last decade, there has been an increasing tendency to replace analogue communication technologies (such as analogue telephones) with digital technologies based on the Internet Protocol (IP). The convergence of computer and telephone technologies through the same digital standards, for example Voice over IP (VoIP), has enabled new information and communication technologies (ICT) to build corporate communication platforms. Today, mobile devices, in combination with these corporate communication platforms, are globally connected through corporate and public infrastructures (global telecom networks, satellites, fibre-optic cables, radio, etc.). These ‘intelligent
environments’ (Toffler, 1980:178) facilitate ubiquitous communication (Orlikowski et al., 1995) and offer decision makers a wide variety of different media.

2.5.5 Further considerations in media selection

The next section reviews research on two malfunctions of information processing – information overload and respective information underload – and their possible consequences for the SDMP, as well as symbolic information processing.

2.5.5.1 Information overload and information underload

The phenomenon of information overload (Smart and Vertinsky, 1977; Jakoby, 1984; Edmunds and Morris, 2000) and its counterpart, information underload (O’Reilly, 1980:684), can pose a serious threat to the SDMP by introducing pathological filters into organisational information processing (Smart and Vertinsky, 1977). These two phenomena, caused by the failure to achieve a fit between information processing needs and capabilities, are frequently encountered in the information processing literature (Eppler and Mengis, 2004). Naturally, this analysis requires organizations to be viewed as information-processing systems (Galbraith, 1977; Tushman and Nadler, 1978; O’Reilly and Pondy, 1979).

Excessive use of IS resources can distribute irrelevant information (Feldman and March, 1981:176). Combined with a psychological distancing of communicating units (Smart and Vertinsky, 1977), this creates noise in communication channels. Noise can be found in passive forms, such as organisational gossip (Van Iterson and Clegg, 2008), or it can be used deliberately to avoid decision making, e.g. through ‘death by discussion’ (McCalla-Chen, 2000:35), when ‘extensive discussion is used to veer from an issue – until the issue is forgotten – and a decision is not reached’.
When managers are overloaded with data (Wildavsky, 1983) or information (Jakoby, 1984), there is a danger that they will revert to intuitive decision making, resulting in potentially negative decision consequences (Fredrickson and Iaquinto, 1989:824). If the problem is a lack of clarity rather than a lack of data, new data may be confusing and may even increase uncertainty, as an information stimulus may have several interpretations. Hence the acquisition of new data may ‘not resolve anything when equivocality is high’ (Daft and Lengel, 1986:554), instead resulting in data overload (Morgan, 1996; Van Zandt, 2004).

Some scholars (Amason, 1996; Milliken and Martins, 1996) suggest that the benefits of diversity will not be realised in strategic decision making without important processes, one of which is the management of task conflict. Although it can generate detrimental relationship conflict, Olson et al. (2007) maintain that task conflict is vital to highly complex decisions. Task conflict (Olson et al., 2007:199) is ‘created from diverse perspectives being expressed and challenged’, and encouraged by the competence-based trust of strategic decision makers who may feel confident that the open discussion of their ‘views, even if challenged, will lead to an in-depth analysis of the issues’.

However, harmful effects have been observed when task conflict is combined with information overload. Smart and Vertinsky (1977) examined decision making in situations of organisational crises. In their model of information processing, information overload is characterized by organisational pathologies such as dysfunctional selective attention, retention of information, and delays and subversion of communication flows. Furthermore, information overload may predispose an organisation to harmful surprise, such as the retention of information preventing early mitigation. These surprises increase stress-related maladaptive behaviour (Milburn,
1972) and can lead to “groupthink” (Janis, 1972) within the decision group. Some authors (e.g. Orlikowski et al., 1995; Cronholm and Goldkuhl, 2003) warn that ubiquitous computing and permanent accessibility increase the stress levels of decision makers. These authors suggest creating spaces and times of privacy and utilising secretary services.

2.5.5.2 Symbolic considerations of media selection

The literature shows that the opening of information theory to symbolic approaches allowed the synthesis of research on symbolic phenomena in strategic information processing (such as interaction rituals, Collins, 1981) with research on ‘strategic conversations’ (defined as ‘verbal interactions within superior-subordinate dyads focusing on strategic generalities’; Westley, 1990: 337-338). Weick (2002) describes how information processing is influenced by sense making. Socialization of organisational networks can be another important reason to choose a particular medium for communication: Fulk et al. (1987) propose that ‘social influence’ is accounted for as a phenomenon to explain individuals’ media choices as influenced by those of their coworkers.

2.6 The organisational context of SDMP and IS

2.6.1 Strategic decision making and its organisational context

Chakravarthy (1987) found that in practice strategic planning systems are poorly tailored to the organisation’s context; however, he shares the position that these systems should be ‘continuously tailored both to an organization's external and internal contexts’ (1987:517). In the past, Fowler (1979) claimed that a proper design strategy for providing managers with relevant information for choosing courses of
action will recognize the principle of variety reduction, and that human beings have unique and peculiar ways of reducing variety in noisy information circumstances. However, Fowler (1979) remains sceptical toward structured reporting systems, assuming that the distinguishing feature, beyond luck, of the successful ‘executive’ versus ‘controller’ is creativity, including novel and non-structured uses of information, and implying that structured reporting will fail to meet the needs of strategic decision makers. The following section therefore examines literature on the evaluation of IS.

2.6.2 Information systems and their organisational context
This is considered fundamental, with Irani and Love (2001) demonstrating that it is often the soft, human and organisational factors associated with the adoption and implementation process of IT that can lead to organisational learning and improved readiness, which in turn supports the efficient and effective utilization of IS resources. For example, ease of use was found to be an important requirement of IS for top managers (Carlson and Davis, 1998:353–354). Accordingly, the alignment of IT and underlying information processes with business processes (‘functional alignment’; Henderson and Venkatraman, 1993:476), resulting in an integration of technical, human and business resources, is seen as a decisive factor in performance evaluation.
2.7 Conceptualization of performance

2.7.1 Performance as a conceptual problem

Performance is a much contended research area, and there is not much common ground in the literature (Quinn and Rohrbaugh, 1983; Cameron and Whetten, 1983; Volberda, 2004). For example, the management literature cannot yet agree on how to conceptualize the performance of SDMPs (Cameron and Whetten, 1983; Pearce et al., 1987; Fredickson and Iaquinto, 1989; Hart and Banbury, 1994; March, 1999; Pye and Pettigrew, 2005). Cameron (1986:539) reports that ‘much confusion continues in the organisational literature regarding the definition, circumscription, and appropriate criteria for assessing effectiveness’.

The concept of performance is of fundamental importance as its continuous improvement is the desired process which organisational design is aiming to achieve (e.g. Kilmann et al., 1976). Despite being a basic concept of the economic functioning of organisations, Steers (1975:546) found, in an extensive review of the performance literature, that there is only ‘a rudimentary understanding of what is actually involved in or constitutes the concept’.

A ‘meaningful way to understand the abstract idea of effectiveness is to consider how researchers have operationalized and measured the construct’ Steers (1975:546). Steers found that most studies deploy a unidimensional modelling approach using a single evaluation criterion for performance. Although there are no inherent limitations of unidimensional approaches, they are criticized for their monocausal representation of complex performance relationships, which possibly neglect important factors. Therefore, in contrast to these unidimensional approaches to performance modelling, other authors (e.g. Cameron and Whetten, 1983; Volberda, 2004) recommend a multidimensional approach. For example, a singular focus on efficiency might
jeopardize the success of strategic decisions if major stakeholders are not satisfied. The next section reviews various multidimensional approaches for research on the performance of the SDMP (SD performance).

2.7.2 Approaches to performance and effectiveness

In the following sections, the five discrete approaches to performance and effectiveness found in the literature are reviewed as they ‘encompass the total meaning of effectiveness’ (Cameron and Whetten, 1983:7): (1) the goal approach; (2) the resource-based view (RBV); (3) the internal processes approach; (4) the constituency approach; and (5) the inhibiting factors approach.

2.7.2.1 The goal approach

First, the goal approach (Etzioni, 1964; Andrews, 1987; McGrath et al., 1995; Dean and Sharfman, 1996) defines effectiveness narrowly by the objectives established during the decision process. For example McGrath et al. (1995:251) define an organisation’s competence with regard to strategic processes as the ‘degree to which the firm or its subunits can reliably meet or exceed objectives’. These goals can either be explicit or implied from the behaviour of decision makers. Some authors (e.g. Bourgeois and Eisenhardt, 1988; Nutt, 1993; Murnighan and Mowen, 2002) focus on the substantive-cognitive dimension in terms of efficiency, e.g. financial criteria (cost effectiveness), time (timeliness and speed of decisions) and requirements concerning the quality of decision. According to the cost-minimization perspective (Marschak, 1968), strategic decision makers have, for example, the goal of cost-efficient communication as they attempt to ‘make rational decisions by choosing media that minimize personal costs’ (Reinsch and Beswick, 1990:803). For example, adopting a cost-minimization perspective, Reinsch and Beswick (1990) have defined costs
broadly in an economic sense. They posited that (1) communicators are sensitive to a wide array of potential labour costs; (2) communicators use their perceptions of circumstances to assess the magnitude of potential costs and the probability of cost accrual; and (3) cost minimization is an important determinant of individual behaviour in organisations. In the literature on cost minimization (e.g. Marschak, 1968; Reinsch and Beswick, 1990), three types of cost are conceptualized: (1) access costs; (2) error costs; and (3) delay costs. The presumption of rational behaviour can be applied accordingly to time- and quality-related efficiency. However, the weakness of the goal approach is seen by some researchers (e.g. Cohen et al., 1972, 1976) in its lacking ability to explain the performance of SDMPs where goal achievement is not the primary motivation of decision makers. In terms of the present study, the goal-oriented approach can be seen as privileging an empirical, agent-centred and rational view of organisational competence which prizes efficiency, through ‘actors’ categories’ such as costs or time which are demonstrably measurable and important to decision-makers. If the effectiveness of IS is to be given the broadest possible consideration, these limitations must be transcended.

2.7.2.2 The resource-based approach

Secondly, with regard to performance, the resource-based view (RBV) examines the question of why some organisations outperform others (Barney, 1991; Barney and Arikan, 2001:124), conceptualizing an organisation as a ‘bundle of resources and capabilities’ (Amit and Shoemaker, 1993:33). The RBV is particularly significant in strategic management research (Collis and Montgomery, 1998; Eisenhardt and Martin, 2000; Barney, 2001; Connor, 2002; Johnson et al., 2003). Focusing on the value-creating capacities of an organisation, the RBV is concerned with those organisational practices and activities (e.g. IS use in strategic information processing) that can be the
source of sustainable competitive advantage. These capabilities are ‘information-based, tangible or intangible processes that are firm-specific and are developed over time through complex interactions among the firm’s resources’ (Amit and Shoemaker, 1993:35); a few of these capabilities are strategic (i.e. leading to competitive advantage), i.e. they meet the criteria of being valuable, rare (or unique) and hard to replicate (or inimitable), and the organisation must be organized in a way to deploy these resources effectively (Barney, 1991), resulting in the value, rareness, inimitability and organisation (commonly known as the VRIO) framework of resource-based analysis. The actual dynamic capabilities (Eisenhardt and Martin, 2000) are developed by combining physical, human and technological resources at the corporate level, e.g. with the purpose of achieving quality strategic information processing (Ansoff and Brandenburg, 1971:713).

Critics of the RBV (e.g. Priem and Butler, 2001; Johnson et al., 2003) contend that the ‘debate over the resource-based view has so far been largely conducted either theoretically or empirically at the macro-level’ (Johnson et al., 2003:6). The macro approach to the RBV was supported by large-scale statistical studies (Rumelt, 1991; McGahan and Porter, 1997; Bowman and Helfat, 2001) confirming a fit relationship between strategy and a given industry structure. However, a micro approach to the RBV (e.g. Collis and Montgomery, 1995; Eisenhardt and Martin, 2000) focuses on the strategy disrupts and understands ‘misfit’ as dynamic capabilities that competitors cannot copy. With regard to these strategic resources (also referred to as core capabilities, core competencies or, more generally, strategic resources; Hamel and Prahalad, 1994), strategy is about achieving seemingly unattainable ‘stretch’ goals (Hamel and Prahalad, 1994). The SDMP seen as a competitive advantage encompasses dynamic capabilities such as (1) the organisation’s SDMP itself as a core
competence (Teece et al., 1997); (2) strategic planning (Powell, 1992); (3) corporate culture (Barney, 1986; Camerer and Vepsalainen, 1988); and (4) IS/IT (Powell and Dent-Micalef, 1997) in conjunction with managerial IT skills (Mata et al., 1995).

Regarding empirical research, Hitt et al. (1998) emphasize the difficulties that empirical testing of the RBV faces (1998:13) because of the ‘idiosyncratic nature of resources and capabilities’. For example Hart and Banbury (1994) have examined, from a sample of 285 top managers, the relationships of five dimensions of perceived performance of the SDMP. Their findings indicate that high process capabilities are advantageous compared to single-mode or less process-capable organisations. With regard to this study’s approach to focus narrowly on the performance of the SDMP, the empirical study of Ray et al. (2004) is important as it suggests examining strategy processes from a RBV using a more narrow perspective focusing on the performance of a business process, i.e. to adapt the effectiveness of a business process as a dependent variable, instead of broadly focusing on the overall firm performance of an organisation like most other research in RBV theory on strategy performance, e.g. RBV empirical research on overall performance at the corporate level of analysis (e.g. Markides and Williamson, 1994; Farjoun, 1998) or at the business level (e.g. Barnett et al., 1994; Huselid et al., 1997). To conclude, the RBV is broadly applicable (Hitt et al., 1998:13), e.g. to tangible resources (e.g. ICT) as well as to intangible ‘idiosyncratic routines and organizational capabilities’ (Hitt et al., 1998:13; e.g. decision-making routines), and provides important insights for the analysis of the effectiveness of dynamic capabilities in SMDPs.

2.7.2.3 The internal processes approach

The internal processes approach to effectiveness is based on input–process–output models and the calculation of a ratio of inputs to output. The lack of an agreed process
model for the SDMP is seen as a problem by some authors (e.g. Hart and Banbury, 1994). However, the rational model of decision making can be used as a structure to highlight the processes mapping them to the different phases of the rational model, i.e. identification and analysis of strategic issues, evaluation of alternatives, strategic choice and communication with stakeholders.

Internal processes concerning the identification of, evaluation of and response to strategic issues (issues management; e.g. Johnson, 1983; Bartha, 1988; Greening and Gray, 1994) impact the performance of the SDMP, for instance, through their impact on the speed of decision making, the creation of strategic options and their influence on the satisfaction of stakeholders (see Section 2.2.3.3). For example collaboration processes between strategic decision makers, advisors and involved managers across business units and functional groups are typical, e.g. for the evaluation phase of strategic decision making – travelling to meet and discuss strategic issues face-to-face, coordinating work and ‘haggling over objectives and the sharing of information’ (Hansen, 2009:85). Additionally, tensions that can arise in the collaboration processes between decision makers and, for example, business unit managers can create ‘significant costs: delays in getting to market, budget overruns, lower quality, limited cost savings, lost sales, [and] damaged customer relationships’ (Hansen, 2009:85). To control for these collaboration costs, Hansen (2009) suggests including them in the analysis of the performance of the SDMP. In sum, there is a gap in empirical research to understand the influence of internal communication processes on SD performance; e.g. the costs associated with collaboration processes, i.e. those costs ‘arising from the challenges involved in working across organizational boundaries’ (Hansen, 2009:85), are an often overlooked factor when analyzing the performance of SDMPs.
While the internal processes approach eliminates the potential problems with actors’ categories seen in the goal approach, it still relies on a positivist, rational model of decision-making which takes no direct account of the behavioural and environmental influences behind empirically-observed phenomena such as ‘collaboration costs’. Again, the effectiveness of IS cannot be fully judged against such a partial model of decision-making effectiveness.

2.7.2.4 The constituency approach

The constituency approach (Thompson, 1967) is an extended view of performance, defining performance in terms of fulfillment of constituent needs and satisfaction of relevant stakeholders. The basic presumption of the constituency view is that organisations exist to benefit their numerous ‘constituencies’ (Thompson, 1967), both internal and external to the organisation. The groups or individuals who are affected by or affect the achievements of organisations (stakeholders; Freeman, 1984) decide finally about the success or failure through their interpretation of the outcomes of strategic decisions because organisations are seen by stakeholder theory as accountable to all their stakeholders. However, a criticism of stakeholder theory (e.g. Sternberg, 1997) holds that the aim of balancing stakeholders’ competing interests, which is ‘an essential tenet of stakeholder theory’ (Sternberg, 1997:4) and one of its core doctrines (Sternberg, 1997:5), is unworkable because there is no indication provided by stakeholder theory of ‘which of these benefits is to be preferred, or how conflicting interests are to be balanced’ (Sternberg, 1997:5).

The constituency approach is taken by authors (e.g. Child, 1972; Zammuto, 1984; Wooldridge and Floyd, 1990; Roberto, 2004) who extend the concept of performance through emphasizing the critical importance of the political-symbolic dimension, taking into account the symbolic and intangible values of the SDMP in addition to...
operational and strategic benefits. Hence the focus is on both how managers make strategic decisions efficiently and how they ‘simultaneously build the consensus often required to implement decisions successfully’ (Roberto, 2004:625). This wider definition of performance contends that a purely financial view of the costs of the SDMP can result in misleading findings, as the financial value of intangible costs and benefits is neglected. Simmons et al. (2005) found that the incorporation of stakeholder perspectives in decision-making processes impacts positively on organisational effectiveness.

In sum, the satisfaction of stakeholders is seen as a necessary outcome of an effective organisation (e.g. Zammuto, 1984) deploying an inclusive stakeholder-based approach (e.g. Mason and O’Mahony, 2008:42), in which the organisation not only communicates with its contractual stakeholders (e.g. employees, shareholders, suppliers, customers, etc.), but also its social stakeholders (e.g. communities affected by organisational activities), considering stakeholders as part of the corporate SDMP. Inclusive stakeholder management requires, therefore, as its ‘key attribute, simultaneous attention to the legitimate interests of all appropriate stakeholders, both in the establishment of organizational structures and general policies and in case-by-case decision making’ (Donaldson and Preston, 1995:67). However, there is a gap in understanding how IS use contributes to stakeholder satisfaction as a facet of SD performance.

2.7.2.5 The inhibiting factors approach

The practically highly relevant inhibiting factors approach to assess and improve organisational effectiveness focuses on the ‘factors that inhibit successful performance rather than on factors that contribute to or indicate successful organizational performance’ (Cameron, 1984:235). This approach prioritizes the elimination of
inefficiencies and accordingly defines an organisation as ‘having achieved basic effectiveness’ when ‘it is free from characteristics of ineffectiveness’ (Cameron, 1984:236). Instead of promoting the search for optimal solutions, it acknowledges the bounded rationality (Simon, 1957, 1979) of decision makers facing the complexity of strategic issues where ‘difficulties increase and our special competence diminishes by an order of magnitude with every level of decision making we attempt to ascend’ (Hitch, 1957:718). Applying this approach prevents strategic decision makers from being overwhelmed and overstrained by the complexities and uncertainties of their task of finding strategic solutions, and it allows for an active attitude by solving some lower-level problems, i.e. the ‘art of sub-optimizing’ (Hitch, 1957:718) and seeking the ‘good enough’ (i.e. satisficing; Simon, 1957, 1979). In contrast, being overstrained by the search for optimal solutions results in passivity in complex situations, leading to a state of paralysis and, over time, to organisationally induced helplessness (Martinko and Gardner, 1982), fostering a maladaptive organisation-level behaviour ‘where employee failure is conditioned’ (Martinko and Gardner, 1982:195).

To conclude, the inhibiting factors approach is especially useful as it provides an understanding of performance deployed in practice, when organisations are confronted with complex problems and top management is ‘muddling through’, relying ‘heavily on the record of past experience with small policy step[s] to predict the consequences of similar steps extended into the future’ (Lindblom, 1959:79), and is focusing on inhibiting factors. It is not clear how an approach that defines effectiveness as the elimination of inefficiencies (Cameron, 1984:236) can be used to assess the use of IS, given the incremental nature of the approach and its focus on decision-makers and their categories.
2.7.3 Gaps in the literature

To analyse performance and effectiveness issues, two basic modelling approaches of performance have been developed, namely unidimensional and multidimensional modelling. The preceding review has presented a range of multidimensional approaches, as unidimensional approaches are not seen as adequate to cover the multiple facets of SDMPs (e.g. Volberda, 2004; Cameron, 2005). In the literature, there is no consensus on how to conceptualise the performance of SDMPs (SD performance) in a multidimensional way. Despite all the difficulties involved in conceptualising performance, several approaches have been proposed as can be seen in the below Table 2.9:

<table>
<thead>
<tr>
<th>Multidimensional approaches</th>
<th>Strategic options and alternatives</th>
<th>Satisfaction of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unidimensional</td>
<td>- Focus on operational efficiency</td>
<td>Cost Time Service Level/Quality</td>
</tr>
</tbody>
</table>

TABLE 2.9: Taxonomy of Approaches to Conceptualize Performance

A focus on operational efficiency is a necessary, but not sufficient, aspect of the performance of the SDMP. Accordingly, several authors (e.g. Henderson and Venkatraman, 1993; Zajac and Olsen, 1993; DeLone and McLean, 2003; Grover and Segars, 2005; Palanisamy, 2005) have called for the accompaniment of cost, time and service considerations with more strategic criteria for performance assessment, e.g. the generation of strategic options or the satisfaction of stakeholders.
Conceptualising SD performance is a controversial subject with intensive debate and little agreement among scholars (Cameron and Whetten, 1983; Volberda, 2004; Cameron, 2005). As shown in this chapter, researchers disagree on methodological issues, and the whole concept of performance remains as yet unclear owing to a lack of agreed causal postulates. For example there is no agreement about what constructs to use (Dewett and Jones, 2001) and their operationalisation (Fredrickson and Iaquinto, 1989; March, 1999; Cameron, 2005; Pye and Pettigrew, 2005), with the result that performance is measured in various ways, based on varying unidimensional constructs. What is missing is a comprehensive conceptualisation of performance that takes into account multiple facets of performance of SDMPs. However, due to the various contradictory perspectives available, it seems impossible to agree on one conceptualization of the relationships between various characteristics of individual and organisational behaviour (such as the use of information systems by strategic decision makers) and the effectiveness of decision-making processes reflecting the complex nature of the SDMP. The conceptualization of cause-effect relationships between specific factors of the SDMPs and a multifaceted performance construct remains a significant challenge. For example Mata et al. (1995: 500) have called for new research on the question of ‘how managerial IT skills as an organization’s capability can be used to leverage a firm’s technical IT skills to create sustained competitive advantage’, e.g. through their deployment in the SDMP.

Taking into account this lack of methodological consensus toward a context-sensitive approach analysing differing facets of performance, it is proposed, therefore, to review the literature on effects of IS, including ICT, in more detail.
2.7.4 Multidimensional conceptualization of SD performance

There are a number of conceptualizations of SD performance. However, several authors (e.g. Cameron, 1981; Quinn and Rohrbaugh, 1983) argue that a problem with the construct of performance is the lack of consensus about ‘which concepts are to be included’ and ‘how they are to be related’ (Quinn and Rohrbaugh, 1983:363). The various approaches towards conceptualising performance, and in particular, the performance of SDMPs (SD performance), existing in the literature can be linked to the basic distinction between the two strategic key foci (Porter, 1996), namely (1) an operational focus (i.e. efficiency and effectiveness) and (2) a strategic focus (e.g. a focus on the markets for the products and services as well as on the strategic capabilities of the organisation).

First, the operational focus (e.g. Tallon et al., 2000; Rusjan, 2005) examines the impact of information processing on performance, usually including competitive priorities such as, for example, reducing cost (e.g. Bharadwaj, 2000), increasing the speed of the decision-making process (e.g. Baum and Wally, 2003; Siggelkow and Rivkin, 2005) and improving its quality (e.g. decision and information quality; e.g. Ansoff and Brandenburg, 1971), as well as on enhancing overall organisational effectiveness. According to this approach, performance is conceptualized in terms of net benefits (DeLone and McLean, 2003), i.e. producing a ‘net excess of out-puts from a given amount of resources’ (“economizing”; Frederick, 1992:288). Secondly, the strategic focus, an extended understanding of effectiveness (e.g. Porter, 1996), is criticising a solely operations focus as a narrowed understanding of operations efficiency that focuses purely on operational concerns (such as efficiency in terms of cost, time and quality), and as being too constricted in neglecting strategic benefits,
e.g. the creation of a greater number of strategic options and performance as perceived by stakeholders (e.g. Driscoll, 1978).

Understanding both foci as complementary (dual focus; Drucker, 1992; Tallon et al., 2000) enables the conceptualization of the construct of SD performance in a way that reflects the multiple facets of performance of SDMPs. It is hoped that this multidimensional conceptualization of SD performance will contribute to the clarification of the frequently ambiguous and/or contradictory findings of previous studies relying on a narrow definition of SD performance. Accordingly, as shown in Table 2.10, this study intends to complement the operations focus with a broader perspective, taking strategic benefits into account.

<table>
<thead>
<tr>
<th>Operational Dimension</th>
<th>Strategic Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost effectiveness</td>
<td>Generation of alternatives</td>
</tr>
<tr>
<td>Timeliness and speed</td>
<td>Satisfaction of stakeholders</td>
</tr>
</tbody>
</table>

TABLE 2.10: Operational and Strategic Dimensions of SD performance

This approach is also expected to facilitate comparison of the present study’s findings with findings of previous studies focusing on single dimensions of SD performance. The literature review in Chapter 2 has highlighted these various approaches toward conceptualizing SD performance. The following table lists a range of authors according to which themes they have contributed.
In summary, the conclusion that can be drawn from the existing research is that SD performance has multiple dimensions, which may be affected differently by a given factor. The present study uses an integrative approach to ‘open up strategic management research’ (Hitt et al., 1998:32), combining qualitative and quantitative research and synthesizing research on the SDMP with research on strategic information processing to provide a broader understanding of SDMPs and SD performance, in line with the recommendations of Bettis (1991). The present study attempts to take into account this complexity regarding the concept of SD performance by acknowledging the multidimensional nature of the concept. The following sections discuss the four dimensions of SD performance in more detail.
2.7.4.1 Dimension 1: Cost effectiveness of the SDMP

Cost effectiveness is an important criterion for assessing the performance of SDMPs, given that cost analysis is a basic dimension of operational efficiency and a widely-used technique in analysing not only alternative decisions (Bouyssou, 2006) and the content of the strategic decisions, but also the very process of decision making (Shrivastava and Grant, 1985). For example Bharadwaj (2000) has examined, from a resource-based view (RBV), the impact of IT capability on cost and profit as performance indicators. A comparison specifying the costs of different ways to use IS can be used as part of a cost-benefit analysis for deciding between alternatives, for example by adding up the value of the benefits of a course of action and subtracting the costs associated with it. However, in SDMPs, it is extremely difficult precisely to establish the costs and benefits requiring analysis. As the impact of strategic decisions is often long term and far-reaching, it is difficult to identify and calculate benefits. The interpretation of benefits can vary substantially, depending on the criteria (e.g. financial or nonfinancial such as corporate governance or market position, environmental issues or satisfaction of specific stakeholders) and the perspective of the stakeholder, e.g. the analysis of financial analysts or shareholders, the board of directors, customers and suppliers or employees. The timing of the judgement is also critical since the same strategic decision can be judged at different times as a success or a failure.

On the cost side, it is often unclear exactly which activities are part of a particular strategic decision, and accordingly, which costs should be included. Not all the activities of the multiple actors involved are made transparent; whereas some activities, while contributing to the SDMP, also overlap with ‘normal business activities’. It is quite conceivable that costs may not be accounted for under the label
of a strategic decision, but as part of a general cost account such as administration. Although there are some exceptions, like the hourly billing rates of lawyers or consultants, it is typically impossible to arrive at precise figures for the activity-based costs of the SDMP, as time capture of board members or top managers does not happen. The information for the control principle states that the more and better the information on cost, time schedule and quality that is available (e.g. computer-based performance measurement information), the greater the control and the fewer actual performance variances (Steiss, 1982). Contradicting this position, Overman and Loraine (1994:193) report finding no empirical evidence for the presumption that information on cost performance is used for controlling cost.

In summary, this section has shown that cost of the SDMP is a necessary, but not sufficient aspect of performance of the SDMP. More dimensions of the SDMP must be taken into account. The following section will concentrate on the speed of the SDMP as another aspect of SD performance.

2.7.4.2 Dimension 2: Timeliness and speed of the SDMP

Speed is seen by some authors as an essential quality of the SDMP, as strategic decisions must be timely to be effective (e.g. Thompson and Strickland, 1987; Eisenhardt, 1989a; Baum and Wally, 2003). Naturally, the pressure for speedy resolution varies with situational factors, and it may be insignificant compared to the stakes in a decision (Deal and Kennedy, 1982). Time pressure can be caused by fast-changing contexts or deadlines (e.g. imposed by external pressure from public media or legislation) requiring a fast strategic response. For example, Eisenhardt (1989a:543) reports a case in the computer industry in which time delays in the SDMP through indecision ‘ultimately cost the firm its early technical and market advantages’. Competitors were able to pick up and ‘flood its empty market niche’ so that the head
start was lost. In comparing alternatives, one way to measure the time required is to express it in financial terms: for example, lost time can be calculated as opportunity costs.

Carlsson and El Sawy (2008) have examined the decision-making processes in turbulent and high-velocity environments, where decision makers were supported by IT. In their research, they have identified key tensions regarding the speed of decision making: (1) the tension between the need for quick decisions and the need for analytical decision processes; (2) the tension between the managerial imperative of action and the need for bold and risky decisions to be safely executed; and (3) the tension between empowered middle managers and impatient top executives. These tensions may result in time pressure which threatens decision quality (e.g. Smart and Ventirsky, 1977; Brown, 1997; Dooley and Fryxell, 1999). In decision situations where stakes are high and an incorrect response is perceived to be costly, side effects described in the literature include an increase in the stress levels and anxiety of decision makers which can result in anxiety-ameliorating phenomena such as “groupthink” (Janis and Mann, 1977), denial (Brown, 1997) or avoidance of necessary conflictive debates (Dooley and Fryxell, 1999). These effects may result in dysfunctional decision processes leading to decreasing decision quality. On the other hand, time pressure may also lead to the deployment of fast-track methods (e.g. different phases of information analysis running concurrently or commencing one phase before another one is fully completed). Other methods of speedier decision making include raising the ‘authorization levels of individual executives’ and increased 'levels of discretion' (e.g. Grant, 2003:507). Nutt (1993) describes how the flexible use of decision styles can save time, e.g. when the time-consuming collection and analysis of hard data (analytic approach to decisions; Nutt, 1993:697) is partly
substituted by instant intuition of managers (speculative approach to decisions; Nutt, 1993:697).

In sum, this section has shown the importance of timeliness and speed for the effectiveness of SDMPs. The next section discusses the creation of alternatives as another important facet of SD performance.

2.7.4.3 Dimension 3: Generation of strategic options

High-quality decisions are seen from a rational perspective as a choice among relevant alternatives to find the best solution, by deploying stepwise decision methods such as decision trees, dialectical inquiry, and calculation of opportunity costs. Sharfman and Dean (1997:194) found that SDMPs characterized by (1) openness to novel alternatives, (2) openness to information sources and (3) openness to roles are more likely to produce the types of innovative decisions that facilitate organisational adaptation. However, in practice, difficulties persist when it is not clear ‘whether there may be other alternatives besides those being compared, and of those that are known it is not at all certain what the seriousness and extent of their consequences may be’ (Hickson et al., 1986:10). Ritov and Baron (1992:50) observed status quo bias (impeding necessary innovation) and found that it is at least partly caused by a bias toward omissions and unwillingness to search for alternatives. Several authors (e.g. March and Simon, 1958; Cyert and March, 1963; Mintzberg et al., 1976; Bacharach et al., 1995) have suggested that variation in decision making can, to some extent, be explained ‘by the way in which decision alternatives are generated’ (Bacharach et al., 1995:468). Changing environments may demand innovative decisions facilitating organisational adaptation. Such innovative decisions may also require the generation of a sufficient number of creative decision alternatives.
From a political perspective, Narayanan and Fahey (1982) contend that ‘conflicting goals and evaluation criteria must be compromised, consensus must be reconciled, and political antagonists must be appeased: there are no ready-made formulae and solutions’ (Narayanan and Fahey, 1982:32) and strategic alternatives must be developed.

To conclude, the generation of strategic alternatives within the SDMP is necessitated by a variety of circumstances such as changing environments, difficult political situations or the need for (technological or other) innovation. From a microsituational viewpoint, some authors argue that conversation, such as strategic conversation between stakeholders (Westley 1990), is the most basic or elemental unit for situating the communication practices that make up organisational life (Collins, 1981). The following sections therefore review the literature on stakeholders.

2.7.4.4 Dimension 4: Satisfaction of stakeholders

Several authors (e.g. Jacobides and Croson, 2001; Westphal and Clement, 2008) emphasize the need for external and intra-organisational stakeholders to be distinguished. One reason is that the perceptions of external constituencies such as shareholders or analysts may differ from those of internal stakeholders like top management. To learn about the perceptions of outsiders, and to communicate their views, organisations manage their public relations. Westphal and Clement (2008) have shown that external information networks, such as those involving financial analysts, are a strategic asset of CEOs and directors. The importance of the symbolic management of information can only be weighed once it is acknowledged that collective values define the character of an organisation. The strong culture hypothesis (Dennison, 1984) claims that the most effective organisations are those with strong positive cultural traits and the right combinations of values, norms, beliefs, symbols
and rituals. Some authors emphasize the considerable symbolic value of information and IS (e.g. Feldman and March, 1981), although this can be highly subjective. However, critics (e.g. Saffold, 1988) warn that the concept of strong or excellent cultures advanced by Peters and Waterman (1982) is methodologically weak because it is based on several wrong assumptions. The unitary culture assumed by the strong culture view is the exception, whereas in practice, multiple subcultures ‘appear to be the rule’ (Saffold, 1988:547). This is supported by the empirical study by Van Maanen and Barley (1984). The definition of strength is ambiguous; organisational complexity is reduced to least common denominators as elements of organisational culture; the relationship between culture and performance is oversimplified; and finally, inadequate methodologies are used in studying culture. Correctives to these weaknesses are developed through more sophisticated frameworks.

2.7.5 Definition of performance of SDMP (SD performance)

Based on the above considerations about multiple dimensions of SD performance, in this study, performance is referred to as perceived efficacy, rather than actual dynamic capability (Eisenhardt and Martin, 2000), when used in combination with SDMPs (i.e. SD performance). As explained in Section 1.4, the terms performance and effectiveness are used synonymously in this study. The approach of relying primarily on managers’ self-reported perceptions and judgements about effectiveness and performance in the SDMP, rather than on objective data and participant-observer methods, is explained in more detail in Section 4.3.3, on measuring SD performance.
2.8 Summary of gaps found in the literature

The early adoption of the decision-making paradigm of organisational activity has had crucial consequences for the analysis of SDMP over the last forty years, including the present study. The investigation of decision making itself has successively broadened in scope from the first empirical studies of CEO and top-management. Critiques of these studies revealed the need for perspectives which go beyond the rational bounds imposed by organisational structure, to include both behavioural and environmental influences on the decision-making process. The literature shows that these perspectives compete with rather than contradict each other, and that they can be used together in an integrative approach. The second major impact of the decision-making paradigm is to imply, as a logical corollary, the need for qualitative approaches to the assessment of organisational performance/effectiveness. Empirically, these approaches have utilized multidimensional but nonetheless restrictive criteria derived from organisational goals, resources, internal processes, stakeholder satisfaction and freedom from inhibition (i.e. the absence of inhibiting factors). They have the potential to underpin a comprehensive conceptualization of the performance of strategic decisions (SD performance) if they can successfully be synthesized. It is submitted that the present study requires such a synthesis in order fully to elucidate the relationship between IS use and SD performance, a requirement which is problematized and discussed in Chapter 4.

This literature review has identified several areas of research, directly relevant to the present study, where important issues have been conceptualized and - to some extent - discussed theoretically, but have not yet received adequate empirical study.
2.8.1 Information processing theory

The review of the literature given in this chapter shows that the field of information processing is open to development. For example, there is currently no theoretical understanding of the creation of shared interpretations within an organization through internal communication (Daft and Weick, 1984; Rice and Schook, 1990). The theoretical consideration of the concomitant use of multiple communication media (Daft and Weick, 1984), as in the now unremarkable instance of a telephone conversation conducted while an email is sent to the interlocutor, i.e. a common mixing of traditional and new media, has only recently begun; for example, empirical research on phenomena such as "multicommunicating" (i.e. a 'specific form of multitasking' which involves 'engaging in multiple conversations at any one time'; Cameron and Webster, 2005; Turner and Reinsch, 2007:37; Reinsch et al., 2008), or “polychronicity” (i.e. ‘the communication itself may be performed simultaneously with other tasks’; Cameron and Webster, 2005:99). Methodologically, there is little agreement on the operationalisation of the proposed constructs of information processing capabilities (which will be addressed in Section 5.2, on quantitative research).

2.8.2 Politicality and symbolic considerations of media choice

While there has been comparatively more research on political information behaviour (i.e. politicality) and information politics (e.g. Mitroff et al., 1982:1393; Castrogiovanni and Macy, 1990; Roberto, 2004; Silva, 2007; Stringer, 2008; Westphal and Clement, 2008), these areas lack empirical data. Concerning the SDMP, existing research has acknowledged the importance of political information behaviour, but the role of politicality in moderating the effects of IS use on the performance of SDMPs,
remains to be discussed and conceptualized. Harmon (1998) reports on electronic
meeting systems to assist with value-laden conflicts and difficult decision tasks in
SDMPs; more studies in this area are required.
There is also a lack of research into media selection in the context of SDMPs because
the central proposition of media richness theory, the question of whether the
performance of equivocal tasks (like strategic decision making) is improved by the use
of richer rather than leaner media, remains largely untested (Rice, 1992; Dennis and

2.8.3 SDMP performance
There is a lack of research on SDMP performance. The lack of a theoretical basis is
mentioned by Pearce et al. (1987:670–672) as a weakness of empirical research.
While performance studies mostly focus on firm performance, no theoretical
framework has been developed that reflects the multiple facets of SD performance. In
methodological terms, the most important lacunae are a the lack of attention to
contextual influences (Pearce et al., 1987; Hoskisson et al., 1999), and a lack of
empirical evidence for moderating factors suggested in the literature such as
politicality and environmental dynamics. Several researchers (e.g. Pearce et al., 1987;
Papadakis and Barwise, 1998; Nutt, 2000:78) claim that the influence of context on
strategic decision making remains an underexplored avenue for research. For example
Pearce et al. (1987:670–672) highlight the methodological weakness of evidence from
interviews and quantitative evidence due to a low number of factors and the absence
of moderators.
Another methodological concern with research on decision-making performance to
date is the lack of agreement between researchers about how planning should be
operationalised. Several studies attempt to measure the same underlying organisational phenomenon (the impact of planning on firm performance) by operationalising planning in different ways (e.g. the degree of formality of planning vs the perceived importance of planning). In studies which address planning efficacy, the appropriate time frame over which the effects of strategic planning should be anticipated and measured also remains moot.

2.8.4 The SDMP and IS

The Carnegie school’s view of organisations as ‘information processing systems’ (Engelhoff, 1982: 436; Simon, March and Cyert) establishes the general relevance of the information processing perspective to the study of organisational decision-making. Relevant studies are identified on the basis of a discussion of the essential notions of uncertainty, ambiguity and information overload and information underload. It introduces the notion of strategic information processing (SIP) and examines the concept of issue management. The information processing in strategic decision making processes (SDMPs) can be described as sequences of communication episodes, where the ‘primary occasions for sequential ICT use were (a) preparing for meetings, (b) performing daily tasks, and (c) following up to persuade’ (Stephens et al., 2008:197).

In 1990, Rice and Shook outlined the problems of studying IS use, and it is clear from the more recent examination by Elbanna (2006) that the state of the art has not significantly advanced. In the field of information processing research, there are many methodological differences between previous studies such as data collection methods, variations in sample size, statistical techniques, type of industry and number of
industries (Elbanna, 2006). The combination of information processing theory with perspectives that view organisations as decision making entities (Huber and McDaniel, 1986; Daft and Lengel, 1986; Boudreau, 2004) is seen by Tushman and Nadler (1978) as an integrative concept for the study of IS use. Several writers have suggested that the use of IS should improve strategic decisions and have developed a number of propositions about the effects of IS on strategic decision making (e.g. Molloy and Schwenk, 1995:283). Covering both traditional and new media, recent research on information processing and media richness theory can provide the microconcepts for IS use for this study. In order to study the complex and interwoven processes of IS use in the SDMP, the author proposes that the literature on the SDMP and information processing is particularly well suited to address the intersection of SDMP and IS. However, the influence of contextual factors on the performance of such aligned resource-based information capabilities, especially in dynamic environments such as the SDMP, is not currently understood.

2.8.5 Conclusion

In sum, the scarcity of empirical studies focusing on the intersection of the SDMP, performance and the role that IS use plays in the SDMP is a major motivation for this thesis. Cyert and Williams (1993:6) confirmed that research at ‘the intersection of organizations, decision making and strategy has great theoretical and practical significance’. Schwenk (1995:485) specifically encouraged research at the intersection of the SDMP and IT as an interface between a traditional and an emerging topic with high potential. Molloy and Schwenk (1995:284) stated ‘We know very little about the effects of IT on the complex activity of strategic decision making.’ Therefore research
is needed on the organisational impact of IS because previous research has produced ‘conflicting results and few reliable generalizations’ (Markus and Robey, 1988:596). Elbanna (2006) has suggested, in a review of relevant previous theory and research, several possible reasons for the contradictory results of previous studies: a lack of clear and systematic treatment of environmental variables; failure to include other strategic process variables; variations in the operationalisation of the SDMP dimensions; and a failure to investigate more complex relationships. Rigorous empirical analysis is required in order to arrive at a better understanding of the use of IS in SDMPs and its context.

Chapter 3 will present a conceptual research model and develop hypotheses to better understand the context of IS use in the SDMP and its performance link, with the aim of contributing to the closure of the above gaps.
Chapter 2 has reviewed the bodies of literature on the SDMP and organisational information processing. Gaps in the existing research have been identified, focusing on the use of IS within the SDMP. To contribute to the closure of these gaps, a conceptual research model, developed on the basis of SDMP theory, combined with information processing theory, is proposed. First, section 3.1 summarises the conceptual research model, its core constructs and the relationships between them in a diagram. It provides also an overview of the seven hypotheses for this study. Section 3.2 presents a conceptualization of the dependent variable, SD performance, as a multidimensional construct with four dimensions: (1) cost effectiveness of the SDMP; (2) timeliness and speed of the SDMP; (3) the creation of strategic options; and (4) the satisfaction of stakeholders. In section 3.3, the independent variable of the conceptual research model for this thesis is developed, namely the use of IS (IS use). Using the five-step model of rational decision making to structure the discussion, the influence of IS use on each of the four dimensions (operational as well as strategic focus) of SD performance is discussed; the development of a multidimensional construct of SD performance is a main contribution of the present study. At the end of each section, a hypothesis conducive to empirical testing is formulated. Section 3.4 discusses the factors hypothesized as moderating factors, as the second main contribution of this research is to provide a more comprehensive contextualization of SD performance. Finally, section 3.5 outlines the control factors of the conceptual research model for this thesis.
3.1 Overview of core constructs and hypotheses

The following Figure 3.1 gives an overview of the present study’s main lines of argument and their relationships on the basis of information processing theory and SDMP research.

![Conceptual Model](image)

**FIGURE 3.1: The Conceptual Model**

In the upper left box, IS USE in the SDMP is presented as the independent variable, which influences SD performance as the dependent variable in the upper right box. It is submitted that the relationship between the two constructs, represented by the horizontal arrow, is influenced by contextual factors through the vertical arrow.

The lower left box depicts the contextual factors, namely the environmental characteristics, procedural rationality and political behaviour. In the lower right box
the control variables are shown, i.e. the specific characteristics of the strategic decision to be taken (namely the formalisation, duration and complexity of the decision), and the industry and size of the organisation.

FIGURE 3.2: The Hypotheses of this Research Study

The above figure 3.2 shows where the seven hypotheses for this research are positioned. Hypotheses 1a to 1d are aspects of the performance link between IS use and SDMP, and hypotheses H2 to H4 are contextual factors assumed to influence this relationship as moderating factors.

The hypotheses determine how the data analysis is organized in Chapter 5. First, the research question regarding the impact of IS use on SD performance will be analysed by computating four models according to the first four hypotheses as shown in the next figure 3.3:
FIGURE 3.3: Four Models of SD performance for hypotheses H1a-H1d

The below Figure 3.4 shows how hypotheses H2 to H4 are linked to the computation of the four models of SD performance to analyze a possible impact on the relationships from Figure 3.3.

FIGURE 3.4: Impact of Contextual Factors on the Four Models

Accordingly, this study analyzes each of the hypotheses H2 to H4 in terms of their impact on each of the four models of SD performance as described in more detail in section 3.4.
The following overview summarizes the seven research hypotheses that will be tested in this study:

**Hypothesis 1a:** There is a positive relationship between the level of IS use and the cost efficiency associated with strategic decision making.

**Hypothesis 1b:** There is a positive relationship between the level of IS use and the speed associated with strategic decision making.

**Hypothesis 1c:** There is a positive relationship between the level of IS use and the number of strategic options created during the SDMP.

**Hypothesis 1d:** There is a positive relationship between the level of IS use and stakeholder satisfaction with SDMPs.

**Hypothesis 2:** The degree of politicality, i.e. political information behaviour, is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.

**Hypothesis 3:** The degree of environmental munificence is positively associated with the strength of the relationships between IS use and all dimensions of SD performance.

**Hypothesis 4:** Greater environmental dynamics is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.

In order to test these hypotheses, Chapter 4 presents the methods and research design for this task. The relationship between research questions and hypotheses is shown in the following.
RQ 1: What are the processes of information processing in SDMPs, and what communication media are used to enable these processes?

The descriptive findings relating to the first research question (RQ 1) are discussed in section 5.2.

RQ 2: What is the nature of the relationship between the use of IS (IS use) in SDMPs and the benefits achieved through this use (SD performance)?

The second research question (RQ 2) is addressed by the following four hypotheses that are covering the four characteristics of the relationship between IS use and SD performance:

H1a: Level of IS use and the cost efficiency associated with strategic decision making.
H1b: Level of IS use and the speed associated with strategic decision making.
H1c: Level of IS use and the number of strategic options created during the SDMP.
H1d: Level of IS use and stakeholder satisfaction with SDMPs.

RQ 3: To what extent is this relationship affected by contextual characteristics of the environment of the specific decision-making process?

The below three hypotheses (H2, H3 and H4) are focusing on the third research question (RQ 3):

H2: Degree of politicality on the relationships between IS use and all dimensions of SD performance.
H3: Degree of environmental munificence on the relationships between IS use and all dimensions of SD performance.
H4: Environmental dynamics on the relationships between IS use and all dimensions of SD performance.

The following sub-sections are explaining the constructs used in the above conceptual model and hypotheses in more detail.

3.2 Use of information systems (IS use)

Measuring IS use of strategic decision makers is problematic as usually, no objective data are available. Due to the sensitivity of strategic issues, there is typically no access granted to outside observers (e.g. Welch et al., 2002). Additionally, top executives are hardly willing to allow people of lower hierarchical positions in the organisation to measure and judge their activities. To measure the use of IS in SDMPs, in the absence of objective data and consistent with other empirical research, respondents were asked to provide their perceptions about the frequency with which they used a number of different communication media during a single, particular decision-making process in which they were involved over the last five years. DeLone and McLean (2003:27) advocate the inclusion of ‘system use’ as a critical dimension of success measurement. Some authors see a high usage of IS already as an indicator of its success. However, in this study, the concepts ‘IS use’ and ‘SD performance’ are treated as conceptually (as well as practically) distinct concepts. Taking the frequency of IS use in the SDMP as the independent variable for the topic of this study (see Section 4.2), respondents were asked to indicate the frequency of usage of different categories of IS (direct contact, mass media capability and abstract performance measures). The survey instrument asked for the level of the respondent’s agreement to the following statements, using a
7-point Likert-type scale ranging from 1 (don’t use at all) to 7 (use several times a day), with reference to five different communication media (see the appendix: questionnaire items C18, 19 and 28-30 \((\alpha = 0.771)\) (IS USE)).

Several authors have used a similar construct or a similar combination of items. With regard to questions C.18 to C.23 (see survey instrument in the appendix), Galbraith (1977:53), Daft and Lengel (1986), Lengel and Daft (1988), Panko and Kinney (1995a), Reich and Benbasat (2000) and Gattiker and Goodhue (2004) have used the same items. C.18 and C.20 were also used by Burton-Jones and Hubona (2006). C.22 was used in the research of Fish et al. (1992). Vlahos et al. (2004) have used items C.24, C.25 and C.28. Regarding questions C.24 to C.28, these items were used by Panko and Kinney (1995b), Meier et al. (2003) and Brignall and Ballantine (2004). The items regarding questions C.29 and C.30 were used by Vlahos et al. (2004) and Simons (1991, 1994).

### 3.3 SD performance as a multidimensional construct

As has been shown in the literature review, the purpose of this study which is to analyse the influence of IS use on the multiple dimensions of SD performance (operational as well as strategic), requires the conceptualization of SD performance as a multidimensional construct. The following list shows how the hypotheses of this study are linked to the four dimensions of the SDMP:

- **H 1a:** Cost effectiveness of the SDMP;
- **H 1b:** Timeliness and speed of the SDMP;
- **H 1c:** Generation of strategic options; and
- **H 1d:** Satisfaction of stakeholders.
Accordingly, the above described relationship between the independent (IS use) and the dependent variable (SD performance) will be analysed with regard to these four performance dimensions by calculating respectively four regression models.

### 3.4 Conceptualization of the influence of IS use on SD performance

In this section, the relationship between IS use as the independent variable and SD performance as the dependent variable is discussed. To structure the discussion, the rational model of the SDMP is used to explain the impact of IS use on the four facets of SD performance. The following sections attempt to map the above four dimensions of SD performance (i.e. four performance facets of SD performance: cost, speed, generation of strategic options and satisfaction of stakeholders) in relationship to the steps taken in decision making according to the rational approach in order to demonstrate its importance for information processing (at the levels of human information processing, computer-based information processing, and at the interface between human and computer-based information processing). For this purpose, the rational five-step model (e.g. Blankenship and Miles, 1968; Andrews, 1971; Mintzberg et al., 1976; King and Cleland, 1978) is used because it synthesizes rational decision making by encompassing the following five steps of the SDMP: (1) the identification of current strategy and strategically relevant issues; (2) the analysis of environment, resources and gaps; (3) the identification and evaluation of strategy options; (4) strategic choice; and (5) the communication of strategically relevant issues to stakeholders.
The *first step* involves the identification of significant risks and opportunities. It is needed to help fully inform the managing board and supervisory board about issues of a strategic nature. In the *second step*, the organisational environment, resources and gaps in organisational objectives are monitored more closely to prepare an analysis. The *third step* comprises the identification and evaluation of strategy options, including the generation and analysis of alternatives to the actual course of the organisation. *Fourthly*, a strategic choice (Child, 1972, 1973) is taken – this is the ability of an organisation to take strategic decisions to ‘obtain, at least temporarily, more autonomy’ (Pfeffer and Salancik, 2003:xii) in pursuit of organisational interests. A *fifth and final step* is the communication of strategic issues to stakeholders within and without the organisation. These five steps are found to structure the discussion, although not necessarily in the suggested sequential order, because strategic decision makers ‘may cycle back to earlier phases as necessary and environmental factors may affect the speed of the process and the need to repeat phases’ (Molloy and Schwenk, 1995:287).

The following sections use the above described five-step model to discuss the influence of IS use on the four performance facets of SD performance (cost, speed, generation of strategic options and satisfaction of stakeholders). At the end of each of the following sections, the argument is summarized and a hypothesis formulated.

### 3.4.1 IS use and the cost effectiveness of strategic decision making

With regard to the first facet of SD performance – cost – both positive and negative effects of IS use on the cost efficiency of the SDMP are described in the literature. In the following table, these cost effects are linked to the five-steps of the SDMP.
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| **Step 1: Identification of strategic issues** | - Costs of planning, implementing and maintaining enterprise-wide monitoring (labour, IT) of organisation and its environment |
| **Step 2: Analysis of strategic issues** | - Costs of analysing potential threats or opportunities (risk management and reporting) |
| **Step 3: Evaluation of strategy alternatives** | - Costs of finding and evaluating strategic options, e.g. co-ordinated efforts of specialists and top management |
| **Step 4: Strategic choice** | - Costs of the processes and procedures for taking the formal decision |
| **Step 5: Communication with stakeholders** | - Costs for communication of information to relevant stakeholders  
- Processes and procedures for establishing and maintaining contact |

**TABLE 3.1:** Impact of IS use on Cost Effectiveness

Within each step, there are costs related to human information processing (e.g. labour costs), the costs of computer-based information processing (e.g. costs of electronic data management); and costs arising from interface between human and computer-based information processing (e.g. access costs and training).

A problem in measuring the costs of the SDMPs is that there are no objective financial data available. The costs of the SDMP are usually – following corporate accounting policies – accounted for and capitalized as corporate overhead under the title ‘Other intangible assets’, e.g. costs of information technologies, cost of materials, direct labour and general overhead expenditures. It is therefore impossible to understand, from a company’s financial reporting, the exact costs involved with strategic decision-
making activities. Already the title information technology is in the range of billions of British pounds (GBP), whereas it cannot be deducted how much of it is used in the SDMP.

However, in the absence of objective data, studies in strategic management use self-reported judgements and perceptions of top managers. Accordingly, the construct uses self-reported judgements about the cost effectiveness of IS use as indicators, reflecting the influence of IS use on the cost of SDMPs. The information about cost associated with SDMPs usually consists of judgements relating to (1) the estimated or expected cost of the overall process, (2) historic data of earlier similar processes, and (3) anticipated cost according to financial and budgetary provisions. In summary, this section has shown that in practice, it is impossible to provide exact figures of the cost of a particular SDMP. However, perceptions of involved decision makers can be used as a substitute.

Regarding the survey items, the concept reflecting cost was measured using questions referring to the cost reductions associated with the use of information systems in the decision-making progress, which were derived from previous empirical studies on IT and decision making (e.g. Brynjolfsson and Hitt, 2000). Respondents were asked for the level of their agreement with the following statements, using a 7-point Likert-type scale ranging from 1 (don’t agree at all) to 7 (strong agreement): (1) the costs of the decision-making process were lower than expected, (2) the costs associated with the process were lower than in similar, earlier decisions and (3) the costs of the decision-making process were as anticipated. A confirmatory factor analysis further supported this measurement approach.
At first sight, higher IS use increases the costs of strategic decision making, occasioned by the labour cost of answering a growing number of emails, costs for customizing ICT applications for strategic decision making or access costs created by the global mobility of managers. However, it is held that the overall cost-reducing effects (e.g. by enabling better coordination resulting in simplified and cost-saving processes) outweigh the cost-creating effects, and that the relationship between IS use and SD performance is a positive one.

Thus the following hypothesis is formulated:

**Hypothesis 1a:** There is a positive relationship between the level of IS use and the cost efficiency associated with strategic decision making.

### 3.4.2 IS use and speed of strategic decision making

Regarding the second facet of SD performance – speed – both positive and negative effects of IS use on the speed of the SDMP are described in the literature (e.g. Thompson and Strickland, 1987; Eisenhardt, 1989a; Baum and Wally, 2003). However, in this study, it is argued that the speed-increasing effects of IS use are stronger than the speed-decreasing effects, and therefore that IS use is positively related to SD performance in terms of speed. In the following table, these time effects are linked the five-steps of the SDMP.
| Step 1: Identification of strategic issues | - Speed of gathering information and reporting within a multinational company, and aggregating data on a global scale at corporate HQ |
| Step 2: Analysis of strategic issues | - Speed of in-depth analysis of strategic issues to understand the magnitude and scope of strategic issues |
| | - Proactive issues scanning |
| Step 3: Evaluation of strategy alternatives | - Speed of evaluation, e.g. accelerating recursive examination of key assumptions, providing information loops to speed up coordination |
| Step 4: Strategic choice | - Speed of voting on strategic decisions including preparation and documentation |
| | - Timeliness of decision to meet deadlines or fast response to changes |
| Step 5: Communication with stakeholders | - Speed of dissemination of information to stakeholders (e.g. fact sheets or news releases for quarterly financial reporting, information in the intranet, or to shareholders) |

**TABLE 3.2: Impact of IS use on Timeliness and Speed of the SDMP**

Within each step, first, the speed related to human information processing (e.g. acceleration effects of joint meetings and direct personal contact) is discussed; followed, secondly, by the time effects referring to computer-based information processing (e.g. organisation-wide support of information gathering and analysis); and concluded by, thirdly, the time effects regarding the interface between human and
computer-based information processing (e.g. direct global access to relevant organisational information through the corporate intranet; Dias, 2001).

As has been shown, IS use in the SDMP results in time savings for human- as well as computer-based information processing, and information processing at the interface between the two. However, it is also argued that greater use of IS reduces the speed of strategic decision making, for example when excessive time is spent in monitoring the environment or when over-zealously codified and formalised information leads to data overload. In these circumstances, it becomes more rather than less difficult to identify and analyse important information, and the SDMP is impeded (Dewett and Jones, 2001:324). Yet, while such decelerating effects demonstrably exist, the arguments for the accelerating influences of IS use are more convincing. Anecdotal (Murphy, 1989; Khatri and Ng, 2000) and empirical evidence (e.g. Eisenhardt, 1989b; Huber, 1990; Baum and Wally, 2003; Siggelkow and Rivkin, 2005) supports this positive relationship. Thus, on the basis of this previous research, the construct was operationalized using the following three items for the survey: (1) the decision-making process was faster than expected, (b) the process was faster than in similar, earlier decisions and (c) the time spent on the decision-making process was as expected.

Therefore the following hypothesis is formulated:

**Hypothesis 1b:** There is a positive relationship between the level of IS use and the speed associated with strategic decision making.
3.4.3 IS use and the creation of strategic options

Regarding the third facet of SD performance – the creation of strategic options – it is widely agreed in the literature that decision making involves uncovering alternatives and that generating options is a crucial activity in strategic decision making (e.g. Mintzberg et al., 1976; Hickson et al., 1986; Nutt, 2000). Fredrickson and Mitchell (1984:402) characterize a comprehensive decision-making process as ‘exhaustive in the generation and evaluation of alternatives’. This is important because the purpose of strategic decision making is to uncover the best course of action (Stein, 1981a; Fredrickson, 1983; Bryson and Cullen, 1984; Nutt, 2000), choosing between an adequate number of strategic options. The following table presents IS activities that help to create more strategic options.

| Step 1: Identification of strategic issues | - Identification of events or trends of strategic relevance |
| Step 2: Analysis of strategic issues | Using analytical techniques; open discussion of strategic issues; and creation of alternative planning scenarios |
| Step 3: Evaluation of strategy alternatives | - Systematic discovery approach (Nutt 2008) (e.g. strategy workshops, use of creativity techniques, feedback/feed forward) - Benchmarking |
| Step 4: Strategic choice | - Open discussion, lessons learned (e.g. combined with 'organisational memory' of intranet, file-tracking and minutes/reports) |
| Step 5: Communication with stakeholders | - Seeking feedback before announcing a decision (e.g. form key stakeholders) to develop, test, modify or refine strategic options |

TABLE 3.3: Impact of IS use on Generation of Strategic Options
Overall, it is held that IS use in the SDMP results in the creation of more strategic options. This is supported by empirical research (e.g. Cyert and March, 1963; Stein, 1981a; Mintzberg et al., 1976; Sambamurthy, 2003) indicating that a lower usage of IS with less communication results in a lower number of strategic options, because individuals involved in SDMPs are restricted in the number of strategic options that can be considered by a lack of information, rigid information processing patterns, and comparatively fewer exchanges among decision makers. In contrast, greater use of IS leads to more strategic options.

Thus the following hypothesis is formulated:

**Hypothesis 1c:** There is a positive relationship between the level of IS use and the number of strategic options created during the SDMP.

### 3.4.4 IS use and stakeholder satisfaction

Regarding the fourth and final facet of SD performance, the satisfaction of key stakeholders, the use of IS to contact internal and external stakeholders is highly relevant. Stakeholders are an important set of actors, as their judgements are the final word on the success or failure of a particular strategy (e.g. Zammuto, 1984). Legally, shareholders as the owners of an organisation are its primary stakeholders. However, many leading Western organisations now accept that good corporate governance should include stakeholders (e.g. Mason and O’Mahony, 2008:42), and that communication not only with contractual, but also social stakeholders is needed (e.g. deliberations with special interest groups within the framework of an environmental
impact assessment). Accordingly, in this broader sense, IS use enhances stakeholder satisfaction and effective stakeholder management as part of corporate governance defined as ‘a set of relationships between a company's management, its board, its shareholders and other stakeholders [that] provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined’ (OECD, 2004:13). In addition, some stakeholders may be ‘opinion influencers’, exerting widely-felt influence on the public, or they may represent power centres inside or outside of the organisation. The following table presents concepts which are seen to increase the satisfaction of stakeholders during different steps of the SDMP.

<table>
<thead>
<tr>
<th>Step 1: Identification of strategic issues</th>
<th>Satisfaction of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Identifying stakeholder needs and interests</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2: Analysis of strategic issues</th>
<th>Satisfaction of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Understanding concerns and special interests in more depth (focus groups), - Issues management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3: Evaluation of strategy alternatives</th>
<th>Satisfaction of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Discovery approach (‘working with interest groups to install the most beneficial option’ (Nutt, 2008:426)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4: Strategic choice</th>
<th>Satisfaction of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Active stakeholder management , stakeholder participation in SDMP (Jones, 1990:63)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 5: Communication with stakeholders</th>
<th>Satisfaction of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Customized information to stakeholders (e.g. corporate websites with nearly real-time information)</td>
</tr>
</tbody>
</table>

TABLE 3.4: Impact of IS use on Satisfaction of Stakeholders
In sum, it is held that the use of IS in stakeholder management results in a greater degree of stakeholder satisfaction. While shareholder theory (e.g. Clarke, 2004) and the law suggest that executives should primarily have ‘regard for the interests of their shareholders, reality demands otherwise’ (Mason and O’Mahony, 2008:33). Responding to this reality, IS use enables a wide range of stakeholder interests to be taken seriously, either proactively or as a reaction to requests or complaints. IS use is essential for an open and transparent communication with stakeholders about the opportunities, risks and assumptions underlying each proposed strategy, which is a key element of corporate governance at a time when organisations are being monitored by an increasing number of interest groups and shareholders (e.g. pension funds; Faccio and Lasfer, 2000). In addition, the literature (e.g. Jones, 1990), indicates further positive effects of IS use on the satisfaction of stakeholders when assumptions are ‘brought to the surface and critically evaluated’ (Jones, 1990:63–64). Management, adopting an assumption-challenging philosophy as an integral part of decision making, will probably find that they create an atmosphere conducive to the reconciliation of conflicting stakeholder interests, for the satisfaction of all. This is confirmed by empirical research on the success of decision-making processes (e.g. Nutt, 2008) showing that an active discovery approach which evaluates options according to their benefits for interest groups, is more effective than the straightforward imposition of ideas, which tends to limit the engagement of special interest groups in constructive dialogue.

Therefore the following hypothesis is formulated:
Hypothesis 1d: There is a positive relationship between the level of IS use and stakeholder satisfaction with SDMPs.

This section has developed and formulated four hypotheses concerning the impact of IS use on a multidimensional construct of SD performance, i.e. the preceding four facets of SD performance. The next section presents the moderating factors for this relationship of IS use on SD performance.

3.5 Factors moderating the relationship between IS use and SD performance

In this section, three factors are presented which are modeled as moderating the relationship between IS use and SD performance. These factors are derived from the behavioural approach (Cyert and March, 1963) and the strategic contingency view (e.g. Hickson et al., 1971; Lindsay and Rue, 1980). While the rational perspective and its conceptualization of the SDMP as a sequential step-model (e.g. Blankenship and Miles, 1968; Mintzberg et al., 1976; Lechner and Mueller-Stewens, 2000) represent substantial contributions to SDMP research, valuable as these contributions are, they neglect the social and political embeddedness of strategic decision making and its effects on IS use within the SMDP. Therefore the author suggests the integrative use of rational, behavioural and contingency perspectives, as their contributions have already been shown to complement rather than contradict each other (see section 2.4).

It is submitted that this approach will produce a more complete and more nuanced understanding of the relationship between IS use and SD performance. First, the key
The contribution of the rational perspective on decision making is the phasal conception of step-models of SDMPs, assuming that specific steps can be distinguished (e.g. Nutt, 1993; Lechner and Mueller-Stewens, 2000). Several authors (e.g. Mintzberg et al., 1976) have emphasized the analytical relevance of step models, which ‘often represent the only feasible approach to do research on chains of events’ (Lechner and Mueller-Stewens, 2000:21).

Secondly, the contribution of political theories, such as the conceptualization of social power bases (Raven, 1965; Pettigrew, 1972), is important for the topic of this study as it reflects on the question of how micropolitics moderates the impact of IS use on SD performance. The political dimension of multiple actors (i.e. individuals and groups) complements rational step models, as it ‘should be clearly stated who classifies certain phases according to which criteria’ (Lechner and Mueller-Stewens, 2000:21).

In particular, behavioural and contingency views have contributed substantially to decision-making process research. One of the key contributions of behavioural theory has been the examination of politicality (e.g. Cyert and March, 1963; Pfeffer, 1981; Hickson et al., 1986; Papadakis et al., 1998; Miller et al., 1999; Walter et al., 2008), providing an emphasis, lacking in earlier organisational research (Pettigrew, 1972:187), on the understanding of decision making as a political process. Concerning our understanding of the contingencies of the relationship between IS use and SD performance, these perspectives are also expected to make a significant contribution because they offer complementary dimensions to the rational perspective of decision making. The author therefore suggests that these two views should be modeled as moderating factors.
While the literature suggests an influence of contextual factors on firm performance, the present study argues that these factors mainly act as moderators between IS use and SD performance. The moderation perspective (e.g. Venkatraman, 1989) assumes that the impact of an independent variable on a dependent variable is influenced by the level of a third variable, i.e. the moderator. The fit between the independent variable and the moderator is the primary determinant of the dependent variable (Venkatraman, 1989:424). Presuming that the organisational strategy process is influenced by the environmental or organisational context, the contingency view (e.g. Hofer, 1976; Harrigan, 1983; Ginsberg and Venkatraman, 1985) uses an operationalisation based on the moderation concept. The present author suggests that factors highlighted by the behavioural and contingency approaches moderate the relationship(s) between IS use and the previously-rehearsed facets of SD performance (see section 3.4). These are the contribution of behavioural theory, in particular, the notion of (1) politicality; and the contribution of contingency theory, in particular the elements of (2) environmental dynamics and (3) environmental munificence. In the following sections, these three moderating factors are discussed in terms of their implications for the development of another three hypotheses (H2 to H4) for this study.

With regard to the first of these three, the following section presents politicality as a moderating factor on the relationship between IS use and SD performance.

### 3.5.1 Politicality as a moderating factor

Internal politics and political information behaviour (i.e. politicality) are difficult to define, and there is no agreement about an instrument for measuring the concept. Politicality is defined by some authors as acts intended to enhance or protect the self-
interest of individuals or groups (Hickson et al., 1986; Walter et al., 2008). Accordingly, political behaviour is based on the exercise of power (e.g. informational power; Raven, 1993) and the tactical use of resources (Pettigrew, 1972; Bacharach et al., 1995), for example information as a tactical resource. Proponents of behavioural theory conceive decision making as a political process (e.g. Pettigrew, 1972; Narayanan and Fahey, 1982; Cyert and Williams, 1993; Bacharach et al., 1995; Walter et al., 2008) suggesting that information is ‘the crucial ingredient in mapping strategy’ (Cyert and Williams, 1993:10) in an organisational micro-environment of competing interests. Consequently, ‘differences in the goals of middle-level managers’ and top management (Guth and MacMillan, 1986:313) can lead to ‘major differences in their perceptions of the desirability of the strategy being selected’ and an increased degree of political behaviour (tactical use of power). Therefore, in this study, politicality is hypothesized to moderate the relationship between IS use and SD performance via several key mechanisms of politicality.

When the SDMP is politically loaded in such a way, IS become ‘carriers of power’ (Pettigrew, 1972:187) and information access and control (Pettigrew, 1972) are a source of power (informational power; Raven, 1965). Effective top managers have an intuitive grasp of political processes and people management (Bennis, 2007). ‘Differential access to the flow of communications during a decision making process’ (Pettigrew, 1972:187) means that those actors with better access to information are more likely to achieve their goals. Such information and decision behaviour can only be controled to the extent that managers rely directly on subordinates in decision making (Blankenship and Miles, 1968:106). Narayanan and Fahey (1982:33) suggest that effective SDMP entails managing the strategic content as much as the
organisational political context, e.g. the microdynamics of SDMP through the inclusion of middle managers (Westley, 1990).

Jones (1990:66) claims that ‘in order to effectively operate [sic] within an organisation, an organisational member must accurately assess the organisation’s political environment and then make behavioural adjustments which are in accordance with the political contexts’. If political motives guide information gathering and the search for strategic alternatives, then it can result in the filtering and distorting of information which can lead to organisational inertia. This is confirmed by empirical research (e.g. Eisenhardt and Zbaracki, 1992; Pfeffer, 1992). To avoid this, some theorists (Janis, 1972; Mitroff, 1982; Mitroff and Mason, 1981) have advocated to build decisional conflict into the group process. Doing so, they have argued, should yield better decisions by improving the quality of the group’s underlying inferences and assumptions. However, IS use in SDMPs are possibly constrained when strategic alternatives are evaluated with regard to fostering the interests of the ruling power elite or power centres within the organisation, instead of focusing solely on performance. Mechanisms such as distorting budgets or displacing rules and internal procedures are likely to weaken the impact of IS use on SD performance because they replace rational procedures designed to improve the performance of decision-making processes.

Another key problem concerns the often conflicting perceptions of different stakeholder groups. Stakeholders (clientele) who feel that an organisation’s objectives adequately represent their own special interests will be less motivated to engage in political activities (e.g. coalition building) to gain adequate representation. In contrast, stakeholders who feel under-represented are likely to resort to such activities as using
their expert knowledge as a power base, or forming coalitions, withdrawing organisational support, attempting to discredit the strategic decision makers or sabotaging current operations. Such political behaviour is likely to affect IS use on SD performance negatively because gaining access to information through participation in informal networks can be problematic. Coalition building tends to impede free access to these informal networks and cross-coalition information exchange, weakening the impact of IS use on SD performance. Concerning stakeholder satisfaction, when the reconciliation of stakeholders’ conflicting interests is not considered within an organisation’s overall goals, the level of internal politics and coalition building increases, weakening the relationship of IS use and reducing stakeholder satisfaction. The ‘ability of any organisation to be cohesive depends on the structure and quality of its communication system’ (Westley, 1990:337). If managers as stakeholders of the SDMP are dissatisfied in their need for organisational efficacy, it may result in negative spirals (Lindsley et al., 1995), leading to worse organisational decision making. If strategic decision makers in their encounters with middle managers fail to solve existing conflicts, then this also leads to less efficient use of IS and impaired performance of the SDMP.

In sum, the review of existing research (see Table 3.5 below) led to a list of 5 items representing the five underlying mechanisms of politicality according to the following authors which will be used as measures (see items C.6 to C.10 and D.19 to D.31 of the questionnaire in the appendix) of the politicality construct.
### TABLE 3.5: Five types of political information behaviour

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informational distorting and Filtering of information</strong></td>
<td>Cyert and March (1963); Wildavsky (1968); Pettigrew (1973); Edmondson <em>et al.</em> (2003); Bannister (2008); Walter <em>et al.</em> (2008)</td>
</tr>
<tr>
<td><strong>Budget distortion</strong></td>
<td>Raven and French (1958); Cyert and March (1963); Wildavsky (1968); Schiff and Lewin (1970); Markus (1983); Lederer <em>et al.</em> (1990)</td>
</tr>
<tr>
<td><strong>Specialist knowledge and expertise</strong></td>
<td>Raven and French (1958); Crozier (1964); Hickson <em>et al.</em> (1974); Pettigrew (1973); Mintzberg (1983); Symons (1991); Markus (1983); Lederer <em>et al.</em> (1990)</td>
</tr>
<tr>
<td><strong>Displacement of rules and internal procedures</strong></td>
<td>March and Simon (1958); March (1981); Chakravarthy and Doz (1992); Brandenburger and Nalebuff (1995); Lovas and Goshal (2000)</td>
</tr>
<tr>
<td><strong>Coalition Building</strong></td>
<td>Raven and French (1958); March (1962); Murray (1978); Grant and King (1982); Narayanan and Fahey (1982); Jones (1990); Eisenhardt and Zbaracki (1992); Pfeffer (1992)</td>
</tr>
</tbody>
</table>

The foregoing arguments regarding the mechanisms in the above Table 3.5 support the general hypothesis that the more the decision process is characterized by politicality, the weaker are the effects of IS use on the performance of SD. It is
hypothesized that the positive effects of IS use on SD performance are moderated by political information behaviour. Therefore the following hypothesis is formulated:

**Hypothesis 2:** The degree of politicality (i.e. political information behaviour) is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.

### 3.5.2 Environmental variables

The importance of the environment of an organisation is stressed by contingency theory (e.g. Mintzberg 1978; 1994; Butler, 1998; Pettigrew, 2003). Accordingly, environmental variables need to be analysed with regard to their impact on the strategic decisions under investigation in this study. Hence, the second type of contextual factor deemed to moderate the relationship of IS use and SD performance is environmental contingency. Some proponents of the contingency perspective (Burns and Stalker, 1961; Lawrence and Lorsch, 1967; Mintzberg et al., 1998) claim that the environment is the most significant contingent factor in organisational strategy formulation, based on the assumption that organizations adapt to their environments. The interrelations between an organisation and its environment require consideration of the macro (economy and markets) level in addition to the meso (sector) and micro (company) levels normally included in co-evolutionary analysis (e.g. McKelvey, 1997). Understanding the different environmental variables affecting the decision is seen to be important (e.g. Mintzberg et al., 1998).

Several variables are linked to the environment. From among these environmental variables, environmental munificence and environmental dynamics have been
identified in the literature (e.g. Dess and Beard, 1984; Mintzberg et al., 1998; Elbanna, 2006) as being more important for the relationship between IS use and SD performance, in the sense of focusing on some environmental variables such as uncertainty, and failing to consider the effect of others such as hostility, munificence and complexity (Dess and Beard, 1984:55–57). For example, environmental complexity may need to be treated rationally in decision making so as to understand the different environmental variables affecting the decision (Elbanna, 2006:6).

Thus a central assumption in this thesis is that the relationship of IS use and SD performance is moderated by environmental factors such as environmental munificence and environmental dynamics. In the following sections, these variables are discussed in more detail.

3.5.2.1 Environmental munificence

The first environmental variable, munificence, refers to the propensity of the environment to support organisational growth. It is manifested in high industry sales growth (Dess and Beard, 1984), while environmental hostility represents the ‘degree of threat to the firm posed by the multifacetedness, vigour and intensity of the competition and the downswings and upswings of the firm’s principal industry’ (Miller and Friesen, 1983:222).

In reality, organisations rarely face an environment that is entirely munificent or hostile, or entirely dynamic or static in this condition. However, there may be periodic pockets of hostility in one market or another, caused by particular technology, regulation or customer preference. One market may yield high profits for an organization while another market may require the development of new innovative products due to tough competition. Huber and McDaniel (1986:572) have argued that
the decision-making paradigm is ‘applicable when the organisational environments are hostile’ because ‘if the environment is threatening, as it is when competitors are strong or when resources are scarce, then decision quality is important and the organizational design should facilitate the making of high quality decisions’ (1986:577).

On the other hand, munificent environments, which might benefit from government support for innovation and new technologies, low taxes and interest rates, can enhance the ability of companies to access external resources (Hambrick and Finkelstein, 1987) and to exploit new investment opportunities. The configuration school within strategic management describes the relative stability of strategy within given states, interrupted by occasional and rather dramatic leaps to new ones (Mintzberg et al., 1998). March (1991:71) found that during such times of munificence and stability, a primary factor in an organisation’s ‘survival and prosperity’ is the maintenance of an ‘appropriate balance between exploration and exploitation’. An organisation’s information processing must facilitate the adaptive processes to explore new possibilities (innovation) while at the same time exploiting given opportunities (efficient implementation and execution). March (1991:71) suggests that there are many decisions to be made with regard to organizational information processing, about the ‘many features of organizational forms and customs, for example, in organizational procedures for accumulating and reducing slack, in search rules and practices, in the ways in which targets are set and changed’.

To measure environmental munificence, measures suggested by Elbanna and Child (2007) were used. In summary, the general effect of environmental munificence is that
of strengthening the relationship between IS use and SD performance. Thus the following hypothesis is formulated:

**Hypothesis 3**: The degree of environmental munificence is positively associated with the strength of the relationships between IS use and all dimensions of SD performance.

### 3.5.2.2 Environmental dynamics

The second variable, environmental dynamics, is described in the management literature as environmental dynamism (Dess and Beard, 1984), volatility (Bourgeois, 1985), instability (Fredrickson, 1984) and unpredictability (environmental uncertainty) (Huber et al., 1975). The factors within the dynamic environment are defined as being in a state of change, relationships are ambiguous and the future is unpredictable (Duncan, 1972), e.g. volatile prices in customer and supplier markets, emerging technologies and new competitors.

Information processing theory has addressed the role of environmental uncertainty and the moderating effect of environmental dynamics on the relationship between IS use and SD performance. Argument is based on the distinction of *stable* and *unstable environments* (in terms of changing conditions for decision making) in the strategic management literature (e.g. Mintzberg, 1973; Anderson and Paine, 1975; Grant, 2003). It infers that synoptic information processes (based on a rational model) are appropriate for stable environments, whereas incremental processes should be used in unstable environments. On the basis of empirical evidence, Fredrickson (1984:447) contends that ‘a stable environment increases the likelihood that critical decision
variables can be identified and allows theory to be developed regarding the relationships among those variables and the organisation. In contrast, an unstable environment makes it difficult to achieve the high level of certainty sought by rational models’. Eisenhardt (1989:549) emphasizes the importance of real-time information (i.e. information about an organisation’s operations or environment for which there is little or no time lag between occurrence and reporting), whereas forecasted information was found to be less important. She found that fast decision makers extensively use real-time information – often more than slower decision makers. Hough and White (2003:481) found that environmental dynamism moderates ‘the relationship between rational-comprehensive decision making and decision quality’. A lesser degree of environmental dynamics is hypothesized to strengthen the relationship between IS use and SD performance. In stable environments, where there is less need for flexibility, elaborate planning and control systems often facilitate information processing (Van de Ven, 1986).

In contrast, highly dynamic environments are hypothesized to weaken the impact of IS use on SD performance. Environmental dynamics has been cited as an important challenge to SDMPs because such conditions increase the difficulty of understanding the environment, e.g. supplier and customer markets (Priem et al., 1995), and the dynamically changing needs and interests of the organisation’s suppliers and key customers. Fredrickson (1984) and Fredrickson and Iaquinto (1989) argue that rational decision-making processes provide little assistance to decision makers because of the inherent uncertainty of dynamic environments.

On the basis of these arguments, the following hypothesis is suggested:

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**Hypothesis 4:** Greater environmental dynamics is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.

### 3.6 Control variables

A number of control variables will be included in the analysis. The rationale underlying the inclusion of certain variables (and the exclusion of others) is twofold: first, to increase confidence in the results regarding the proposed relationship, factors suggested in previous research have to be controlled for, to assess the comparative explanatory power for variances in SD performance of the determinant and moderators suggested previously. Secondly, the inclusion of variables used in previous studies allows for a comparison of this study’s results with those of existing studies using different variables in the explanation of IS use. Both are seen as crucial to an assessment of the study’s contribution to existing research and practice. The following sections introduce the five control variables including the related measures.

#### 3.6.1 Formalisation of decision

Formalisation of decision making procedure has been argued to influence the relationship between IS use and the performance of SDMP (e.g. Baum and Wally, 2003). This is in line with earlier research which found that informal, adaptable and loosely controlled organisational structures (organic companies; e.g. Slevin and Covin, 1995) show better performance in dynamic environments, whereas firms with more formal, preplanned and rigidly controlled decision making (mechanistic companies) perform better in stable environments. Baum and Wally (2003) found that the formalisation of procedure is also positively linked to financial performance, and
that formality will have a positive effect. The factor of formalisation of procedures of decision making is thus controlled for.

To measure the formalisation of routine decisions, measures suggested by Baum and Wally (2003) were used. This construct, labelled SDM_FORMAL, consisted of three items (D.9, D.10, D.11_REV) and showed an acceptable level of reliability ($\alpha = 0.639$). Respondents were asked to agree or disagree with the following statements: ‘Our company has highly formalized channels of communication for routine processes and practices’ (D.9); ‘Our standard operating procedures (SOP) manual helps us deal with routine problems’ (D.10); and ‘Our front-line managers are “on their own”, even with routine tasks’ (D.11 reverse).

3.6.2 Duration of decision

Concerning the duration of a strategic decision, some authors (e.g. Hickson et al., 1986) suggest that there is a variation between three months and four years. The decision duration may affect the completeness of information and the thoroughness of the analytical process, because longer decision processes give more time to the decision steps of information gathering and evaluation. In consequence, this may impact decision quality and the performance of the SDMPs. The factor of decision duration is thus controlled for.

Regarding the duration of the SD (SD DURATION), respondents were asked to report the start date and the end date (month/year) of the SDMP, i.e. they were asked how long it took from the initiation of the decision-making process to the final decision. Then, the duration in months was calculated using these dates.
3.6.3 Decision complexity

The degree of decision complexity is represented by the number of problems encompassed by the decision (Miller et al., 1999:50): the more problems a decision has to address, the more complex the SDMP becomes. Usually, strategic decisions are made up of various problems – some of which are more complex than others – and the comprehensiveness of strategic decision-making processes will vary, requiring information to be garnered from more diverse sources. The reasons for complexity are varied, e.g. the extent to which decisions are unusual or unique, or the likelihood of serious or widespread consequences setting fundamental precedents for the future.

Decision complexity is linked to both the cognitive and the social complexity of decision makers. First, cognitive complexity can be defined as the ability to think in a multidimensional, abstract manner and to synthesize information at various levels of abstraction (Jaques, 1976). It has two dimensions: differentiation and integration. Differentiation is the number of characteristics of a problem one discerns, and integration is the number of connections and rules governing the connections made among the differentiated concepts (Boal and Whitehead, 1992). Leaders particularly require cognitive complexity when the time span of decisions is lengthy, the decision environment is uncertain, and tasks require the ability to synthesize component parts (Jacobs and Lewis, 1992). Cognitive complexity is thought to be necessary but insufficient for leader effectiveness in complex situations. Effective leaders are also behaviourally complex, tending to ‘act out a cognitively complex strategy by playing multiple, even competing roles, in a highly integrated and complementary way’ (Hooijberg and Quinn, 1992:164).
Secondly, social complexity, the ability to apply interpersonal skills in a socially appropriate manner, reflects the leader’s social perceptiveness and response flexibility (Zaccaro, 2007:9). Schneider (2002:217) proposes ‘that effective leaders have relationships with a broad range of stakeholders that make use of various types of authority’. Socially complex leaders have more developed and complex knowledge structures regarding people and situations, greater understanding of critical social organisational problems and more adaptive responses to these problems than nonleaders (Zaccaro, 2007). Social differentiation is the ability to discriminate aspects of a social situation, including the capacity to differentiate emotions in oneself and others. Social integration is the capacity to synthesize the components of a social situation, leading to increased understanding of the social context and the achievement of instrumental objectives.

The behavioural flexibility required of decision makers (Hooijberg, 1996) in dealing with decision complexity (both cognitive and social), is reflected by the two components of behavioural complexity – repertoire and differentiation – enabling behaviours suitable to their organisational contexts. Empirical research (e.g. Daft and Lengel, 1986; Markus, 1994; Dennis and Kinney, 1998) has tested the proposition that higher performance is achieved by using richer media for more complex tasks, owing to more cues and feedback. Accordingly, the repertoire of effective leaders encompasses a wider repertoire of roles than that of less effective leaders (Hart and Quinn, 1993; Denison et al., 1995). Consequently, the flexibility of behaviour and roles is paralleled in a flexible use of information processing. The factor of decision complexity is thus controlled for.
Decision complexity was measured using a single item suggested in literature (Hickson et al., 1986; Cray et al., 1988, 1991; Miller et al., 1999:49–50). The respective statement asked respondents to agree or disagree with the following statement: ‘The decision was highly complex in terms of factors which had to be taken into account’ (DEC_COM1; C.14).

3.6.4 Industry

Contingency views hold that industry characteristics impact on organisations by constraining and shaping their strategies. Several researchers (e.g. Miles and Snow, 1978; Dess and Beard, 1984; Fredrickson, 1984; Bourgeois and Eisenhardt, 1988; Hitt and Tyler, 1991; Andersen, 2001) found that strategic decision making varies by industry. They therefore distinguish the characteristics of different industry sectors. For example, the rate of technological and competitive change in an industry sector (“industry velocity”; Nadkarni and Narayanan, 2007:688) determines the availability of market data, which is an important factor in the SDMP (Hofer and Schendel, 1978; Porter, 1980; Bourgeois and Eisenhardt, 1988) because certain analyses can only be conducted if market data are available. Accordingly, industry characteristics controlled for in the literature include sharp and discontinuous change in high-velocity industries (Bourgeois and Eisenhardt, 1988; Nadkarni and Narayanan, 2007) such as software, electronics, airlines and banking, which are distinguished from industries with cyclical change, such as food products and manufacturing systems engineering. The factor of the industry’s inherent character is thus controlled for by asking respondents about their insider judgment about their industry’s characteristics (Low- and high-velocity conditions).
To identify and categorise the industrial sector in which the respondents work, the author has used the standard industrial classification (SIC) codes which were introduced in 1992 as a European standard for the statistical analysis, measurement and reporting of business and trading activity by authorities and statistical bodies. Accordingly, the industry sector was identified from information obtained from the questionnaire (F.11; see questionnaire in the Appendix) and, respectively, the interview. Furthermore, the respondents were asked whether frequent changes in the organisation's products and practices occurred; whether products/services quickly became obsolete in their industry; whether actions of competitors were quite easy to predict; whether consumer tastes were fairly easy to forecast in their industry; and whether technology changed more quickly in this industry than in other industries (see survey instrument in the Appendix).

3.6.5 The size of the organisation

Previous research (e.g. Blankenship and Miles, 1968; Child and Mansfield, 1972; Hickson et al., 1986) has suggested that decision making is affected by the size of the organisation because more complex organisational structures are typical of large organizations and vice versa. Several researchers (e.g. Child and Mansfield, 1972; Lindsay and Rue, 1980; Pearce et al., 1987:670–672) emphasize the methodological concern that a company’s size may be a factor that influences the planning-performance relationship. Empirical examination of the effectiveness of strategic planning systems by Lindsay and Rue (1980) led them to conclude that large business firms in a variety of industries are attempting to ‘fit’ their long-range planning processes to their perceived environmental conditions, and that small firms should be considered as a separate class (Lindsay and Rue, 1980:402). Blankenship and Miles
(1968:106) found that the differential effect of size on SD performance depends on the position of the decision maker in the organisational hierarchy. Thus, to control for this factor, it has been decided to limit the empirical investigation to firms that have at least 10,000 employees (see the presentation of the study sample in section 5.1).
4 Methodology

Building on the conceptual research model and the corresponding hypotheses developed in Chapter 3, this chapter provides the methodological background and the rationale for the choice of an explanatory, hypotheses-testing approach. Reflecting on the research design, methodological problems are discussed, explaining the source and analysis of quantitative data that were gathered by means of a questionnaire survey to test the proposed hypotheses. This includes the operationalisation of key concepts and the survey design. This chapter also explains the collection of qualitative data through in-depth interviews to help with the interpretation and explanation of the findings.

4.1 Research philosophy

As discussed in section 2.1, the researcher has defined this study’s approach to philosophical, methodological, axiological and rhetorical questions with regard first and foremost to the nature of its research questions and the research design requirements that follow from them. It is submitted that this approach has much in common with the ‘reticulated model’ proposed by Laudan (1984), which allows researchers to debate individual components of a paradigm. In this vein then, the philosophical approach of this study combines an objective ontology, required by the use of discrete strategic decisions as the unit of analysis; an empirical/explanatory epistemology consistent with the definition of quantitative variables to test statistical correlation; and the neutralist axiology which these scientific ‘worldview elements’ imply (Creswell and Plano Clark, 2007). However, because Van de Ven’s (1992) processual approach has been used to organise the concepts used in this study, such an approach is not fully adequate because
it needs to go beyond positivism. ‘Strategy as a process’ requires consideration of political and behavioural patterns in which an interpersonal reality (Olson et al., 2007) is constructed by multiple actors. Therefore the hypothetico-deductive model is augmented by the use of semi-structured interviews, a strategy allowing the capture of constructed realities and in-depth analysis of the phenomena under investigation. The strongly incommensurable paradigms (Kuhn, 1962; Burrell and Morgan, 1979) are incompatible with the integrative approach to theory used in this study (Maxwell, 2012). By not accepting that research methods are ‘wholly internal to a single paradigm’ it becomes possible to ‘disconnect a particular method from its normal paradigm and use it, consciously and critically, within another setting’ (Mingers, 2001:243).

Furthermore, the flexibility of the critical realist approach obviates the use of a multiparadigm perspective (e.g. Gioia and Pitre, 1990; Lewis and Kelemen, 2002). While such a perspective might facilitate ‘views on organizational phenomena that not only allow scholars to recognize inherent and irreconcilable theoretical differences’, and the exploration of plurality and paradox (e.g. Schultz and Hatch, 1996; Lewis and Grimes, 1999), exposing the ‘interplay of entities and processes by applying divergent paradigm lenses’ to the SDMP (Lewis and Kelemen, 2002: 254); it would distract attention from the assumptions underlying the competing paradigms which this study holds to be far more significant.

Using a critical realist approach, Mingers (2001; 2004) illustrates this by focusing on these assumptions (i.e. ‘worldview elements’; Creswell and Plano Clark, 2007: see Section 2.1) as the essence of paradigms (‘It has been conventional since Kuhn (1970) to call particular combinations of assumptions paradigms’; 2001:242). He demonstrates
that empiricist and constructivist positions can be reconciled within the realist understanding of science which ‘takes the view that certain types of entities – be they objects, forces, social structures, or ideas – exist in the world, largely independent of human beings; and that we can gain reliable knowledge of them’ (2004:88). Hence, the research philosophy underpinning the research approach for this study is loosely consistent with the open approach of critical realism (Mingers, 2004; Maxwell, 2012).

4.2 Research design

4.2.1 Unit and level of analysis

The unit of analysis defines the object under investigation, which is important for methodological reasons (Nachmias and Nachmias, 1987:57). Concerning the level of analysis, Pettigrew (1992) recommends that the nature of the research question influences the choice of the level of analysis. The decision-based perspective (Fredrickson and Mitchell, 1984; Fredrickson, 1984) emphasizes that strategy formulation is a decision-making process, and the SDMP is seen as an organisation-level phenomenon which is characterized by a pattern of behaviour that develops in an organisation (Weick, 1979) that is apparent to its executive-level personnel. To improve the understanding of organisational processes (e.g. the SDMP), model development has to ‘account for the relationships between individual processes and organizational behavior’ (Steers, 1975:554). For instance it is critical to extrapolate findings to the same level of analysis and the same time reference which has been adopted in the research. Hence individual, group and organisational levels must be distinguished and taken account of.
In this research a particular strategic decision serves as the principal unit of analysis, including the related information processing at the level of the organisation, at the level of the group of strategic decision makers and at the level of the individual decision maker because this is the only level at which first-order data can be gathered which are necessary to study the effectiveness of the SDMP (Cameron, 2005). To get access for alternative data collection methods such as structured observation to gather first-order data on group and organisational factors through direct observation is in the area of strategic decision making almost impossible. While questions can be asked about the group or the organisation, this data is acquired through the second-order mechanism of an individual survey or interview. Several researchers (e.g. Fredrickson and Mitchell, 1984; Fredrickson, 1984; Hickson et al., 1986) have suggested that investigators should study how organisations make individual (i.e. single), particular strategic decisions, and whether they attempt to integrate these decisions into some overall strategy. In line with these authors, the process leading to a single, discrete strategic decision was chosen as the unit of analysis for this study.

4.2.2 Reliability and validity
Reliability and validity of this study need to be discussed beyond the conceptual model with regard to external validity (the issues arising from the sampling method, target population and sample interaction, situation effects, etc) and internal validity (the data collection instrument). The term external validity covers several types of effect. In the following, those issues which are particularly relevant to this study including the safeguards taken to address them are discussed.
4.2.2.1 The sampling method: Snowball sampling technique

When using sampling techniques, Chadwick et al. (1984:69) state that researchers ‘must review the nature of the population, estimate the completeness of the sampling frame, consider the nature of the behavior to be studied as well as the time and funds available’. The selection of profit-making businesses as distinguished from public sector organisations is supported by the findings of Rodrigues and Hickson (1995), who found that successful decisions of nonbusiness organisations are less influenced by the decision-making process itself and more by ‘social qualities’ of the decision making, i.e. participation of the right people without interference of upper levels. By contrast, successful decisions of profit businesses were associated with the decision-making process and the availability of resources.

Given that the subject under investigation needs respondents that have been involved in strategic decision making as well as the fact that a discrete instance of a strategic decision was to be the unit of analysis (see Elbanna and Child, 2007), the sampling for this research proved to be difficult. Existing research shows that studies targeting CEOs or other senior managers suffer from very low response rates, given the time constraints of this group of respondents. Traditional sampling strategies were considered and discarded as inappropriate because they are probabilistic (Saunders et al., 2009:223), and probabilistic sampling is not useful because it is impossible to construct a defensible sampling frame, and without a sampling frame P cannot be known for each case being selected. The alternatives (non-probabilistic methods such as quota, convenience, self-selection) are not appropriate because this relevant quota variables are not available. Saunders et al. (2009:234) suggest snowball sampling in such a case.
A judgment about randomness is realistically not possible because there is no opportunity to find out what the respondents were thinking when referring other respondents to the researcher. However, the set threshold standards for the acceptance or rejection of each case suggest an element of discrimination. Therefore, the deployed version of snowball sampling counts as ‘exponential discriminatory’ snowball sampling. Nonrandom sampling techniques limit the opportunity to draw more general conclusions based on the results obtained.

An alternative approach was thus taken. The sampling method chosen can be described as a variant of snowball (chain referral) sampling (see e.g. Biernacki and Waldorf, 1981; Patton, 2002; Blumberg et al., 2008). Upper echelons of large organisations are a special population as commonly there are extreme difficulties in getting in touch with, gaining access to and finally, gaining permission to interview the members of this population. Frequently, methods using network structure are used, i.e. by asking contact persons for their recommendation and referral to others, so that the sample can be extended in a less time consuming and reliable way. In particular, snowball sampling has proved to be successful for this purpose (Biernacki and Waldorf, 1981; Salganik and Heckathorn, 2004). The main idea was to develop a list/database of individuals that are or had been involved in SDMPs. Given the role of IS use in this study, a further requirement was that these processes had to take place in large companies with headquarters and origins in Western industrialized countries.

The researcher’s network of contacts, created over 15 years of consultancy work, provided the starting point for the snowball sampling procedure. This is, however, a possible cause of bias as the sectors the researcher has worked in (banking, consultancy, IT) might be overrepresented in the final sample. On the other hand, it
could be assumed from the beginning that the exponential nature of snowball sampling would get the final sample a long way from the origin of the starting contacts within a few snowball cycles. As a safeguard, the industry sectors of the final sample are checked accordingly whether they cover a sufficient wide range of industries.

For this study, ninety-four managers who were believed to fit the preceding criteria were contacted via email and asked for their help with this study. This help consisted of the willingness to complete a questionnaire (to be sent out at a later date) and their help in expanding the contact database by forwarding a prepared invitation email to individuals in their own network of contacts who matched the criteria. Problems encountered and resolved in the course of using snowball sampling for this study were finding respondents and starting referral chains, and verifying the eligibility of potential respondents as well as engaging respondents as interviewees. Additional problems included controlling the types of chains and the numbers of cases in any chain, pacing and monitoring referral chains (Biernacki and Waldorf, 1981) and monitoring data quality. As safeguards, several control dimensions of the sample (quota sampling; e.g. Blumberg et al., 2008:253) were tested with regard to samples from previous research, e.g. the quota of specific categories of decisions, functional areas and management role of the respondents, impact level of the strategic decision, etc. As these tests show a great congruence with the quota of previous research, it is demonstrated based on ‘predictive validity’ (Blumberg et al., 2008:254) that systematic bias is not that great a danger for this research, and a potential misrepresentation of the sample is thus avoided.
4.2.2.2 Sample interaction

The phenomenon of sample interaction emerges where the population under test has some specialist knowledge about, or responsibility for, one of the variables under test. With regard to this study, it is likely that some of the respondents have an academic background in management sciences and/or MBAs and might know about SDMP and IS research. Hypothetically, they may be able to discern the researcher’s motives and hypotheses of this study, and this potentially could influence their responses. There is no opportunity to establish the extent of sample interaction for the quantitative stage owing to the researcher-not-present (RNP) nature of the questionnaire. It is therefore not possible to judge the respondents’ reaction to the instrument, which is a consideration that needs to be considered in the choice of instrument and in the interpretation of results.

4.2.2.3 Situation effects

Situation effects are those effects that impact on the responses of the questionnaire by email. Can you demonstrate that situational effects are minimised as far as possible through your choice of administration method. For example, situation effects potentially caused by pre-existing relationship between researcher and some questionnaire respondents are minimised by the self-administered nature of instrument where the researcher is not present.

4.2.2.4 Common method bias

With regard to common method bias (i.e. variance that is attributable to the measurement method rather than to the constructs the measures represent; Podsakoff et al., 2003:879), the following steps have been taken to avoid or reduce the possibility of a common method bias affecting the data collection. As a safeguard, a
number of response items (reverse questions) were used in the survey instrument to control for a lack of motivation on the part of the respondents. Furthermore, independent assessment of outcome variables by external observers was used as a strategy to reduce common method bias, e.g. the research methodology and measures were examined by the supervisors of this study. Common method variance can occur if data on antecedents as well as outcome variables are collected only through self-reports. However, reliance on the self-administered survey is accepted because it is considered a suitable method of data collection in research with managers. For example, questions measuring the same issue have been dispersed across the questionnaire. In addition, wherever possible, subjective evaluations were cross-checked with company information from annual reports and similar sources. Furthermore, the interviews carried out can – to some extent – be seen as corrective and as a means of providing some degree of triangulation.

4.2.2.5 Validity of the items of the survey instrument
The validity of the survey instrument items is an important methodological issue (e.g. Cortina, 1993; Hair et al., 2006) and accordingly the internal consistency of the set of items of the survey instrument needs to be assessed. Internal consistency has been achieved if a minimal degree of measurement error remains so that consistency and dependability can be assured. Alpha coefficients are a conventional standard to examine the internal consistency of a survey (Lance et al., 2006:205). Cronbach (1951, 1984) proposed to compare the variability of item scores to the variability of the instrument’s total scale. If no measurement error is present, an alpha coefficient of 1 is achieved. In the case of the presence of a measurement error, the calculation
yields a lower alpha coefficient. Accordingly, the reliability of the survey items was measured using Cronbach’s alpha.

In the literature it is accepted that when dealing with top management, access time is rare, and a constraint as it limits the respondents’ availability. Therefore, the questions which can be asked are limited. For example, some authors were constrained to using surveys not exceeding two pages in length (e.g. Allen and Griffeth, 1997), which forced them to use mostly one-item or idiosyncratic measures precluding an assessment of their reliability.

The validity is further improved because the literature review has identified ‘established, generally accepted’ measurement constructs used by other studies in the same field of research (‘concurrent validity’; Litwin, 1995:45) used in the questionnaire of this study. The literature review and the development of the conceptual model demonstrate a thorough attempt to ensure the construct validity and nomological validity behind the choice of variables. Furthermore, the key threat to internal validity (i.e. rival explanations for a correlation) has been addressed to some extent through ex post facto quality control, i.e. by measuring the Cronbach’s alpha values of the construct variables.

4.2.2.6 Direct objective performance data or self-reported perceptions

In the literature it is a contentious issue whether direct objective performance data or self-reported perceptions (e.g. expert judgements) should be used. For example, in IS research, it is recommended (e.g. DeLone and McLean, 2003) that actual use measures should be preferred to self-reported use measures. Usage measures should capture the richness of use as a system phenomenon, including the nature, level and
appropriateness of use, and should not simply measure the frequency of use (DeLone and McLean, 2003:28). However, in the area of strategic decisions, direct measures (i.e. objective, external properties) cannot be obtained (Stein, 1981a:925).

The question is therefore whether indirect measures (i.e. perceptions by individuals) can be used instead. This question of whether direct objective performance data can be used or if self-reported perceptions of strategic decision makers are more adequate has received some attention in the literature. A fundamental point of measuring input data is that there needs to be clarity about what activities, people and resources are included. However, Dess and Robinson (1984) argue that direct, objective performance data are frequently either unavailable or in conglomerate business units inextricably interwoven with corporate-wide data (e.g. the cost of sending an email is included in the general IT budget). Additionally, in the case of strategic decisions, it can be hard to clarify exactly which activities are parts of the SDMP and which are not (e.g. preliminary activities or auxiliary effects of a parallel strategic initiative). For example, there is anecdotal evidence that sometimes strategic decisions emerge out of a situation when the right people meet at the right time, exchanging ideas or agreeing on a subject of strategic importance. Such encounters may take place at out-of-office locations, e.g. on golf courses, on transcontinental flights or at special locations where events primarily not related to business, but of a political, cultural or sportive nature, take place. Such encounters and face-to-face gatherings, which may be sought and planned ahead or are purely accidental, are hard to express in costs. Furthermore, the usually high compensation of top executives reflects this use of informal networks and private occasions. Dess and Robinson (1984) have therefore suggested using subjective, indirect performance measures from top management teams as proxies.
when accurate performance data cannot be obtained. This is supported by Stein (1981a), who suggests that when direct measures (i.e. objective, external properties) cannot be obtained, indirect measures (i.e. perceptions by individuals) should be used instead (Stein, 1981a:925), for instance respondents describing their own behaviour in the SDMP. This is in line with the argumentation of Blankenship and Miles (1968:109), who argued that ‘broad patterns of decision making across levels and organizations can only be studied by relying heavily on self-supporting measures’.

Following these suggestions, this study uses the subjective assessment of the respondents. The problems associated with this approach, i.e. common method bias, are estimated to have no impact on the quality of this study as it can be assumed with some optimism that the terminology used will be accessible to the respondents. With several years’ work experience in their field, the respondent managers should readily understand the terms used as communicating the same set of ideas.

The consistency of managers’ reports as self-reported observations about their behaviour is a methodological problem. The question arises if subordinates’ reports about their superiors’ behaviour would show discrepancies. To check for this issue of validity – involving the accuracy and generalisability of the results to N from n –, Heller (1971) has triangulated the reports of top managers and their subordinates, concluding that for decisions of a strategic nature, the differences were nonsignificant.

Concerning the measurement of variables, objective (direct) and perceived (indirect) measures have to be distinguished. Substantial research efforts comparing the two types of measurement have reached the conclusion that they deal with different aspects of reality (e.g. Child, 1972; Tosi et al., 1973; Downey et al., 1975; Podsakoff et al., 2003). Perceptions of variables are individual psychological traits, rather than
external attributes. Accordingly, physical attributes should not be used as criterion measures without some assurance that those physical attributes tend to elicit similar perceptions by individuals (Downey et al., 1975).

Many authors have defined the perceptual dimension as the relevant research object, arguing that behaviour is more directly linked to managerial perceptions than to objective, external properties. For example Stein (1981a:926) has shown that several studies used perceived environmental uncertainty as one of the most important independent variables (e.g. Duncan, 1972; Anderson and Paine, 1975; Downey and Slocum, 1975; Huber et al., 1975). Other authors have proposed that the important external properties are enacted by the organisation, i.e. created by a process of attention (Weick, 1969).

Strategic decision making is not only a reaction to perceived extraneous attributes, but may also influence the perception of those attributes through its effect on the managerial attention process (Miles et al., 1978). Results cannot be extended straightforwardly to objective attributes, which are a distinct concern. The two types of measures contribute to a comprehensive picture of the strategic decision process, but they need to be handled with different methodological approaches. The research focus of this investigation was centred on perceptual variables describing decision methods. Accordingly, the questionnaire requested that the respondents describe their own behaviour in the SDMP. To conclude, it is necessary to make a distinction between objective, detached measurements of the variables of interest and the perception of a decision maker of the same variables.
4.2.2.7 **The retrospective perspective**

Using a retrospective perspective toward judgements about performance by decision makers is a relevant methodological problem reported by many authors (e.g. Huber and Power, 1985; Golden, 1992, 1997; Osborne *et al.*, 2001). The discussion of this methodological issue is important as it is useful for both academic researchers ‘who study strategic decisions and organizational processes and for those managers who may be asked to provide the retrospective data’ (Huber and Power, 1985:171). The measurement of performance has an ‘important role to play in the efficient and effective management of organizations . . . it remains a critical and much debated issue’ (Kennerley and Neely, 2002:1222). Generally, there is little agreement so far on how to measure the performance of the use of information systems in SDMPs (Fredrickson and Iaquinto, 1989; March, 1999; Pye and Pettigrew, 2005). A retrospective perspective allows understanding how strategic decisions are framed by decision makers (Hodgkinson *et al.*, 1999).

There are several sources of data inaccuracies that commonly affect retrospective data. Glick *et al.* (1990) have assessed the trade-offs involved with retrospective event histories. This was taken account of in the research design as the respondents were asked – in the survey as well as in the interviews – to report retrospectively about a particular strategic decision with which they had been involved. This is in line with methodological recommendations in the literature, e.g. Huber and Power (1985:171) explain that strategic management studies ‘frequently involve obtaining retrospective data from strategic-level managers’. As measures to guarantee the quality of the obtained data, they suggest the following. (1) If only one informant per organisation is to be questioned, the person most knowledgeable about the issue of interest should be
identified (Huber and Power, 1985:174). (2) If more than one informant per unit of analysis is to be interviewed, informants whose unique biases or lack of knowledge are likely to offset those of other informants should be chosen (Huber and Power, 1985:175). (3) The person’s emotional involvement with a topic or unit of analysis that may either increase or decrease the accuracy of the responses should be recognized when choosing key informants. (3a) Informants with moderate levels of emotional involvement should be chosen; a lower level of involvement may result in casual deletion of information and the introduction of random error, whereas a greater level of involvement may lead to either motivational or cognitive distortions. (3b) Factual data from informants with higher emotional involvement should be sought as their ability to recall is probably greater, and judgemental data from those with lower involvement should be sought as their responses are less likely to be distorted by their motives. (4) Attempts to motivate the informants to cooperate with the researcher should be made (Huber and Power, 1985:176). (4a) As many disincentives to responding as possible should be removed; disincentives are e.g. fear that the information provided will somehow prove adverse to the respondent’s interests, time and convenience. (4b) Usefulness is a key incentive to upper-level managers (Kincaid and Bright, 1957); therefore it should be explained how the research results can be useful to the manager, the organisation, the strategic management field and the researcher. (5) The elapsed time between the events of interest and the collection of data should be minimized (Huber and Power, 1985:177). (6) It should be considered how the framing of questions will affect the informant’s responses (Huber and Power, 1985:177). (7) Questions used should be pretested and structured and impart an image of being rich in information content without being complex. In interviews, follow-tip
probes should be used to ensure that the original question was understood and the answer is complete (Huber and Power, 1985:177).

Nutt (2000:88) recommends the ‘use of retrospective data in which people reconstruct events’ as the best way to ‘get close to the phenomenon of interest’: strategic decision making. However, there are certain problems associated with retrospective data such as self-justification, memory lapses and logical inconsistencies (e.g. Bartlett, 1954; Nutt 2000). To cope with these problems, Nutt (2000) suggests interviewing more than one person for each strategic decision, and following a ‘carefully crafted interview procedure’ (Nutt, 2000:89). However, due to the limitations of this research as a PhD project, such as time constraints and the sensitivity of the subject matter, this was not possible: all nine interviewees were involved in different strategic decisions and employed by different organisations.

In sum, the use of the retrospective perspective is an adequate data acquisition methodology for studies about strategic decisions provided that the above safeguards are implemented. Additionally, obtaining retrospective data from strategic-level managers (Huber and Power, 1985:1717) is a widely used method for SDMP studies.

4.2.3 Ethical considerations and safeguards

Concerning research ethics, the present study has followed ethical practice because it involves human participants (for the questionnaire and in the interviews) and therefore needs to protect the rights and welfare of participants. Furthermore, the respondents were recommended by contact persons to participate in this research through snowball sampling requiring that any risk of harm and danger from research procedures needed to
be excluded. Accordingly, the collaborating individuals (respondents and interviewees) were explicitely asked for their consent and informed about their right to withdraw their consent at any time. Therefore, respondents were asked on the questionnaire for their collaboration. The purpose of the research and its academic nature were explained. Additionally, the university contact details of the researcher (email @bradford.ac.uk, office telephone and address) were shown on the questionnaire for further information, as well as the ones of the University of Bradford School of Management (website, telephone and address) to provide a contact point for complaints. Prior to conducting the interviews, the interviewees were informed about all relevant aspects of the study and their rights and again asked for their collaboration. Participants were told why they had been selected to take part and how many questionnaires were sent out. Confidentiality was guaranteed to the participants of the survey and the interviews and their organisations because the data collection has covered possibly sensitive data. Consent was given freely, informed and there was no form of coercion. Participants had the capacity to consent and the right to withdraw without penalty or providing explanation. As good practice all interviewees were notified after the interviews about the last point when it was possible to withdraw their data (i.e. 30th September 2008). The procedures for storage of the data for this research guarantee the confidentiality. E.g. questionnaires and interview transcripts were numbered, no names appeared and participants and their organisations can not be identified. The contact list for the interviewees is kept separately.
4.3 The fieldwork

4.3.1 Overview

The research design chosen for this study is predominantly explanatory in nature and the main study consists of a large-scale questionnaire survey among managers involved in SDMPs, followed by systematic interviews and document analysis. These choices are consistent with recommendations as to which research methods should be deployed to gather data to study strategic decisions, e.g. by Mintzberg et al. (1976:248) and Hickson et al. (1986).

The following figure 4.1 presents the four phases of the fieldwork for this study.

FIGURE 4.1: The Fieldwork

Some researchers conduct their studies in naturalistic settings (e.g. within the organisations), whereas other authors recommend laboratory experiments (e.g. Nutt, 1977; Schwenk, 1995). As laboratory settings are typically used by behavioural
decision researchers to study individual decision processes, whereas organisational
decision making (March, 2002) is usually researched in a naturalistic environment
(e.g. Shapira, 2002; Camerer and Knez, 2002), it was decided to use a naturalistic
setting for the data collection. This is supported because a critical characteristic of
taking strategic decisions in the form of organisational decision making (March, 2002)
is the need to coordinate behaviour on a level of high complexity with multiple actors
which is hard to simulate in a laboratory, and much better to find in a natural setting.

In accordance with the considerations in the below sections about the
survey and the interviews, the following four phases for the research were planned as
the following table shows in more details, for example specifying interview times and
numbers of interviewees.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Interviewees</th>
<th>Interview Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Type</td>
<td>Number</td>
</tr>
<tr>
<td>1</td>
<td>Interviews and piloting survey instrument</td>
<td>External advisors</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Document analysis (of those case companies known to the researcher)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Survey</td>
<td>Rule: number of survey items × 10 = min. number of respondents</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Interviews</td>
<td>Internal key informants</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 4.1: Phases of Data Collection
The following sections provide more details about each of the phases of this research.

4.3.2 Questionnaire design

Forza (2002:152) highlights the increase and importance in survey research in research. There are three properties of data from a properly executed survey that make surveys preferred as a research method (Fowler, 2002:4):

1. Probability sampling creates confidence that the sample is not a biased one and optimizes its validity and generalisibility.

2. Standardized measurement that is consistent across all respondents ensures that comparable information is obtained and that meaningful statistics can be produced.

3. A well designed special-purpose survey can collect quantisable data on all the constructs under test, allowing relational hypotheses to be tested and the validity and reliability of the instrument itself to be demonstrated.

Regarding the third point, the questionnaire was designed using the checklist for standards for questions provided by Fowler (2002:108; see Table 4.2). The questionnaire asked respondents to answer all questions with regard to one specific strategic decision process in which they had been involved over the last five years. The time frame was chosen to reduce a potential memory bias (e.g. Woehr and Feldman, 1993). Respondents were also asked to provide a brief summary of the strategic decision to which they were referring in their answer. In addition to the item batteries used to measure constructs, the survey instrument included questions about the demographic data of the respondents (i.e. age and gender).
### Categories and Evaluation Criteria of a Survey Pretest

<table>
<thead>
<tr>
<th>Categories</th>
<th>Evaluation criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aesthetics</td>
<td>How does the survey ‘look’? Is the design appealing? Does the ‘look’ motivate managers to participate?</td>
</tr>
<tr>
<td>Organisation</td>
<td>Is the organisation of sections/questions appropriate?</td>
</tr>
<tr>
<td>Navigation</td>
<td>Is there good flow? How long does it take to complete the survey? Are explanations and guidance helpful? Do respondents have the information needed to answer the questions?</td>
</tr>
<tr>
<td>Data entry</td>
<td>How easy/difficult is it for participants to select responses or enter data? Are the response choices clear?</td>
</tr>
<tr>
<td>Consistency</td>
<td>Do the answers accurately describe what respondents have to say? Are the questions within each section consistent?</td>
</tr>
<tr>
<td>Measurement</td>
<td>Do the answers provide valid measures of what the question is designed to measure?</td>
</tr>
</tbody>
</table>

**TABLE 4.2:** Categories and Evaluation Criteria of a Survey Pretest

Source: Fowler (2002)

### 4.3.3 Pilot test and expert interviews

The questionnaire was piloted before the main study. A small non-probabilistic convenience sample (Creswell and Plano Clark, 2007; Blumberg et al., 2008) of three academics who had worked earlier as senior managers was trialled among colleagues. The questionnaires were handout and collected by the researcher, and completed in his presence. Once a set of survey questions is drafted, Fowler (2002) suggested that they should be subjected to a critical systematic review. Therefore, after completing the actual questionnaire, the test respondents were asked to assess the questionnaire using the above criteria (see above table 4.2).
This assessment led to some minor corrections to the questionnaire, in particular, with regard to the sequence and phrasing of some of the questions. Regarding the time for self-administration of the instrument, the pretest showed that it took respondents, on average, 20 minutes to complete the questionnaire, which was seen as acceptable and not detrimental to achieving a good response rate.

In order to ensure the validity of the questionnaire, in a parallel process, the recommendations of Nachmias and Nachmias (1987) were followed, and four researchers with experience in empirical studies and questionnaire design were asked to evaluate the content validity (Litwin, 1995:45) of the questionnaire. With the exception of a number of instances of confusion due to phrasing, which were changed subsequently, these experts had no concerns.

4.3.4 Quantitative research (Survey)

4.3.4.1 Combined survey/interview approach
The choice of a combined survey/interview approach was taken after assessing different alternative research designs and based on a number of reasons. First, the area of research (SDMP and IS research) is well established and the key concepts are known. There are a number of theories that have been developed in this field and have already been tested empirically. Thus the argumentation could be based on existing work in this area, and there was no need to explore the issues using an exploratory design. In particular, information processing theory and the microconcept of media richness were regarded as useful for the development of hypotheses regarding the relationship between IS use and SD performance as well as the identification of moderating factors. This is in line with other research using a survey approach in the
investigation of strategic processes, e.g. the studies of Fredrickson (1984), Fredrickson and Mitchell (1984), Fredrickson and Iaquinto (1989) and Iaquinto and Fredrickson (1997), where questionnaire instruments were administered to find out how executives describe the processes their firms would use if faced with a specific scenario situation. Other researchers have combined surveys with interviews (e.g. Hickson et al., 1986). Yet, given the limitations of a purely deductive approach, it was decided that for this study that after the quantitative analysis of the data gathered by means of questionnaire survey a number of interviews were to be carried out.

4.3.4.2 The process of data gathering for the survey

Snowball sampling was used as the data collection method for this study (see the discussion in section 4.2.2.1 with regard to methodological issues). The process was started in June 2007, and by September 2007, the contact database consisted of 448 individuals. In September 2007, questionnaires were sent out to these 448 contacts. In January 2008, after two waves of reminders, 129 (28.79%) questionnaires had been received. Out of these, 113 (25.22%) completed and usable questionnaires could be used for statistical analysis, resulting in a response rate of 28.79% as shown in the following Table 4.3.

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
<th>Percentage [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Total sample size = Total number of distributed questionnaires</td>
<td>448</td>
<td>100 %</td>
</tr>
<tr>
<td>2 Total number of respondents</td>
<td>129</td>
<td>28.79 %</td>
</tr>
<tr>
<td>3 Total number of non-respondents</td>
<td>319</td>
<td>71.20 %</td>
</tr>
<tr>
<td>4 Total number of eligible respondents</td>
<td>113</td>
<td>25.22 %</td>
</tr>
<tr>
<td>5 Total number of ineligible respondents</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>6 Expected number of eligible respondents *</td>
<td>279</td>
<td></td>
</tr>
<tr>
<td><strong>Response Rate</strong></td>
<td></td>
<td>28.79 %</td>
</tr>
</tbody>
</table>

TABLE 4.3: Response Rate of Survey Instrument
This method of response rate calculation is proposed by the American Association for Public Opinion Research (2006). In sum, the response rate for the survey of this study is adequate as it is consistent with other empirical studies on the SDMP.

4.3.5 Qualitative data gathering (Interviews)

The following section describes the process of data collection and reports the researcher’s ‘own analytical procedures and processes‘ (Patton, 2002:432), and addresses considerations regarding the ‘linking of qualitative and quantitative data’ (Miles and Huberman, 1994:41).

4.3.5.1 Interviewees

Summaries of the research findings were sent to those respondents who expressed interest in such a summary by providing their contact details. Participants were asked about their willingness to be interviewed about the findings and their reactions. From among the 34 managers who expressed an interest, 9 stated that they would be available for a short interview via telephone; on condition that neither the interviewee nor his/her organization could be identified in the research outcome. This number is adequate in line with the principle stated by McCracken (1988:17): ‘less is more’.

4.3.5.2 Interview guide for semi-structured interviews

Traditional semi-structured interviews (e.g. Brown, 2006) were conducted with the nine interviewees between March 2008 and May 2008. The time duration was planned to be less than one hour. This was also planned as a safeguard to avoid special problems of reliability related to data collected in the later stages of over-long
interviews. However, some of the interviews took up to one hour and a half, as the interviewees were willing to respond to some questions in more detail.

An interview guide (see the Appendix) was used to ‘direct the interview process’ (Wilkinson and Young, 2004:211). As such, the interviews were semi-structured, on the one hand based on an interview guide which gave scripted introductions to questions designed to elucidate a specific strategic decision in which the interviewees were involved. On the other hand, the strength of a semi-structured interview is that it allows to ‘explore, probe, and ask questions that will elucidate and illuminate that particular subject’ as recommended by Patton (2002:343), probing deeper into the given responses.

4.3.5.3 Recording and transcription

Five of the nine interviews were recorded and subsequently the audio documents were transcribed. Four managers withheld permission to record their interviews, and notes were taken during these interviews and immediately written up. All interviews were carried out in either German or English. The quality of the translation of the interviews in German language to English (which has implications for validity and generalizability) is based on the author’s skills and ability having studied English for more than thirty years and living in England for more than five years. Additionally, in order to add transparency, the translation was double-checked and approved by a bilingual speaker of the English and German language.

The analysis of the qualitative data aims at the reconstruction of expert knowledge on the basis of the interview transcripts. In the literature, expert interviews are seen as an instrument by which experts can tell their narrative about decisions and identify the
principles on which their judgments were based. However, transcripts are ‘characterized by a considerable reduction of […] almost infinitely rich primary and secondary data’ (Kowal and O’Connell, 2004:249). The role of the researcher then is to reconstruct the interpersonal patterns of expert knowledge on the basis of these data. The interviews – which were carried out between March 2008 and May 2008, were not intended to explore new factors that had so far been neglected in research; rather, the objective of these interviews was to clarify and discuss findings of the quantitative analysis with managers to help with the interpretation of unexpected and/or ambiguous findings. To this extent, the interviews represent an important opportunity to confirm the integrity of the first data collections stage – especially in setting quantised relational hypotheses about the kind of behavioural and contextual factors which are more usually approached through qualitative data collection methods. In comparing qualitative and quantitative research methods, Miller and Friesen (1982) emphasize the complementary nature of a mixed approach; on one side, the richness of qualitative studies that can reveal deep insights into the complex and dynamic interplay among relevant forces, while on the other side, quantitative studies permit more objective, replicable and reliable findings. While the study is thus based on quantitative as well as qualitative data, the primary research design was explanatory.

4.3.5.4 A particular strategic decision as case

Following Nutt (2000:89), a decision case was defined as an ‘episode beginning when the organisation first became aware of a motivating concern or difficulty and ending with a successful or unsuccessful implementation attempt. After a failure, a recycle would be viewed as a new case if new alternatives were obtained’. The purpose of the
study was presented to the interviewees as a purely academic research project to accumulate a sufficient number of crucial decisions to understand and appreciate the practices used in SDMPs.

Consequently, the interviewees were asked to describe key themes from the SDMP, as well as specific details about strategy and information systems not covered in the earlier semi-structured questions building ‘a conversation within a particular subject area’ (Patton, 2002:343). The qualitative information from managers involved in strategic decision making is seen as particularly useful. While a purely narrative approach would concentrate phenomenologically on emergent themes, the analysis of expert interviews is linked to an *a priori* understanding, i.e. the work which is invested in the development of an interview guide enables the interviewer to develop the thematic competence to facilitate interviews with high-yielding data.

4.3.5.5 *Data analysis of interviews*

The analysis of the transcripts focuses on clusters of themes which are related by their content, e.g. passages spread over the text, and not on the sequentiality of the expressed themes in each interview. The following methodology allows such a stepwise procedure:

**Step 1: Paraphrasing**, i.e. the identification of passages in the text which can be linked to a theme cluster. Silverman (2011:70) cautions of coding in terms of concepts drawn from the literature because if this is ‘done too early, you may lose touch with the fine detail of what you are hearing and saying’.

**Step 2: Coding**, i.e. the ‘allocation of categories to text segments’ (Kelle, 2004:279) is done with the purpose of ordering the themes of the paraphrased passages by
condensing, typifying and abstraction within the frame of a single interview. Coding can result in the direct use of a passage. A passage might be linked to several clusters.

**Step 3: Comparing themes**, in which comparable passages of various interviews are bundled into **categories**. This process needs to be evaluated and might be repeated several times (iterative procedure).

**Step 4: Conceptualisation**, where isolated text passages are analysed with a view to their juncture with debates in the literature; including using terms not used in the original interview, building categories capturing the particular knowledge expressed by the expert interviewee which is condensed and made explicit.

This process of **category building** implies the subsumption of parts under a more general term or concept, and at the same time the reconstruction of a more common term for the expressed view on reality. For this purpose, a template (Crabtree and Miller, 1999; King, 2004) was used with codes derived *a priori* from the literature review.

**Step 5: Theoretical generalisation**, i.e. categories are put into a new frame ordering them by their theoretical context, allowing the construction of typologies (Maxwell (2012:111-115). This was again done focusing on the categories from the literature review of this study.

With regard to how the interviews were conducted, transcribed, coded and analyzed, all the stages of this procedure have been followed sequentially. Sometimes an evaluation was needed with a recursive reconsideration of earlier steps.
The themes emerging during the interviewing and coding process were organised in a ‘template’ (King, 2004) (see Appendix), which provided a meaningful hierarchical structure of codes by theme and subtheme. Template analysis (Crabtree and Miller, 1999; King, 2004) was used, as it allows the combination of a more open approach (Hycner, 1985) with a method in which themes and subthemes are known \textit{a priori}. In the case of the present study, this required that the survey was conducted ahead of the interviews. As outlined previously, the purpose of the interviews was to help in interpreting the findings of the quantitative analysis through a triangulation of methods and data. As a result, the content of the interviews was very much geared towards specific areas. The interviewees participated in the role of informant, giving ‘information about what happened and not about themselves or their opinions’ (Hickson \textit{et al.}, 1986:24), and there was no indication that the information given was more than minimally biased by personal perspective.

To conclude, this study has used an interview guide (see the appendix), and template analysis (Crabtree and Miller, 1999; King, 2004) as a method to code and analyse the interview data, facilitating the ‘linking of qualitative and quantitative data’ (Miles and Huberman, 1994:41).

\textbf{4.3.6 Document analyses}

\textbf{4.3.6.1 Usefulness of document analysis for SDMP research}

The usefulness of documentary evidence for strategy process research is highlighted by many authors in the field of SDMP (e.g. Hickson \textit{et al.}, 1986; Papadakis \textit{et al.}, 1998; Barnes, 2001:1087–1088), in particular, when used in combination with other
data collection methods as in this study. To provide documentary evidence and insights into actual developments related to the strategic decisions referred to by the respondents, annual reports and the related letters to stakeholders (Bowman, 1978; Bettman and Weitz, 1983), speeches of CEOs (Sussman et al., 1983) and other publicly available documents like company newsletters and corporate website information are useful in complementing data sources. Given the nature of the strategic decisions the respondents were referring to in their answers, for a number of cases, it was possible to supplement the information gathered through the questionnaire survey with information that was publicly available, e.g. through company reports or the business press.

On the other hand, several authors (e.g. Ingram and Frazier, 1983; Judd and Tims, 1991; Preston et al., 1996; Graves et al., 1996) have developed critical positions toward annual reports. These ‘kaleidoscopic, glamorous, and entertaining’ documents (Graves et al., 1996:59) seek to present memorable ‘facts’, emphasizing the image the organisation wishes to portray by means of sophisticated visual and textual strategies, while at the same time denying, omitting and concealing information incompatible with such rhetoric (Davison, 2008). Other authors (e.g. Lincoln and Guba, 1985:277) allude to a distinction on the basis of whether the text was prepared to attest to some formal transaction or formal documentation, e.g. if the publication of documents and records is required to comply with corporate governance regulation (e.g. Pye and Pettigrew, 2005; VanLengen, 2005; Voo, 2006).

However, annual reports provide, for example, some useful financial information about the overhead cost of strategic decision making. The listings for infrastructure and support services in annual reports typically include, for example, human resources
and central training, research and development (R&D), information technology, central finance, executive support group, the legal department and expenditure for external legal services and strategic advisors/consultancies, strategy division and business affairs management.

4.3.6.2 Problems with access to documents

A practical and well-acknowledged problem in SDMP research is that it is extremely difficult to get access to documents (Hickson et al., 1986; Pettigrew and McNulty, 1998; Kakabadse et al., 2006). For example, in three multinational companies envisaged for this study, where contacts (i.e. a sequence of recommendations, email exchanges, telephone calls and preparatory meetings) had already been established with executives involved with SDMP, a sudden change of the CEO took place, accompanied by the unexpected decision of shareholders to review and refocus the organisations’ strategies, which was covered extensively in the business media. In all three cases, the CEO’s departure led to highly publicized power battles among the top executives, directors and others facing significant uncertainties concerning the organisation’s operations as well as their personal careers. These uncertainties affected the involved consultants also, as it was an open issue if their contracts were to be prolonged. Consequently, none of the contacts remained accessible. When the author was referred to the department for public relations, the company answered via email, stating that much to their regret, they could not get any internal approval to continue with the research project and apologized for not being able to provide any documents related to the SDMP, and attached a version of the annual report.

All the respondents as well as the interviewees of this study were asked by the author to provide additional documentation on particular strategic decisions. One top
management advisor of an in-house consulting unit [Int #1], who spoke on condition of anonymity, in line with company rules, said, ‘The program I was involved with is all confidential. You cannot get clearance for publication on such sensitive issues.’

Due to the sensitivity of the strategic decisions, none of the interviewees was ready to provide documents related to the strategic decision. This is confirmed by many researchers (e.g. Kincaid and Bright, 1957; Pettigrew and McNulty, 1998; Welch et al., 2002; Kakabadse et al., 2006), who report that obtaining access to the UE is a major problem in the study of strategic decisions and is often an issue of trial and error.

To conclude, annual reports and associated letters to shareholders were taken in this study as background information to complement the discussion of results (Chapter 5) through citing some complementary information. The potential use of such information has been stressed e.g. by Papadakis et al. (1998), who used archival data in combination with interviews and questionnaires for their investigation into strategic decision making. Hickson et al. (1986) also report their use of company documents. However, because of the anonymity guaranteed to the respondents and interviewees and their organisations (i.e. data were collected on the basis of an agreement of nondisclosure and guaranteed confidentiality), it is not possible to quote directly from the annual reports because this would reveal the identities of the case organisations. However, the company documents which were publicly available and related business news provided useful background information to understand the context of strategic decision making more in depth, and, methodologically, to enable triangulation (i.e. triangulation of data and methods; Denzin, 1970; Jick, 1979; Blaikie, 1991).
Based on this research design and the data collection methods used, in the following Chapter 5 the findings of this study are presented, analyzed and discussed.
5 Findings, analysis and discussion

In this chapter, the quantitative analysis of the survey data complemented by the qualitative analyses of the interview data are presented. In a first step, descriptive analyses are performed, first of the respondents, and secondly of the strategic decisions. Then, in a second step, the hypotheses (presented in Chapter 4) are tested. To test the model, three submodels were computed for each of the four dimensions of the dependent variables: (1) a baseline model that only contained the control variables; (2) a model that combined control variables and the respective independent variables; and (3) a full model that also included the moderators. The data analysis and statistical findings are explained. The data analysis was carried out using the statistical software package SPSS.

Furthermore, this study’s findings are discussed and related to existing empirical research and theoretical perspectives (i.e. theoretical triangulation; Denzin, 1970). Following Volberda’s (2004:38) proposal of ‘strategy synthesis’, i.e. to build on more than one perspective (see Chapter 2) when analyzing a strategic management problem, the discussion focuses on the cluster of problem areas related to IS use and the performance of SDMPs covered by the three research questions of this study. To allow for explanation and interpretation of the results of the survey’s quantitative data analysis (which are documented in Chapter 5), information gathered by means of in-depth interviews with some of the respondents will be used (i.e. triangulation of data and methods; Denzin, 1970; Jick, 1979; Blaikie, 1991).
5.1 Overview

5.1.1 Descriptive statistics of sample

Data cleaning (e.g. number of participants) and plausibility tests (checking if reported years in profession and years in organisation are coherent with age and management level) were performed. Additionally, it was made sure from the questionnaires that all respondents participated in decision making at a strategic level.

5.1.1.1 Statistics of respondents

The sample \((n = 113)\) consisted of a majority of male respondents \((n = 86, 76.8\%)\) compared to 26 female respondents \((23.2\%);\) for a summary see the following Table 5.1 and Figure 5.1:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency (n = 113)</th>
<th>Percentage</th>
<th>Valid percentage</th>
<th>Cumulative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>86</td>
<td>76.1</td>
<td>76.8</td>
<td>76.8</td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
<td>23.0</td>
<td>23.2</td>
<td>100.00</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td>99.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td>0.9</td>
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</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 5.1: Gender of Respondents

FIGURE 5.1: Gender of Respondents
The average age of the respondents was 41 years, with the youngest respondent being 26 years and the oldest respondent being 75 years. Concerning the management level, i.e. the respondents’ positions in organisational hierarchies, 21 respondents (18.6%) held top management and executive positions, 39 respondents (34.5%) were mid-level managers, and a slight majority of respondents \((n = 40, 35.4\%)\) referred to their roles as advisors and consultants, either in-house or external. Other respondents \((n = 10, 8.8\%)\) reported that their positions would not fit into this frame (e.g. project manager, fund manager, controller and global account manager).

In this survey, respondents reported a range of 1–50 years’ tenure in their respective industries. The organisational tenure of respondents ranged from 0.5 to 38 years. Respondents had an average of 14 years of professional experience in their industry sector and had been working for their organisation for an average of nine years. The rationale presented by Hambrick et al. (1993) suggests that the greater the industry tenure and accompanying socialization to industry norms and practices, the greater the executives’ commitment to the status quo. Industry tenure and organisational tenure were measured by asking respondents how many years they had worked in the current industry of their organisation.

Respondents had been working for their companies for an average of 9 years, whereas the average time in their profession was slightly more than 14 years. Based on these characteristics, it can be assumed that all respondents were knowledgeable in their field and that their judgments were informed by facts. The possible impact of this on the external validity of the data by sample interaction is discussed in Section 4.2.2.2.
The respondents’ job titles varied so widely that they were not used for statistical purposes. Instead, management level was analysed. All respondents participated in the process of strategic decision making. Table 5.2 and Figure 5.2 show this distribution.

<table>
<thead>
<tr>
<th>Valid Title</th>
<th>Frequency (n=113)</th>
<th>Percentage</th>
<th>Valid percentage</th>
<th>Cumulative percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advisor or consulting role</td>
<td>40</td>
<td>35.4</td>
<td>36.4</td>
<td>36.4</td>
</tr>
<tr>
<td>Mid-level manager</td>
<td>39</td>
<td>34.5</td>
<td>35.5</td>
<td>71.8</td>
</tr>
<tr>
<td>Executive</td>
<td>21</td>
<td>18.6</td>
<td>19.1</td>
<td>90.9</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>8.8</td>
<td>9.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>97.3</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing System</td>
<td>3</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 5.2: Management Levels of Respondents

Concerning the management level, i.e. the respondents’ positions in organisational hierarchies, 21 respondents (18.6%) held top management and executive positions, 39 respondents (34.5%) were mid-level managers, and a slight majority of respondents (n = 40, 35.4%) referred to their roles as advisors and consultants, either in-house or external. Other respondents (n = 10, 8.8%) reported that their positions would not fit
into this frame (e.g. project manager, fund manager, controller and global account manager). In sum, the sample consists of a good mix of top executives, middle managers and advisors. On this basis, it can be assumed that the respondents were all knowledgeable about the issues raised in the questionnaire survey.

Regarding the nationality of respondents, the major group consisted of 55 German nationals (48.7%). The second largest group comprised of 17 English managers (15%), followed by four Austrian and French managers, with a share of 3.5% each. As the following Figure 5.3 and Table 5.3 show, the other 19 nationalities of this survey were represented by between one and three managers or between 0.9 up to 2.7%.

![Nationality of respondents](image)

**FIGURE 5.3**: Nationality of respondents

196
<table>
<thead>
<tr>
<th>Nationality</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>113</td>
<td>99.1%</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>17</td>
<td>15.0%</td>
<td>15.2%</td>
<td>15.2%</td>
</tr>
<tr>
<td>German</td>
<td>55</td>
<td>48.7%</td>
<td>49.1%</td>
<td>64.3%</td>
</tr>
<tr>
<td>Swiss</td>
<td>2</td>
<td>1.8%</td>
<td>1.8%</td>
<td>66.1%</td>
</tr>
<tr>
<td>Austrian</td>
<td>4</td>
<td>3.5%</td>
<td>3.6%</td>
<td>69.6%</td>
</tr>
<tr>
<td>Swedish</td>
<td>3</td>
<td>2.7%</td>
<td>2.7%</td>
<td>72.3%</td>
</tr>
<tr>
<td>French</td>
<td>4</td>
<td>3.5%</td>
<td>3.6%</td>
<td>75.9%</td>
</tr>
<tr>
<td>Belgian</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>76.8%</td>
</tr>
<tr>
<td>Dutch</td>
<td>3</td>
<td>2.7%</td>
<td>2.7%</td>
<td>79.5%</td>
</tr>
<tr>
<td>Italian</td>
<td>2</td>
<td>1.8%</td>
<td>1.8%</td>
<td>81.3%</td>
</tr>
<tr>
<td>Turkish</td>
<td>3</td>
<td>2.7%</td>
<td>2.7%</td>
<td>83.9%</td>
</tr>
<tr>
<td>Spanish</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>84.8%</td>
</tr>
<tr>
<td>Irish</td>
<td>2</td>
<td>1.8%</td>
<td>1.8%</td>
<td>86.6%</td>
</tr>
<tr>
<td>Welsh</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>87.5%</td>
</tr>
<tr>
<td>US American</td>
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<td>1.8%</td>
<td>89.3%</td>
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<tr>
<td>Moroccan</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>90.2%</td>
</tr>
<tr>
<td>Japanese</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>91.1%</td>
</tr>
<tr>
<td>Indian</td>
<td>2</td>
<td>1.8%</td>
<td>1.8%</td>
<td>92.9%</td>
</tr>
<tr>
<td>Mexican</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>93.8%</td>
</tr>
<tr>
<td>Brazilian</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>94.6%</td>
</tr>
<tr>
<td>Canadian</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>95.5%</td>
</tr>
<tr>
<td>Emirati</td>
<td>2</td>
<td>1.8%</td>
<td>1.8%</td>
<td>97.3%</td>
</tr>
<tr>
<td>Sri Lankan</td>
<td>2</td>
<td>1.8%</td>
<td>1.8%</td>
<td>99.1%</td>
</tr>
<tr>
<td>South African</td>
<td>1</td>
<td>.9%</td>
<td>.9%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Missing System</td>
<td>1</td>
<td>.9%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 5.3: Nationality of Respondents**

There was a wide range of nationalities among the remaining respondents. As such, the sample is adequate for the purpose of this study. See above Table 5.3 for a summary.

The organisations of the respondents and interviewees were all based in industrialized “Western” countries. Due to the guarantee of confidentiality that was granted to both the respondents and the interviewees, details about the case companies cannot be disclosed.
A similar distribution was revealed with regard to the country of residence (see Table 5.4 and the following Figure 5.4). As such, the sample is adequate for the purpose of this study.

A.9 Country of Residence

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>n = 113</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>16</td>
<td>14.2</td>
<td>14.3</td>
<td>14.3</td>
</tr>
<tr>
<td>Germany</td>
<td>60</td>
<td>53.1</td>
<td>53.6</td>
<td>67.9</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
<td>68.8</td>
</tr>
<tr>
<td>Austria</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
<td>69.6</td>
</tr>
<tr>
<td>Sweden</td>
<td>5</td>
<td>4.4</td>
<td>4.5</td>
<td>74.1</td>
</tr>
<tr>
<td>France</td>
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<td>.9</td>
<td>.9</td>
<td>75.0</td>
</tr>
<tr>
<td>Belgium</td>
<td>2</td>
<td>1.8</td>
<td>1.8</td>
<td>76.8</td>
</tr>
<tr>
<td>The Netherlands</td>
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<td>.9</td>
<td>.9</td>
<td>77.7</td>
</tr>
<tr>
<td>Turkey</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
<td>78.6</td>
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<td>Spain</td>
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<td>1.8</td>
<td>1.8</td>
<td>80.4</td>
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<tr>
<td>Ireland</td>
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<td>.9</td>
<td>.9</td>
<td>81.3</td>
</tr>
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<td>3.5</td>
<td>3.6</td>
<td>84.8</td>
</tr>
<tr>
<td>Japan</td>
<td>2</td>
<td>1.8</td>
<td>1.8</td>
<td>86.6</td>
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<tr>
<td>Mexico</td>
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<td>.9</td>
<td>.9</td>
<td>87.5</td>
</tr>
<tr>
<td>Brazil</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
<td>88.4</td>
</tr>
<tr>
<td>UAE</td>
<td>6</td>
<td>5.3</td>
<td>5.4</td>
<td>93.8</td>
</tr>
<tr>
<td>Romania</td>
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<td>.9</td>
<td>.9</td>
<td>94.6</td>
</tr>
<tr>
<td>US/Belgium EU</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
<td>95.5</td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
<td>.9</td>
<td>.9</td>
<td>96.4</td>
</tr>
<tr>
<td>Finland</td>
<td>2</td>
<td>1.8</td>
<td>1.8</td>
<td>98.2</td>
</tr>
<tr>
<td>Denmark</td>
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<td>.9</td>
<td>99.1</td>
</tr>
<tr>
<td>UK/The Netherlands</td>
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<td>.9</td>
<td>.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
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<tr>
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<td>.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 5.4: Country of Residence
Respondents were working in a wide range of functional areas (see Table 5.5). A majority of respondents held positions in the area of manufacturing/operations ($n = 22; 19.5\%$), followed by corporate administration (18.6%) and IT (14.2%).

<table>
<thead>
<tr>
<th>Functional Area</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td>8</td>
<td>7.1</td>
<td>7.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Marketing/Sales</td>
<td>12</td>
<td>10.6</td>
<td>11.2</td>
<td>18.7</td>
</tr>
<tr>
<td>Manufacturing/Operations</td>
<td>22</td>
<td>19.5</td>
<td>20.6</td>
<td>39.3</td>
</tr>
<tr>
<td>Research and Development (R&amp;D)</td>
<td>3</td>
<td>2.7</td>
<td>2.8</td>
<td>42.1</td>
</tr>
<tr>
<td>Human Resources</td>
<td>10</td>
<td>8.8</td>
<td>9.3</td>
<td>51.4</td>
</tr>
<tr>
<td>Corporate Administration</td>
<td>21</td>
<td>18.6</td>
<td>19.6</td>
<td>71.0</td>
</tr>
<tr>
<td>Information Systems/IT Department</td>
<td>16</td>
<td>14.2</td>
<td>15.0</td>
<td>86.0</td>
</tr>
<tr>
<td>Consulting</td>
<td>13</td>
<td>11.5</td>
<td>12.1</td>
<td>98.1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1.8</td>
<td>1.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>107</td>
<td>94.7</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing System</td>
<td>6</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113</strong></td>
<td><strong>100.0</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 5.5: Functional Areas of Respondents
As such, the sample is perfectly adequate for the purpose of this study as it covers all functional areas where strategic decision making takes place in comparison to the functional areas described in the seminal study of Hickson et al. (1986).

5.1.1.2 Statistics regarding the strategic decisions

The following tables 5.6 and 5.7 show the types of strategic decisions covered in the survey and the interviews. The majority were decisions about reorganisations (e.g. mergers or acquisitions) (25.3%), followed by decisions about technology (22.9%). As such, distribution of the sample over subject matters is adequate for the purpose of this study as it is consistent with the sampling of previous studies, e.g. Hickson et al. (1986), where decisions about technology and reorganisations also ranked first. Again, similar to these studies, the survey sample covered also strategic decisions about controls, marketing and distribution, new products or services and personnel, as can be seen in the following Table 5.6 and Figure 5.6.
<table>
<thead>
<tr>
<th>Decision type</th>
<th>Responses from questionnaires</th>
<th>Number</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reorganisations</td>
<td>Mergers and acquisitions (M &amp; A), Change management, Post-merger acquisition, Reorganisation of HQ Marketing, Restructuring overall production and sales system, Strategic Priorities for Change Programme, Company acquisition to acquire technology, Relocation of existing support organisation,</td>
<td>21</td>
<td>18.6</td>
<td>25.3</td>
</tr>
<tr>
<td>Technology</td>
<td>Investment in infrastructure (national), Software investment in core platform (global), Implementation global IT test management, Initial automation of logistics chain (national), Implementation of security systems at plant level, ERP system, Future Factory concept, new data centre for IT</td>
<td>19</td>
<td>16.8</td>
<td>22.9</td>
</tr>
<tr>
<td>Marketing</td>
<td>New market channels, New distribution system, New Marketing tools (national), CRM implementation, new SBU strategy to regain market share</td>
<td>14</td>
<td>12.4</td>
<td>16.9</td>
</tr>
<tr>
<td>Controls to monitor performance</td>
<td>Global key performance indicators (KPIs), performance targets for SBUs, Adoption of EFQM Model for business planning, Implementing a unifying values driven culture (national), Definition of performance targets for SBUs, KPIs for global supply chain, SBU Process Control Metrics Six Sigma,</td>
<td>12</td>
<td>10.6</td>
<td>14.5</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Count</td>
<td>Percentage</td>
<td>Total %</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>Personnel</td>
<td>Benefit plans, assessments at corporate level, Global employee development</td>
<td>6</td>
<td>5.3</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>scheme, E-Recruiting solution and international roll-out,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products</td>
<td>New product development, further development of new product,</td>
<td>4</td>
<td>3.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Financing</td>
<td>Investment decision, Investment in rented property, Venture Capital Funding</td>
<td>3</td>
<td>2.7</td>
<td>3.6</td>
</tr>
<tr>
<td>Services</td>
<td>Buying or making decision, new service proposition (global)</td>
<td>2</td>
<td>1.8</td>
<td>2.4</td>
</tr>
<tr>
<td>Location/Buildings</td>
<td>Supply chain setup for a new product (plant selection), New factory</td>
<td>2</td>
<td>1.8</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>ramp-up and closing of old factory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total valid</td>
<td></td>
<td>83</td>
<td>73.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing</td>
<td>No answer</td>
<td>30</td>
<td>26.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>n = 113</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 5.6: Types of Strategic Decisions in Survey Sample
In sum, the sample is adequate for the purpose of this study as it covers the eight decision types identified in the Bradford studies (i.e. technologies, reorganisations, personnel policy, marketing, internal operations/controls, products/services, financing and buildings; Hickson et al., 1986) with similar ranking of occurrence.

In the interviews, five of the eight types of strategic decisions were covered. Not included were decisions about personnel, financing and location. The following table 5.7 gives the types of strategic decisions including a description.
<table>
<thead>
<tr>
<th>Decision type</th>
<th>Description and details</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
</table>
| Controls to monitor performance | Key performance indicators (KPIs) for global organisation:  
1. Preparing and agreeing on enterprise-wide performance indicators as the basis for corporate performance evaluations on a global level. Project was three months until the final proposal was accepted. (#1)  
2. Formulating and implementing KPIs for new integrated system of formerly two companies over 24 months. (#4)  
3. Planning and preparing board decision on KPIs for worldwide supply chain within six months. (#7)  
4. Design and implementation of worldwide performance model for corporate management information system, 14 months duration. (#8) | 4      | 44.45   |
| Services              | Buying or making decisions: The strategic decision was about the introduction of new services and the related specifications in the year 2005. The decision process took six months. | 1      | 11.1    |
| Technology            | Investments in infrastructure: The decision was about the procurement and implementation of a technology platform for one of the top five customers worldwide. It took 14 months, | 1      | 11.1    |
including a break of three months, in the years 2005 and 2006.

<table>
<thead>
<tr>
<th>Reorganisations</th>
<th>Restructuring the IT at headquarters into decentralized units at SBUs, transformation of former corporate IT into service-oriented unit supporting SBUs over 36 months, involving strategic, technical and HR implications</th>
<th>1 (#5)</th>
<th>11.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td>Planning and implementing new distribution system at global level, involving software, personnel, strategic planning and setting up of new distribution centres in different continents</td>
<td>1 (#6)</td>
<td>11.1</td>
</tr>
<tr>
<td>Products</td>
<td>New Product Development from end of 2004 to beginning of 2005, five months duration, with corporate-wide implications (e.g. R&amp;D, production)</td>
<td>1 (#9)</td>
<td>11.1</td>
</tr>
<tr>
<td>Total</td>
<td>Interviews</td>
<td>n = 9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

TABLE 5.7: Types of Strategic Decisions in Interviews

The following Table 5.8 and Figure 5.7 show the wide industry spread of case companies. Concerning the industry sector of the case organisations for the survey, only in five cases the respondents had not answered resulting in five missing values in Table 5.8.

The types of case companies for this study range from 54 manufacturing companies from Electrotechnis and Electronics, the automobile sector, Pharmaceuticals and Textiles, Construction and Food, to 51 service companies (e.g. Utilities, Logistics,
Finance, Mobile Telecom, IT and Software), three consultancies and five missing values.

<table>
<thead>
<tr>
<th>Industry Sectors</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing (Electrotechnics and Electronics)</td>
<td>10</td>
<td>8.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Manufacturing (Automobiles and Trucks)</td>
<td>10</td>
<td>8.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Utilities (Energy and Water)</td>
<td>6</td>
<td>5.3</td>
<td>5.6</td>
</tr>
<tr>
<td>Construction (including Property Development)</td>
<td>4</td>
<td>3.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Manufacturing (Textile Finishing)</td>
<td>2</td>
<td>1.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Food</td>
<td>12</td>
<td>10.6</td>
<td>11.1</td>
</tr>
<tr>
<td>Logistics</td>
<td>4</td>
<td>3.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Finance (Banking, Asset Management)</td>
<td>8</td>
<td>7.1</td>
<td>7.4</td>
</tr>
<tr>
<td>Mobile Telecommunications</td>
<td>7</td>
<td>6.2</td>
<td>6.5</td>
</tr>
<tr>
<td>IT and Software</td>
<td>26</td>
<td>23.0</td>
<td>24.1</td>
</tr>
<tr>
<td>Chemicals and Pharma</td>
<td>16</td>
<td>14.2</td>
<td>14.8</td>
</tr>
<tr>
<td>Consultancy</td>
<td>3</td>
<td>2.7</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>95.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing No answer</td>
<td>5</td>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 5.8: Industry Sectors of Case Companies
The following cross-table 5.8a shows how different types of strategic decisions are distributed among industries. In 31 of the 113 cases this can not be identified because of missing data (see table 5.8b). However, it is not so easy to link the strategic decisions of this study to industry sectors. A possible explanation is that several case companies have various SBUs active in different industries so that a clear categorization is not possible. As some of the strategic decisions were taken at the global level of these organisations they apply to all the SBUs and therefore to several industry sectors. As shown in table 5.8a, the rest of 72.6% are evenly divided over adding to the adequateness of the sample for this study’s purposes.

The following table shows the types of strategic decision mapped to the industry sectors of the case companies.
<table>
<thead>
<tr>
<th>Type of strategic decision</th>
<th>Coding of Industry sector (see F.11 Industry) *</th>
</tr>
</thead>
<tbody>
<tr>
<td>(see B.1 SD Category)</td>
<td>Electronics</td>
</tr>
<tr>
<td>Technology</td>
<td>2</td>
</tr>
<tr>
<td>Reorganizations</td>
<td>0</td>
</tr>
<tr>
<td>Personnel</td>
<td>0</td>
</tr>
<tr>
<td>Marketing</td>
<td>0</td>
</tr>
<tr>
<td>Controls to monitor</td>
<td>6</td>
</tr>
<tr>
<td>performance</td>
<td></td>
</tr>
<tr>
<td>Products</td>
<td>0</td>
</tr>
<tr>
<td>Services</td>
<td>0</td>
</tr>
<tr>
<td>Financing</td>
<td>0</td>
</tr>
<tr>
<td>Location</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>

TABLE 5.8a: Types of Strategic Decisions mapped to Industry sectors

* = Coding of Industries
The industry sectors were coded as following (see F.11 Industry from the questionnaire in the appendix):

- ME = Manufacturing (Electrotechnics and Electronics)
- AU = Manufacturing (Automobiles and Trucks)
- UT = Utilities (Energy and Water)
- CO = Construction (including Property Development)
- MT = Manufacturing (Textile Finishing)
- FD = Food
- LO = Logistics
- FI = Finance (Banking, Asset Management)
- TEL = Mobile Telecommunications
- IT = IT and Software
- CP = Chemicals and Pharma
- CN = Consultancy

It needs to be noted that in Table 5.8a which maps the types of strategic decisions to industry sectors there are 31 missing values (see Table 5.8b). This difference may originate because the case companies are usually located in one industry sector (as indicated by the survey data and confirmed in some cases by annual reports), whereas the strategic decisions may cover in some cases several industry sectors as sometimes their SBUs are active across industries.

<table>
<thead>
<tr>
<th>B.1 SD Category * F.11 Industry</th>
<th>Valid</th>
<th>Missing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Percent</td>
<td>N</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---</td>
<td>---------</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>82</td>
<td>72.6%</td>
<td>31</td>
</tr>
</tbody>
</table>

TABLE 5.8b: SD Categories (Missing values)

Regarding the interviews, the following Table 5.8c maps the types of strategic decisions to the related case organisations and their industry sector:
### Types of strategic decisions in interviews mapped to case organisations

<table>
<thead>
<tr>
<th>Decision type</th>
<th>Case organisation and industry sector</th>
<th>Number (# of case vignette)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls to monitor performance</td>
<td>1. Engineering conglomerate; Energy and Electronics Industry</td>
<td>4 (#1)</td>
<td>44.45%</td>
</tr>
<tr>
<td></td>
<td>2. Multinational engineering conglomerate; Energy and Electronics Industry</td>
<td>(# 4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Multinational food company; Food sector</td>
<td>(# 7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Multinational industry conglomerate; Personal care products and Cosmetics</td>
<td>(# 8)</td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>Multinational Mobile Communication Provider; Mobile Telecommunications</td>
<td>1 (# 2)</td>
<td>11.1%</td>
</tr>
<tr>
<td>Technology</td>
<td>Multinational Software Company; Software and telecommunications</td>
<td>1 (#3)</td>
<td>11.1%</td>
</tr>
<tr>
<td>Reorganisations</td>
<td>Global chemical company; Chemical industry</td>
<td>1 (#5)</td>
<td>11.1%</td>
</tr>
<tr>
<td>Marketing</td>
<td>Manufacturing company; Manufacturing</td>
<td>1 (#6)</td>
<td>11.1%</td>
</tr>
<tr>
<td>Products</td>
<td>High-tech textile company; Chemical industry</td>
<td>1 (#9)</td>
<td>11.1%</td>
</tr>
<tr>
<td>Total</td>
<td>Interviews</td>
<td>n = 9</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

TABLE 5.8c: Strategic Decisions in Interviews mapped to Case Organisations
The mean time of the duration of the SD in the study was 13 months. This is in line with previous research. For example, the Bradford studies found a mean time of 12.4 months (Hickson et al., 1986:270; Miller et al., 1999:47, 50). The range of 1–48 months found by Hickson et al. (1986:270) is also similar to the range found in this study: from one month to four years. This is in line with findings in the literature (see e.g. Van de Ven, 1992; Pettigrew, 1990, 1992, 1997; Johnson et al., 2003; Pye and Pettigrew, 2005). As such, the sample is adequate for the purpose of this study as it covers both short-term as well as mid- and long-term strategic decision processes, and its range and mean are comparable to samples of previous research.

Respondents were also asked about the level of impact of the respective SD. Figure 5.5 shows the results. The majority of SD were regarded as having an impact predominantly at the corporate or worldwide level \( n = 51, 45.1\% \), followed by SDs at the business unit level \( n = 29, 25.7\% \) and SDs at the country level or national markets \( n = 20, 17.7\% \). SDs at plant level \( n = 7, 6.2\% \) and group or team level \( n = 2, 1.8\% \) accounted for another 8% of SDs. As such, the sample is adequate for the purpose of this study as the SDs under investigation cover all organisational levels, while more than two-thirds impact a corporate or business unit dimension, as Figure 5.8 shows.
FIGURE 5.8: The Level of Impact of the Strategic Decisions

The questionnaire also asked respondents how typical the specific decision (see Table 5.9 below) and the associated decision-making process (see Table 5.9a) was for the respective company on a 7-point Likert-type scale ranging from 1 (not typical at all) to 7 (very typical). The mean values for both questions were above the theoretical mean of 4 (SD typical = 4.98, SDMP typical = 5.01).

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly disagree</td>
<td>11</td>
<td>9.7</td>
<td>10.1</td>
<td>10.1</td>
</tr>
<tr>
<td>disagree</td>
<td>7</td>
<td>6.2</td>
<td>6.4</td>
<td>16.5</td>
</tr>
<tr>
<td>disagree a little</td>
<td>7</td>
<td>6.2</td>
<td>6.4</td>
<td>22.9</td>
</tr>
<tr>
<td>undecided</td>
<td>2</td>
<td>1.8</td>
<td>1.8</td>
<td>24.8</td>
</tr>
<tr>
<td>Agree a little</td>
<td>17</td>
<td>15.0</td>
<td>15.6</td>
<td>40.4</td>
</tr>
<tr>
<td>Agree</td>
<td>51</td>
<td>45.1</td>
<td>46.8</td>
<td>87.2</td>
</tr>
<tr>
<td>strongly agree</td>
<td>14</td>
<td>12.4</td>
<td>12.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>109</td>
<td>96.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing System</td>
<td>4</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>113</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 5.9: Typicality of the Strategic Decision
<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Hadley</td>
<td>113</td>
<td>94.7</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Valid System</td>
<td>107</td>
<td>94.7</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Valid</td>
<td>113</td>
<td>94.7</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>system</td>
<td>6</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>strongly disagree</td>
<td>3</td>
<td>2.7</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>disagree</td>
<td>4</td>
<td>3.5</td>
<td>3.7</td>
<td>6.5</td>
</tr>
<tr>
<td>disagree a little</td>
<td>17</td>
<td>15.0</td>
<td>15.9</td>
<td>22.4</td>
</tr>
<tr>
<td>undecided</td>
<td>3</td>
<td>2.7</td>
<td>2.8</td>
<td>25.2</td>
</tr>
<tr>
<td>agree a little</td>
<td>31</td>
<td>27.4</td>
<td>29.0</td>
<td>54.2</td>
</tr>
<tr>
<td>Agree</td>
<td>36</td>
<td>31.9</td>
<td>33.6</td>
<td>87.9</td>
</tr>
<tr>
<td>strongly agree</td>
<td>13</td>
<td>11.5</td>
<td>12.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

TABLE 5.9a: Typicality of the SDMP

In the following sections, the findings are discussed according to the three research questions guiding this study. Hence each of the following three sections discusses, first, the relevance of the hypotheses tests for answering the research questions, and secondly, the respective descriptive findings to enrich the issues under investigation.

5.2 Research question 1: The use of IS in SDMP

5.2.1 Multiple linear regression analyses

On the basis of the conceptual model presented in Chapter 4, a number of hypotheses were presented regarding anticipated relationships regarding IS use in the SDMP and its impact on various aspects of SD performance and a number of moderating influences. To test for the existence of significant relationships, the data collected were subjected to multiple linear regression analyses. Nachmias and Nachmias (1987:422) name, as the objective of regression analysis, ‘to find some algebraic expression by which to represent the functional relationships between the variables’.
Below, Table 5.10 shows the correlations among all the variables of the conceptual model of the present study. The strength of a particular relationship is determined by ‘the spread of the actual observations around the regression line’ (Nachmias and Nachmias, 1987:429) and can range from −1 (perfect negative relationship) to +1 (perfect positive relationship).

Multicollinearity is detected by the variance inflation factor (VIF) scores and the tolerance values of the independent variables. For example, a common suggested cut-off threshold (Hair et al., 2006:230) with a tolerance value of 0.10 corresponds to a multicollinearity of 0.95. This was also confirmed by the Durbin-Watson statistics for the regression models (see tables below), with Durbin-Watson values being acceptable and in a range as recommended, and thus they did not indicate multicollinearity (see section 5.2.2).

Homoscedasticity (or equal variance) (i.e. when the residuals in a regression specification have equal spread) can be a problem for statistical inference in regression models. There are several tests available. For the purposes of the present study, the Goldfeld and Quandt (1965) test was selected. The F value is calculated as follows:

\[ F = \frac{(n_2 \times \text{RSS})}{(n_1 \times \text{RSS})} \]

where \( n_1, n_2 \) = two subsets of the sample, and RSS = residual sum of squares.

Accordingly, the dataset was divided into two subsets. N1 represents the residual sum of squares of the first data subset, and n2 was composed of the residual sum of squares of the second subset. Finally, the residual sum of squares was put into the equation to calculate the F value. Then, F distribution tables were checked with the conclusion that there was no heteroscedasticity at the 0.05 significance level.
All of the (sub-) models are statistically significant, with F values ranging from 3.308 (step 1 in Table 5.14) to 19.860 (step 2 in Table 5.12). This is in line with the critical values for the F statistic of 2.68 for the α (significance) level 0.10, 3.84 for the 0.05 level, and 6.63 for the 0.01 level, as recommended by Hair et al. (2006:392).

An important assumption in multiple regression analysis is that of normality. This was tested by using three subgroups of the dataset with the Shapiro-Wilk Test showing Sig. values much greater than 0.05. Therefore it the data is normally distributed.

The following table 5.10 shows the correlation of all factors of the conceptual model of the present study.
# TABLE 5.10: Correlation Matrix

<table>
<thead>
<tr>
<th>Explanatory variables</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. SDPERCO</td>
<td>3.3968</td>
<td>1.70009</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. SDPERSPE</td>
<td>3.3784</td>
<td>1.74524</td>
<td>.857**</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. SDPEROPT</td>
<td>2.6535</td>
<td>1.51456</td>
<td>.690**</td>
<td>.843**</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. SDPERSKH</td>
<td>5.8565</td>
<td>.87555</td>
<td>.286**</td>
<td>.218*</td>
<td>.104</td>
<td>1.00000</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Independent variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. IS_USE</td>
<td>3.4440</td>
<td>1.02102</td>
<td>.540**</td>
<td>.554**</td>
<td>.438**</td>
<td>-.010</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Moderating factors</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. POWER</td>
<td>3.0602</td>
<td>1.37691</td>
<td>.154</td>
<td>-.024</td>
<td>.018</td>
<td>-.079</td>
<td>.243*</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. INFO_ANARCH</td>
<td>3.1190</td>
<td>1.58345</td>
<td>.215*</td>
<td>-.161</td>
<td>.204*</td>
<td>.053</td>
<td>.008</td>
<td>.512**</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. ENV_MUNI1</td>
<td>4.6420</td>
<td>1.09251</td>
<td>-.089</td>
<td>-.095</td>
<td>-.071</td>
<td>.179</td>
<td>-.473**</td>
<td>.211*</td>
<td>-.136</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. ENV_MUNI2</td>
<td>4.4336</td>
<td>1.10576</td>
<td>-.065</td>
<td>-.043</td>
<td>.002</td>
<td>-.015</td>
<td>-.249**</td>
<td>.262**</td>
<td>.190</td>
<td>.473**</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. ENV_DYN</td>
<td>4.7083</td>
<td>1.28961</td>
<td>.215*</td>
<td>.225*</td>
<td>.131</td>
<td>.378**</td>
<td>-.023</td>
<td>-.214*</td>
<td>-.146</td>
<td>.193*</td>
<td>.067</td>
<td>1.00000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. SD_FORMAL</td>
<td>4.3981</td>
<td>1.33738</td>
<td>.360**</td>
<td>.487**</td>
<td>.558**</td>
<td>.261**</td>
<td>.334**</td>
<td>.057</td>
<td>.010</td>
<td>-.206*</td>
<td>.070</td>
<td>.059</td>
<td>1.00000</td>
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<td></td>
</tr>
<tr>
<td>12. SD_DURATION</td>
<td>12.58</td>
<td>10.284</td>
<td>-.029</td>
<td>.042</td>
<td>.137</td>
<td>.094</td>
<td>-.172</td>
<td>-.055</td>
<td>-.107</td>
<td>-.194*</td>
<td>-.008</td>
<td>-.013</td>
<td>.200*</td>
<td>1.00000</td>
<td></td>
</tr>
<tr>
<td>13. SD_COMPLEX</td>
<td>5.82</td>
<td>1.148</td>
<td>.356**</td>
<td>.345**</td>
<td>.278**</td>
<td>.167</td>
<td>.419**</td>
<td>.157</td>
<td>.114</td>
<td>-.250**</td>
<td>-.273**</td>
<td>-.070</td>
<td>.151</td>
<td>.191*</td>
<td>1.00000</td>
</tr>
</tbody>
</table>

N = 113.  
M = Mean, SD = Standard Deviation  
*p < .05. **p < .01.
As expected, the table shows strong and significant relationships among the four dependent variables used in this study as they were all related to the perception of a dimension of the performance of the SDMP. Although these constructs correlated with one another, the existence of these four dimensions of SD performance and therefore the separation of the four dimensions has been confirmed by CFA.

Only one variable, the control variable of industry (IND), is not shown in the table as it was not statistically significant (see 5.2.5). Although there were a number of statistically significant coefficients among the factors used as independent, moderating or control variables, multicollinearity does not seem to be a concern (see the discussion above at the beginning of 5.2.1).

5.2.2 Computation of four models

Given that the model contains four dimensions of SD performance and thus four dependent variables, four sets of regressions were carried out. The resulting four models each tested the role of the main independent variable as well as the role of moderator and control variables. For each of the dependent variables, three submodels were computed: (step 1) a baseline model that only contained the control variables; (step 2) a model that combined control variables and IS use as independent variable; and (step 3) a full model that also included the moderators. The empirical results are shown in Tables 5.11 to 5.14.

The percentage of explained variance in the respective dependent variable (R² adjusted) ranges from 24.1% (Table 5.14) to 52.6% (Table 5.12) for the full models. The Durbin-Watson statistics are all close to 2, indicating that multicollinearity was not a concern in any of the models. The tables also indicated changes in R² adjusted and F when adding the main independent variable IS_USE to the baseline model in
step 2, and when adding the interaction terms for the moderators in step 3. All changes are statistically significant, highlighting the increase in explanatory power of the added moderating variables.

With reference to Cronbach, it is generally suggested (e.g. Nunnally, 1978) that correlations with alpha scores exceeding a cut off value of 0.7 indicate that the measures are reliable. However, Cortina (1993:103) emphasizes that Cronbach’s ‘alpha is not a panacea’. Nunnally himself ‘did raise the bar for reliability of measures’ (Lance et al., 2006:215), for example from accepting “0.6 or 0.5” (Nunnally, 1967) up to “0.7” (Nunnally, 1978). Sijtsma (2009:114) shows that there is some ‘vagueness’ about the definition; and, albeit a ‘blessing for the assessment of test quality’, alpha is “’only’ a lower bound to the reliability, and not even a realistic one’. Accordingly, several authors (e.g. Peterson, 1994; Lance et al., 2006) reported ‘research using scales that had estimated reliabilities less than .70’ (Lance et al., 2006:205). Cortina (1993:101) highlights that the ‘level of reliability that is adequate depends on the decision that is made with the scale’. Given that coefficient alpha is a ‘test property that is subject to a wide variety of influences such as population hetero-/homogeneity, [and] various sources of error variance’ (Lance et al., 2006:206), the ‘spread of inter-item covariances’ (Sijtsma, 2009:113), and the multidimensional nature of the present study a modest reliability of 0.6 is seen as acceptable as the outcome is meant to be strongly suggestive rather than deterministically conclusive.
Model 1: IS use and cost effectiveness (SD PERCO)

The empirical results of the test of the first model, i.e. the SD PERCO model, are shown in Table 5.11.

<table>
<thead>
<tr>
<th>Control Variables</th>
<th>SD PERCO</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td>Step 3</td>
</tr>
<tr>
<td>SD FORMAL</td>
<td>0.340***</td>
<td>0.210**</td>
<td>0.176*</td>
</tr>
<tr>
<td>SD DURATION</td>
<td>-0.157</td>
<td>-0.034</td>
<td>0.038</td>
</tr>
<tr>
<td>SD COMPLEX</td>
<td>0.333***</td>
<td>0.164†</td>
<td>0.119</td>
</tr>
<tr>
<td>IND</td>
<td>1.208</td>
<td>0.988</td>
<td>0.954</td>
</tr>
</tbody>
</table>

| IS USE            |           |   |
|                   | 0.395***  | 0.081 |

| Interactions      |           |   |
|                   |           |   |
| ISUSE x POWER     |           | 0.032 |
| ISUSE x INFO_ANARCH |           | 0.193* |
| ISUSE x ENV_MUNI1 |           | 0.199† |
| ISUSE x ENV_MUNI2 |           | -0.080 |
| ISUSE x ENV_DYN   |           | 0.299** |

| R²                 | 0.245     | 0.348  | 0.462  |
| R² adjusted        | 0.225     | 0.324  | 0.415  |
| F                  | 11.812*** | 14.429*** | 9.839*** |
| Delta R²           | 0.103     | 0.114  |
| F change           | 17.059*** | 4.367*** |
| Durbin-Watson      | 1.458     | 1.490  | 1.470  |

\(N = 113.\)
\(†p \leq .1. \) *p \leq .05. **p \leq .01. ***p \leq .001.

Table 5.11 shows that there was a statistically significant positive relationship between IS_USE and the cost efficiency of decisions (SD PERCO; 0.395, p \leq .001), lending support for hypothesis 1a (There is a positive relationship between the level of IS use and the cost efficiency associated with strategic decision making).
Model 2: IS use and speed of strategic decision making (SD PERSPE)

The empirical results of the test of the second model, i.e. the SD PERSPE model, are shown in Table 5.12.

<table>
<thead>
<tr>
<th>Control Variables</th>
<th>SD FORMAL</th>
<th>SD DURATION</th>
<th>SD COMPLEX</th>
<th>IND</th>
<th>IS USE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2</td>
<td>Step 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD FORMAL</td>
<td>0.463***</td>
<td>0.333***</td>
<td>0.252**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD DURATION</td>
<td>-0.104</td>
<td>0.019</td>
<td>0.100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD COMPLEX</td>
<td>0.294***</td>
<td>0.126</td>
<td>0.086</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IND</td>
<td>1.441</td>
<td>1.166</td>
<td>1.093</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IS USE**

<table>
<thead>
<tr>
<th>Interactions</th>
<th>IS USE x POWER</th>
<th>IS USE x INFO_ANARCH</th>
<th>IS USE x ENV_MUNI1</th>
<th>IS USE x ENV_MUNI2</th>
<th>IS USE x ENV_DYN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-0.280**</td>
<td>0.253**</td>
<td>0.143</td>
<td>0.037</td>
<td>0.270**</td>
</tr>
</tbody>
</table>

| $R^2$             | 0.322          | 0.424               | 0.564              |     |        |
| $R^2$ adjusted    | 0.303          | 0.402               | 0.526              |     |        |
| $F$               | 17.267***      | 19.860***           | 14.821             |     |        |
| Delta $R^2$       | 0.102          | 0.140               | 0.04               |     |        |
| $F$ change        | 19.059***      | 6.641***            |                   |     |        |
| Durbin-Watson     | 1.275          | 1.346               | 1.544              |     |        |

N=113; †p≤ .1; *p≤ .05, **p≤ .01, ***p≤ .001

TABLE 5.12: Regression analysis 2: Speed of the SDMP (SD PERSPE Model)

Table 5.12 shows a positive coefficient for the relationship between IS_USE and the speed of the SDMP (SD PERSPE; 0.393, p ≤ .001), as expected in hypothesis 1b. Hypothesis 1b is therefore confirmed.
Model 3: IS use and the creation of strategic options (SD PEROPT)

The empirical results of the test of the third model, i.e. the SD PEROPT model, are shown in Table 5.13.

<table>
<thead>
<tr>
<th>Control Variables</th>
<th>SD FORMAL</th>
<th>SD DURATION</th>
<th>SD COMPLEX</th>
<th>IND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>0.527***</td>
<td>0.436***</td>
<td>0.192*</td>
<td>1.097</td>
</tr>
<tr>
<td>Step 2</td>
<td>0.436***</td>
<td>0.081</td>
<td>0.074</td>
<td>1.113</td>
</tr>
<tr>
<td>Step 3</td>
<td>0.363***</td>
<td>0.167*</td>
<td>0.028</td>
<td>1.534</td>
</tr>
</tbody>
</table>

| IS USE            | 0.275**   | 0.117       |

Interactions

| ISUSE x POWER     | -0.176**  |
| ISUSE x INFO_ANARCH | 0.269**   |
| ISUSE x ENV_MUNI1 | 0.150     |
| ISUSE x ENV_MUNI2 | 0.068     |
| ISUSE x ENV_DYN   | 0.173†    |

\[ R^2 \] 0.343 0.393 0.509  
\[ R^2 \text{ adjusted} \] 0.325 0.371 0.466  
\[ F \] 18.990*** 17.488*** 11.859***  
\[ \Delta R^2 \] 0.050 0.116  
\[ F \text{ change} \] 8.869*** 4.857*  
\[ Durbin-Watson \] 1.473 1.535 1.482  

N=113; †p≤ .1; *p≤ .05, **p≤ .01, ***p≤ .001

Table 5.13 shows that there was a statistically significant positive relationship between IS USE and the creation of strategic options (SD PEROPT; 0.275, p ≤ .01) which supports hypothesis 1c.
Model 4: IS use and the satisfaction of stakeholders (SD PERSKH)

The empirical results of the test of the fourth model, i.e. the SD PERSKH model, are shown in Table 5.14.

<table>
<thead>
<tr>
<th>SD PERSKH</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD FORMAL</td>
<td>0.239*</td>
<td>0.309**</td>
<td>0.314***</td>
</tr>
<tr>
<td>SD DURATION</td>
<td>0.013</td>
<td>-0.053</td>
<td>-0.028</td>
</tr>
<tr>
<td>SD COMPLEX</td>
<td>0.124</td>
<td>0.215*</td>
<td>0.189†</td>
</tr>
<tr>
<td>IND</td>
<td>0.134</td>
<td>1.028</td>
<td>1.437</td>
</tr>
<tr>
<td>IS USE</td>
<td></td>
<td>-0.212</td>
<td>-0.541***</td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISUSE x POWER</td>
<td></td>
<td></td>
<td>-0.199†</td>
</tr>
<tr>
<td>ISUSE x INFO_ANARCH</td>
<td></td>
<td></td>
<td>0.029</td>
</tr>
<tr>
<td>ISUSE x ENV_MUNI1</td>
<td></td>
<td></td>
<td>0.184</td>
</tr>
<tr>
<td>ISUSE x ENV_MUNI2</td>
<td></td>
<td></td>
<td>-0.299*</td>
</tr>
<tr>
<td>ISUSE x ENV_DYN</td>
<td></td>
<td></td>
<td>0.505***</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.083</td>
<td>0.113</td>
<td>0.302</td>
</tr>
<tr>
<td>(R^2) adjusted</td>
<td>0.058</td>
<td>0.080</td>
<td>0.241</td>
</tr>
<tr>
<td>(F)</td>
<td>3.308*</td>
<td>3.442*</td>
<td>4.946***</td>
</tr>
<tr>
<td>Delta (R^2)</td>
<td>0.030</td>
<td>0.189</td>
<td></td>
</tr>
<tr>
<td>(F) change</td>
<td>3.609*</td>
<td>5.568***</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>1.402</td>
<td>1.393</td>
<td>1.327</td>
</tr>
</tbody>
</table>

N=113; †p≤ .1; *p≤ .05, **p≤ .01, ***p≤ .001

TABLE 5.14: Regression analysis 4: Stakeholders (SD PERSKH Model)

Table 5.14 shows that there was no statistically significant relationship between IS USE and the satisfaction of stakeholders (SD PERSKH; –0.212), which shows no support for hypothesis 1d.
5.2.3 Descriptive findings on IS use in the SDMP: What processes of information processing are employed in SDMPs?

RQ1: What are the processes of information processing in SDMPs, and what communication media are used to enable these processes?

The first research objective of this study was to discover what processes of information processing are employed in SDMPs and what communication media are used to enable these processes. The findings related to these two questions will be discussed in the following section.

5.2.3.1 IS use in SDMPs: Information processing as a small group

One finding of the survey concerns the people involved as key players in the SDMP, their understanding of how to organize themselves and how this impacts the processes of information processing. The number of people involved in the making of a particular strategic decision and the information processes among them in the making of this decision were typically constrained to a small group. The size of these groups of decision makers ranged from 1 to 29. Exceptionally, in two cases, more than 30 people were reported as having been involved directly with the particular strategic decision. First, one case was described as a 36-month-long reorganisation of a decentralized IT organisation on a worldwide scale, involving all strategic business units and the central service unit in the corporate headquarters; an exceptional second case was a 5-month-long decision making about an ERP implementation.

The finding that in the great majority of cases, very few people are actually involved in the making of a particular strategic decision is confirmed by the strategic literature
(e.g. Daft and Weick, 1984; Ireland et al., 1987; Eisenhardt, 1989). It is seen as common for top managers to work as small groups to address strategic problems. Daft and Weick (1984:285) pinpoint that strategic-level managers are ‘a relatively small group at the top of the organizational hierarchy’. As confirmed by several interviewees [Int #3, #7 and #9], the SDMP groups typically consist of the senior management of an organisation (i.e. CEO, board members and other top executives such as general secretary, head of strategic business units etc.) and their advisor networks (internal and external consultants or experts). ‘Indeed, there are very few involved’, as one interviewee [Int #3] commented.

In other cases, the strategic decision is delegated to other groups, e.g. steering committees, commissions on special topics or project teams. These special task groups then oversee and coordinate the preparation of a formal decision, which is then taken again typically under the authority of the board. The dynamics of a small group facilitate effective information processing.

On one hand, an explanation for working in the form of a small group is the complexity, dynamism and ambiguity of strategic problems, which overwhelm the knowledge of any one person (Mason and Mitroff, 1981; Schweiger et al., 1989). Each participant brings a unique background and knowledge, be it the expertise of a specialist or the experience and skills of a generalist, that contributes unique information or perspectives that may be shared in group discussion or other forms of small group interaction (Mintzberg et al., 1976; Quinn, 1980; Hickson et al., 1986).

On the other hand, the sensitive and critical nature of strategic information makes it necessary to deal with it in a protected manner. For example, limiting access to a small group of members, who are typically obliged to confidentiality and constricted
from sharing any information with outsiders under their working contracts or respective nondisclosure agreements, is therefore an organisational response to deal with and control sensitive information. However, there are other external restrictions that must be complied with, creating a regulatory environment (Edelman and Suchman, 1997:479) in which ‘law actively seeks to control organizational behavior’.

The actions of SDMP group members are subject to strict laws, i.e. legislation by national parliaments or international bodies (e.g. rules and laws on securities of publicly listed companies, information management, auditing and financial reporting). Additionally, other quasigovernmental bodies, such as the stock exchanges where the case organisations are listed (e.g. NYSE, LSE, Frankfurt-based Deutsche Börse or Amsterdam-based Euronext), have in place extensive regulations and codes of conduct on investor protection and insider information relevant for the trade in securities. The consequences of noncompliance can be severe, holding persons or companies legally accountable for either civil or criminal violations with significant penalties. Due to the sensitivity of this issue, the questionnaire included no specific item regarding compliance. However, the issue was mentioned by one interviewee [Int #6] who mentioned that sometimes a ‘hermetically sealed’ type of organizing and communication is preferred. ‘Best is, if you keep some information only in your head. Where else is it secure? Databases are like kind of public places’.

To conclude, it was found that the use of the organisational form of a small group is the best way to protect information processing, monitor and limit access to data and regulate contact to outsiders external to the SDMP. This can be explained based on several rationales: first, by the self-organizing effective information processing of a small team; secondly, both as an organisational response as a consequence of the
sensitive nature of information related to strategic decisions and their decision characteristics (Hickson et al., 1986) and a result of compliance with multiple external requirements, e.g. legal regulation for the protection of investors; and thirdly, by the rational model of decision making due to the presumed top-down approach, where only a small group of strategic decision makers is needed.

Another finding is presented in the next section, namely the embeddedness of the small group of strategic actors within the general information processing structures of their organization (the SDMP as a system within a complex system).

5.2.3.2 IS use in SDMPs: The SDMP as a system embedded within organisational information processing

Both the survey and all of the interviewees have emphasized the importance of direct personal conversation. For example, two managers [Int #1 and #6] mentioned explicitly that the major communication with their staff involved in strategic issues is through face-to-face communication. These communication acts at the microprocess level are realized by dyadic interactions between two or interactions including multiple actors. Concerning intraorganisational stakeholders, trickling down effects from higher hierarchies to lower organisational levels through conversations between superiors and their teams have been reported by the interviewees. For example, one interviewee [Int #5] elaborated on the importance of regular weekly meetings to discuss ongoing strategic issues.

Integration in organisational communication is happening on a microprocess level through dyadic communication (i.e. between two communication partners), e.g. through interaction rituals (Collins, 1981), leading to ‘strategic conversations’ (Westley, 1990). For example, two external top management consultants [Int #3 and
#8] and an internal strategic advisor [Int #1] mentioned the importance of presentations at the board level (e.g. the presentation of strategic alternatives before a formal decision was taken). As one consultant [Int #3] elaborated, ‘the preparation for such an event can be quite nerve-racking. However, these are the highlights of long months of work.’ The atmosphere created and the stories about these events then trickle down into the organisation, e.g. during the implementation phase, when the strategic decision has to be interpreted by middle management when they are being informed by their top executives. As a result, if middle managers as stakeholders of the SDMP are satisfied in their need for organisational efficacy, it can result in positive spirals leading to higher performance of organisational decision making.

5.2.3.3 IS use in SDMPs: The effectiveness of a SDMP group

During the interviews for this study, the interviewees were highly focused and concentrated. This concentrated attitude is matched with a high degree of result orientation; as one of the interviewees [Int #1] stated, ‘In our work, failure is no option.’

However, the largely optimistic results about group information aggregation must be regarded with some scepticism (Bottom et al., 2002:148) as it remains an ‘open question whether or not group judgements are truly corrective for what we know to be the systematically biased information processing of flesh and blood individuals’. For example, Brown (2006) reports on the strategic decision concerning the location for an organisation’s European headquarters, where he was involved as an advisor to the CEO. Despite the initial assurance of the multinational executive that ‘economic criteria were all that he cared about’ (Brown, 2006:182), the final decision was taken against the recommendations of the analyses, i.e. Geneva was chosen instead of the
recommended location of southern Germany, despite additional cost for the organisation. The reason given by Brown (2006) is that Geneva had an international school, to which the CEO wanted to send his kids. One of the interviewees [Int #1] of this study told the author that ‘when bringing together different positions, you have to understand the full picture, all the interests of people involved. When I have to deal with the influential heads of strategic business units [SBUs], I usually meet them in person to know what they need. You know how it is.’ When asked cautiously what he was hinting at, he declined to elaborate further: ‘Sorry, I cannot tell you.’

For a SDMP group to be effective in strategic problem solving, it has to identify, extract and use the potential contributions of its members (Mason and Mitroff, 1981; Schweiger and Sandberg, 1989). However, if a group seeks consensus at the price of neglecting or objecting to open evaluation of assumptions and freely expressing opinions and recommendations (“groupthink”; Janis, 1972), consensus seeking may prevent high-quality SDMP because the lack of dissent (Stanley, 1981:13) can lead to miscalculations and even ‘major strategic and tactical errors’.

In contrast, fragmentary or opposing interests leading to decision-making games (Hickson et al., 1986) or extreme conflict, which has been described as ‘battles in the boardroom’ (Ng and de Cock, 2002:31), can also have a detrimental effect on cooperation and openness. As the recent debate on conflict versus consensus (De Cock and Jeanes, 2006a, 2006b; MacLean, 2006) shows, an approach avoiding the traps of both overly harmonized “groupthink” and extreme self-destructive aggression needs more sustained and systematic inquiry into the political context of information behaviour. However, the ultimate responsibility for ‘nurturing a positive climate of exploration and dialogue’ (Kakabadse et al., 2006:147), in a manner that the CEO and
other board members find acceptable, is seen by Duke (1994) as resting with the chairman of the board of directors. In a study by Kakabadse et al. (2006), maintaining a board environment of openness and response to challenge, particularly in terms of raising ‘sensitivities’, was reported as the shared responsibility of the chairman and the CEO. Taking into account the ‘disarray that arises when decisions are not meaningfully made and/or proactively implemented’, as reported by Kakabadse et al. (2006:147), a top-performing SDMP group at its best is engaged in a fruitful strategic dialogue. And rather than smoothing over differences, the group appreciates instead diversity of freely expressed opinions to reflect on the often highly complex nature of a strategic decision (Bennis, 2007). A manager is quoted by Bennis (2007) as saying, ‘Never leave your desk for more than one hour.’ In a similar vein, one of the interviewees [Int #7] said, ‘You have to know what is happening. In decisive moments things can change every minute.’

5.2.3.4 IS use in SDMPs: Labelling a strategic decision ‘strategic’ or doing projects in a temporary organisation

An interesting finding was that almost all interviewees (8 out of 9) explicitly labelled the work they were involved with as doing projects. Most of them objected, at the beginning of the interview, to the label ‘strategic’ when asked if they were involved with the strategic decision making of the organisation, but when asked about the characteristics of a strategic decision, they reported that they were in fact involved with long-term-oriented decisions, in an uncertain environment and often setting precedents while allocating substantial amounts of resources. Hickson et al. (1986) explained this unawareness of the strategic quality of decisions by insiders. First, decisions are normally screened from outsiders (e.g. investment analysts and business
journalists) who decide what is labelled ‘strategic’. From time to time, some examples are ‘blazoned by the public news media when a scandal is exposed or a board room battle breaks out’ (Hickson et al., 1986:28). As insiders, the people involved with the SDMP perceive it as a month-long project work, while they work on subtasks.

Secondly, from a researcher’s perspective, some of the decisions did not seem to be very significant from a strategic point of view, but ‘when understood from the insider’s perspective they took on a greater significance’ (Hickson et al., 1986:28). For example, one case company introduced an organisation-wide system for key performance indicators (KPIs). This program and the related decisions were of such sensitivity that the related training programs for top managers and the negotiations of annual KPIs between headquarters and the SBUs were classified as confidential. The respondents and the interviewee [Int #1] from this multinational enterprise were only ready to participate on confirmation of confidentiality of the organisation and the program’s name.

The implication of this finding to information processing in SDMP is that people involved in specific strategic decisions were interpreting their roles as being members of a project team working together on a challenging task for a limited time, and accordingly, they used information processes and communication practices typical for project teams, namely of a ‘temporary organization’ (Packendorff, 1995; Lundin and Söderholm, 1995). The survey results of this study show that the perception of ‘working together for a limited time’ is confirmed by the mean time of the duration of a strategic decision, which was 13 months. The findings of the Bradford studies show a similar mean time of 12.4 months (Hickson et al., 1986:270; Miller et al., 1999:47, 50). The same range of 1–48 months for the duration was found both in this study as
well as in the Bradford studies (Hickson et al., 1986:270). Other authors (e.g. Van de Ven, 1992; Pettigrew, 1990, 1992, 1997; Johnson et al., 2003; Pye and Pettigrew, 2005) report similar figures. The interviewees confirmed that they organize their work on strategic decisions as projects (i.e. for a limited time).

On the part of the interviewees, the gradual development of strategic issues (over a period of time of up to four years of the SDMP) was mentioned, until a final decision can be taken. The processes leading to the recognition of issues of strategic importance, e.g. evolving ‘ill-structured’ or ‘messy’ problems (Ackoff, 1979; Mitroff and Mason, 1980; Teece and Winter, 1984), are described by some authors as strategic issue selling (e.g. Dutton and Ashford, 1993; Dutton et al., 2001). Organisational policy issues are ‘sold in the organization’ (Dutton and Ashford, 1993) to get the attention of the UE. On the basis of this concept of strategic issue selling, Dutton et al. (2001:716) describe an organisation as ‘a pluralistic marketplace of ideas in which issues are “sold” via the persuasive efforts of managers and “bought” by top managers who set the firm’s strategic direction’. The driving force are ‘managers at all levels . . . pushing for issues of particular importance to themselves’ (Dutton et al., 2001:716).

At the beginning, such issues are often less elaborate and relatively boundless (Dutton and Ashford, 1993:398–399) and have a less objective basis than technical solutions. The processes by which issues are sold in organisations are accompanied by interpretation and the construction of meaning in organisations (Daft and Weick, 1984). The gradual recognition of an issue (Mylonadis, 1993) can lead to an integration of various approaches to a problem ‘that had previously been seen as unrelated and distant from one another’ (Dutton and Ashford, 1993:399), resulting in a large-scale strategic initiative.
The approach to understanding the group involved in the making of a particular strategic decision as a temporary organisation can be additionally explained as learned behaviour of managers, as project management is a well understood and regularly practiced form of organizing and a trained behaviour of managers. The flexibility of project teams facilitates effective planning of strategy fostered by the ‘limited lifetime of projects’ serving ‘as a general incentive for concern with strategy and a deterrent to a preoccupation with operations’ (Ansoff and Brandenburg, 1971:724). During their career, typically, executives work on various projects with increasing responsibilities, developing a ‘system to promote joint decision making among all functional units and divisions involved in the project’ (Bowen et al., 1994:116).

The next paragraph will discuss findings in relation to the media used in the strategic decision making under investigation.

5.2.4 Descriptive findings on IS use in SDMPs: What communication media are used for information processing?

Respondents described their media choice as a blend of traditional, new and abstract communication media. The frequency of these IS used was reported as parallel and simultaneous, e.g. using phone conversations, email exchanges and meetings (both formal and informal) several times a day. This is supported by research on concomitant use of multiple communication media. According to Daft and Weick (1984), it is influenced by (1) characteristics of the environment; (2) the ways in which decisions are made and actions taken; (3) previous experience of the individuals involved; and (4) the methods used to acquire and process information. This is also in line with the research of Rice and Shook (1990:221), who describe a danger of
evaluating new organisational media only as more efficient substitutes for traditional media with low social presence, when in fact they may fit into, and extend, current patterns of media use. The finding by Rice and Shook (1990) that meetings enabled by electronic communications (i.e. computer conferencing, video conferencing and voice messaging) are not as yet very common is supported by the results of this study.

The statement of one of the interviewees [Int #8] that ‘numbers are useful to back up your arguments – even if they are not looked at in detail’ is related to the managerial use of formal (i.e. typically computer-based) information. In the literature, there are two possible extremes of behaviour described: first, decision makers ignore potential sources of information other than computer-based sources (i.e. they work with a narrow definition of information which collapses data into information, and both into IT; e.g. Mutch, 1999); or secondly, decision makers avoid using formal information at all (e.g. Mintzberg, 1994). In the first case, information processing for managers equates information with being computer based (Mutch, 1999:325). As one respondent in the research of Mutch (1999:325) said, ‘Managing of information is an area that I always associated totally with information technology’. This understanding is reflected by a tradition in the literature (e.g. Snavely and Cooper, 1997; Bundy, 2004) which views computer literacy (Kay, 1992) and information literacy (i.e. ‘to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information’; American Library Association, 1989:1) as synonymous.

Regarding the consequences of the first behaviour in organisational practice, ‘the extent to which . . . IT is seen as being synonymous with information’ can result in difficulties making it harder to ‘incorporate the full range of information’ (Mutch,
1999:325) into the SDMP. The danger of this is to narrow down the definition of information to a digital entity being electronically mediated, stored and manipulated, instead of appreciating the value of the soft information (i.e. intangible and often informal) found to be used by strategic decision makers (e.g. Mintzberg, 1975; Kotter, 1982; El Sawy, 1985), which is hard to capture with a computer-based system (Ackerman, 2000). The preference of IT-based information can result, for example, in the exclusive use of new IT-based search methods, overshadowing the more traditional methods and therefore filtering out potentially important signals as well as neglecting the ‘social processes governing disclosure and cooperation in codification processes [of knowledge]’, which are ‘as necessary as technological capabilities’ (Steinmueller, 2000:361). Secondly, concerning the avoidance of using formal information, Mintzberg (1994:16) insists that ‘a point worth emphasizing, and one emphasized in almost every serious study of managerial work, is that formal information – in other words, information capable of being processed in a computer – does not play a dominant role [in strategic decision making]’. This paradox that formal information, on one hand, is of no dominant relevance, whereas on the other hand, it is used by some managers in a more symbolic way, can be explained by the research of Barden and Petty (2008:489). They have proposed the thoughtfulness heuristic, which holds that the perception that more thought has taken place leads to greater attitude certainty and, regarding the SDMP, can result in proposals being accepted more favourably.

Another finding is that researchers and managers need to understand the ways in which new organisational media can facilitate meetings among higher-level incumbents. For example, several interviewees described how they used new media in
meetings to present complex issues using information visualization (Gershon and Page, 2001). Particularly, presentations (e.g. in front of steering committees or boards of directors) were stated by all the interviewees as being of critical importance.

Concerning the use of new services like SMS and messaging, 29 of the respondents reported using SMS and messaging. The interviewees have an age range between 29 and 75 years. However, the results show no significant difference between IS use of respondents of different ages. This contradicts the argument of Lehman-Wilzig and Cohen-Avigdor (2004:722), who describe the differing use of new media by users of different age groups as ‘cultural–generational’. However, the use of new media by older adults (e.g. Charness and Holley, 2004) was not problematized in this study.

The next section discusses the findings of this study with respect to the four dimensions of SD performance.

5.3 Research question 2: SD performance and the influence of IS use

5.3.1 Results for the hypotheses H1a–H1d

The coefficients for IS_USE (Tables 5.11–5.14) allow for testing hypotheses H1a to H1d. Table 5.11 shows that there was a statistically significant positive relationship between IS_USE and the cost efficiency of decisions (SD PERCO; 0.395, p ≤ .001), lending support for hypothesis 1a. Similar results were found for two of the remaining dependent variables. The coefficient for the relationship between IS_USE and the speed of the SDMP (SD PERSPE; 0.393, p ≤ .001) shown in Table 5.12 is positive, as expected in hypothesis 1b. Hypothesis 1c is also supported as Table 5.13 shows a
statistically significant positive relationship between IS_USE and the creation of strategic options (SD PEROPT; 0.275, p ≤ .01). There is no empirical support for hypothesis 1d, which suggested a positive relationship between IS_USE and the satisfaction of stakeholders. The respective coefficient is not statistically significant (SD PERSKH; −0.212, n.s.; see Table 5.14).

The coefficient reflecting the relationship between IS USE and the dimensions of SD performance is in line with the hypotheses in only one of the full models, which also includes the moderating factors (see Step 3 columns in Tables 5.11–5.14). The expected positive effect of IS_USE on speed was confirmed (SD PERSPE; 0.251, p ≤ 0.05). The coefficients reflecting the influence of ISE_USE on cost efficiency (SD PERCO; Table 5.11) and the creation of strategic options (SD PEROPT; Table 5.13) are still positive, but no longer statistically significant. Although this may be interpreted as a lack of support for the respective hypotheses 1a and 1c, it can also be regarded as evidence of the importance of the moderating variables included in the full model, which will be discussed later. More interesting, however, is the finding with regard to the association between IS USE and the satisfaction of stakeholders (SD PERSKH) shown in Table 5.14. While the respective coefficient was not significant in the model that only included control variables and the main independent variable (step 2), the coefficient in the full model is negative as well as statistically significant and is thus opposite to the one expected in hypothesis H1d (−0.541, p ≤ 0.001). While these results may again be explained by the existence of the moderating factors in the full model, further analysis and discussion of this finding seem warranted and will be provided subsequently.
5.3.2 Discussion

In order to address the second research objective of this study, a four-dimensional construct of SD performance was developed. In the following sections, first, descriptive findings concerning these four dimensions are discussed (see section 5.2.1); and secondly, for those hypotheses related to the four dimensions which are not supported by the survey data, interpretations and potential explanations of the findings are given.

5.3.3 Descriptive findings on SD Performance

5.3.3.1 Effects on cost of the SDMP

Typically, in strategic decision making, there are no objective data available about the direct costs of a particular strategic decision. This is confirmed on the part of the interviewees as all reported that their organisations used no activity-based costing approaches (Kaplan and Anderson, 2004) deployed for SDMPs, i.e. none of them reported their costs on an ongoing basis in a way that reveals both the costs of a particular business activity as well as the time spent on it. An exception was the case of one interviewee [Int #4] in a consulting role working for an hourly rate, and obliged to report the time spent on specific activities.

Concerning a more detailed reporting of the cost of information in the SDMP, it was not possible to find any more detailed information in the annual reports of the organisations (i.e. as far as the organisations were known to the author), nor were the interviewees able to give any subjective estimates. However, judgements about the cost of information processing need to be seen in context, e.g. as one of the
interviewees [Int #2] mentioned, ‘sometimes you get the most valuable information at the price of a dinner invitation’.

There are several explanations for the lack of objective cost data. One rationale refers to the characteristics of strategic decisions, e.g. because of the unique nature of SDMPs, standard measurements cannot be developed. Additionally, some types of strategic decisions are rare as they occur only once in a period of several years, and it is therefore not necessary to arrange for a structured cost measurement approach. Furthermore, because of the sensitivity of the involved strategic issues and the hierarchical position of the involved actors, transparency is not allowed on the part of the organisations, and additionally, executives do not want to be observed. Another explanation is political information behaviour (see section 3.4), i.e. when the SDMP and the related information become politicized, transparency of available data suffers, and details are retained, or even distorted.

Additionally, the documentation of certain costs is required by law to fulfil accounting standards (e.g. the documentation of inventory, income and expenses), for example, operating expenses (OPEX), costs of IT system maintenance, management and support, costs for IT to consolidate and integrate disparate systems and capital expenses (CAPEX). From these data, the average fixed cost of certain budgetary positions can be calculated, e.g. IT systems in general. However, there is no legal requirement to calculate the costs of particular business processes such as strategic decision making.

On the part of the interviewees, improving the productivity of the decision-making process itself was not seen as a priority. All the interviewees mentioned that they had a structured approach in place to deal with strategic decisions. ‘We concentrate on the
development of the business case,’ as one interviewee [Int #7] pointed out. However, the focus is on the content of the strategic decision itself, not on the productivity of the SDMP. This is seen to be the responsibility of specialized units, for example, the IT department (e.g. for maintenance or energy savings initiatives), human resources (e.g. for special training like on video conferencing), procurement (e.g. when to buy new equipment) or the finance department (e.g. controlling costs and expenses).

For example, videoconferencing was reported by interviewees to save direct costs because meetings can be held simultaneously from different remote locations, e.g. saving travel costs. However, it is more difficult to attribute indirect costs, such as the procurement and maintenance of the technical equipment necessary for video conferencing, training of participants and personnel (e.g. technical staff), to one particular meeting.

Meetings are a substantial cost factor in terms of person hours or person days spent by executive-level personnel and advisors, travel costs and so on. Additional time is needed to prepare for these meetings. There are a wide range of powerful ICT (i.e. audio-, video- and text-based conferencing) computer-mediated communication systems that support group communication (e.g. Rice et al., 1984; Desanctis and Gallupe, 1987; Fiol and O'Connor, 2005), available to assist face-to-face or dispersed groups on difficult decision tasks. These ICT that could improve SDMP-related tasks are typically perceived as less appropriate for the kinds of equivocality-reducing tasks implied by meetings. For example, the issue of what participants of meetings could have done otherwise with their time and resources can be expressed in terms of opportunity costs. Additionally, as Hannaway (1987) concludes, more frequent managerial interactions may in fact be a net drain on organisational resources because
they increase the amount, ambiguity and uncertainty of other managers’ tasks, without necessarily improving organisational information processing.

The interviews have demonstrated how stories and narratives are important among top management consultants. For example, one interviewee [Int #2] described how a ‘business dinner culture’ helps him to understand the interests of people involved. ‘You have to be there to find out what is happening. Listening to their stories, what people tell you, you get the picture’.

For example, one of the interviewees [Int #8] answered to the question about lessons learned, ‘We do not have a particular knowledge management system in place. Of course, the reports must be written. But we meet every Friday, all the consultants working with this client, and exchange our experiences of the week. That’s where you learn’.

When seeing strategy making as an organisation-wide phenomenon (e.g. Weick, 1979; Hart, 1992), then the symbolic effects of creating and sustaining a culture of high-quality SDMP on lower-level decision making at group and organisational levels can lead to emerging performance-efficacy spirals (Lindsay et al., 1995). As an interviewee [Int #9] said, ‘What we do in our strategic projects is well observed. Mostly it is very calm, but then at other times there is too much attention and you have to work hard to do your job.’

In summary, high-quality SDMP involves the allocation of substantial resources in terms of people, IT and administration. An effective approach to producing high-quality decision making will economize on opportunity costs of otherwise less functional organisation-wide decision making. On the other hand, dysfunctional
SDMP may bring about significant financial and legal consequences, e.g. non-compliance with regulation and associated penalties.

5.3.3.2 Effects on speed of the SDMP

The measurement approach for the quantitative analysis based on the survey regarding this second concept related to the speed of the decision making was (SD PERSPE, \( \alpha = 0.808 \)) was supported through confirmatory factor analysis. As the survey results show, 69.9% of respondents (79 out of 113) disagreed with the statement that the decision was taken under time pressure, leading to negative effects on the quality of decision making. Fifteen percent \((n = 17)\) of respondents agreed a little, while only 8.8% \((n = 10)\) agreed.

On the part of the interviewees, it was reported that they had to deal with a high degree of pressure in SDMPs, i.e. in terms of time available and deadlines to keep (e.g. end of the financial year, meeting dates of the board of directors etc.). However, none of them has described any problems arising from lack of time. One interviewee [Int #5] described his perception of time critical situations as ‘There is this window of opportunity, and you have to feel how fast you have to go. But with big decisions, you get the time that you need.’

The challenge for strategic decision makers and their advisors of making high-quality decisions in limited time is seen, for example, in ‘dealing with huge amounts of information to help in reaching good decisions, and the necessity to share vast quantities of information at unprecedented speeds’ (Roberts and Tsoukias, 2008:1). Bourgeois and Eisenhardt (1988) have studied the link between speed of decision making and performance. Eisenhardt (1989:543) found that ‘fast decision makers use
more, not less, information than do slow decision makers’. This finding is confirmed by Ahituv et al. (1998), who also found completeness of information an important factor in a simulation of high-speed decision making at top levels of an organisation.

The variety in the duration of SDMPs (from 1 up to 48 months) may be seen in connection with the finding that time pressure was not perceived as a factor decreasing the quality of decision making. On the contrary, none of the interviewees saw time pressure as a problem in the SDMP, although they reported phases of altered stress. However, the professional attitude and high self-expectations of executives and top management consultants may lead to coping strategies with pressure that would be seen in other contexts as unbearable, which is supported by research on burnout phenomena (e.g. Levinson, 1996) of managers and management consultants.

With regard to coping strategies in the SDMP, during the interviews, several interviewees expressed their opinions about their feeling of responsibility being involved in SDMPs. For example, when asked if he had any memories of a situation where the SDMP failed, one of the interviewed consultants [Int #1] responded, ‘Failure was never an option.’ Bandura (1977:193) makes a clear link between self-efficacy and coping strategies: ‘The strength of people’s convictions in their own effectiveness is likely to affect whether they will even try to cope with given situations’. He goes on to note that feelings of self-efficacy will affect how long someone persists in an action and how much effort he or she puts into the action. Bandura (1977) notes that efficacy expectations can be based on four major sources of information: performance accomplishments (i.e. carrying out the actions oneself); vicarious experience (or learning from others); verbal persuasion (which may include
self-instruction); and physiological states, particularly emotional arousal (Wilson, 1997:563).

Yet an organisation may need a substantial, irreversible decision in a matter of hours in response to a takeover attempt, a product-tampering episode or another crisis. A delay in decision making can determine the difference between profitable harvesting of benefits and an unprofitable investment. Time is also a financially critical organisational resource when it represents the attention of top management, which carries a high opportunity cost (Payne et al., 1996).

However, speed is in a trade-off relation with the depth of evaluation of options. Recursive evaluation cycles may be very time consuming. Dutton et al. (1983:312) describe such a situation: ‘For example, an issue which begins as a major market share problem may be defined as a technological opportunity and later redefined as a market penetration problem. Such revisions in definition and interpretation reflect the fluidity of participants and available data during SID. The influx of data and participants stimulates the revision of judgements reinforcing the recursive character of the process’.

In summary, speed in the SDMP (‘how fast’) can be an important or even decisive criterion in time critical decision making situations to meet deadlines or exploit windows of opportunity, but so is the question of strategic alternative options (‘what else’). The latter question is discussed in the next section.

5.3.3.3 Creation of alternatives during the SDMP

On part of the interviewees, it was mentioned by several interviewees that there was enough time to search for alternatives and that time constraints were not creating problems for decision quality. Similarly, Eisenhardt (1989:543) reports that fast
decision makers ‘develop more, not fewer, alternatives’. Her findings point to a number of reasons. For example, organisations with a high speed of SDMPs use experienced counsellors in a two-tier approach complementary to the managing board. Another reason for the increase of the speed of the SDMP is the simultaneous consideration of alternatives. Concerning decision alternatives, Roca et al. (2006:175) emphasize the need to account for the frames of reference under which evaluations of probabilistic information take place to understand the phenomenon of ambiguity avoidance. This is, for example, relevant in risk management related to strategic decisions.

Risk assessment benefits from different people contributing with insights from differing perspectives. However, new strategic options and decision alternatives, and considering them for selection, are costly to the organisation. Through a structured discovery process (Nutt, 2008) and concentrating the ‘variation of new forms of the units of selection on a single objective function (the strategic intent), this cost can be reduced. This is the case because much “unnecessary” variation can be weeded out at an early stage by the sources of variation themselves’ (Lovas and Ghoshal, 2000:886). The attitude of ‘uncertainty avoidance’ (Cyert and March, 1963) implies that small steps or inaction (e.g. ‘nondecisions’; Bachrach and Baratz, 1970; McCalla-Chen, 2000) are preferred in comparison to ‘bold strokes’ (Hickson et al., 1986:11), and that the search for alternatives is a ‘simple-minded’ procedure (Cyert and March, 1963) as only those alternatives are considered which would not endanger the status quo, i.e. the more simple alternatives or inaction (Ritov and Baron, 1992:50), as it is supposed that simplicity facilitates more control over the consequences of the strategic decision.
Another explanation why strategic decision makers are searching for alternatives is
given by Bowman and Hurry (1993:776), who describe the view to ‘keep options
open’ in situations that involve an unforeseeable future. ‘Managers will generally be
motivated to hold options under conditions of high uncertainty, and they will be
motivated to strike options under low uncertainty’. In early research, this attitude of
‘muddling through’ is defined by Lindblom (1959) as progressing as safely as
possible.

An alternative explanation of status quo bias could be that changing the status quo
requires an act, while keeping the status quo requires only an omission – a failure to
act (Ritov and Baron, 1992:50). This corresponds with the review of Schwenk
(1995:478) who emphasizes that commitment to the status quo is higher in ‘companies
with better past performance’.

Concerning the dimension of the performance construct related to the generation of
strategic options during the decision-making process (SD PEROPT, α = 0.734), the
statements included in the questionnaires were as follows: (1) the number of newly
generated options during the process was larger than expected and (2) the number of
newly generated options was higher than in similar, earlier decisions.

5.3.3.4 Satisfaction of stakeholders

Stakeholders of the SDMP are the ones who judge, ultimately, the success of strategic
decisions. On the part of the interviewees, several [Int #1, #5 and #7] have expressed
their high awareness of stakeholders’ presence. For example, one interviewee [Int #5]
said that ‘being observed all the time’ and the need to be able ‘to answer at periodic
meetings with analysts’, can create ‘quite some repercussions’. Stakeholder
management (e.g. Schneider, 2002) was described by one interviewee [Int #1] as
‘negotiating the price for cooperation’ or as ‘it is really important to know what the others need to achieve their performance goals’.

Contacts with external information networks, e.g. financial analysts and business media, are a strategic asset of CEOs and directors (Westphal and Clement, 2008) as they facilitate communication with a wider public.

Stories can not only make messages more memorable than explicit data-based information, but also generate organisational commitment (Martin, 1980). One interviewee [Int #8] mentioned that ‘you can not predict all the details. But good anticipation and talking to people helps. Sometimes there is a build up of expectation, and then you have to find a way to get on with the story’. The power of stories in forming and perpetuating corporate culture is supported by the work of Mitroff and Kilmann (1975) on organisational stories and myths as well as the more extensive findings of Martin and her co-authors (1979). Mitroff and Kilmann (1975:20) found that ‘ideal stories’ told by managers about their ideal organisation reveal implicit images and personality types. Rhodes and Brown (2005:167) highlight that a ‘story, unlike a chronology – a list of events in date order –‘ is open to interpretation and sensemaking (Weick et al., 2005). Other than explicit data-based information, stories as ‘narrative sensemaking’ (Rhodes and Brown, 2005:167) are a way to reflect the ‘multitude of subject positions available’ in SDMPs. Stories of high-quality decision making can be told in strategic conversations (i.e. ‘verbal interactions within superior-subordinate dyads focusing on strategic generalities’; Westley, 1990:337-338).

Concerning intraorganisational stakeholders, trickling-down effects from higher to lower organisational levels through ‘strategic leadership patterns’ (Shrivastava and Nachman, 1989) can be observed. The importance of personal contacts in face-to-face
conversations across the organisation was confirmed by both the survey and the interviews. Hence, high-quality decision making can guide and inspire lower-level decision making through the interpretation and sharing of values by decision makers at lower levels in ‘strategic conversations’ (Chermack et al., 2007), and finally, transpiring the whole organisation creating an ‘overall sense of purpose and direction’ (Shrivastava and Nachman, 1989:51). The perceived strength of a corporate culture and the quality of an organisation’s decision-making processes can lead to stimulating and inspiring effects on stakeholders and their sustained satisfaction. Another advantage can be the stimulation to report information up the hierarchy and higher generalized attention to strategically relevant matters in the organisation.

5.3.4  Hypothesis test for hypothesis 1d
Hypothesis 1 was mainly supported. Stakeholder satisfaction with the SDMP was measured using two items, reflecting the general satisfaction with the process and the satisfaction with the received information (SD PERSKH, α = 0.628).

However, hypothesis 1d (H1d: There is a positive relationship between the level of IS use and stakeholder satisfaction with SDMPs; see Section 4.2.5) was not supported. A possible reason could be that new regulation was introduced in the year 2000 obliging organisations to disclose material information to stakeholders. For example in 2000, the Regulation Fair Disclosure (Reg FD) became effective which was approved by the Securities and Exchange Commission (SEC) and is binding for public companies registered with U.S. stock exchanges, e.g. NYSE. Similar regulation is effective for all stock exchanges where the case companies of this study are registered (i.e. LSE, Deutsche Börse and EuroNext). This affects the strategic decisions under investigation
in this study as organisations with material information to disclose must now do so through ad hoc announcements to all investors, e.g. in a press release or conference call.

Furthermore, the selective disclosure of material information to financial professionals (e.g. financial analysts) is against industry-wide standards. For example, the Global Investment Performance Standards (GIPS; CFA Institute, 2008:1) remind participating firms that ‘under the GIPS standards, they must comply with all applicable laws and regulations’. This reduces the asymmetry of information (which otherwise would disadvantage e.g. small investors without access to privileged information). Usually, such ad hoc announcements about the performance of organizational investments are covered and commented in the business press creating open access for all interested parties (e.g. investors, customers and employees etc.). As one interviewee [Int #5] put it: ‘I have to mention that we prepare and send out all the necessary information to shareholders. In addition, meetings with investment analysts take place’.

Another aspect of the heterogeneous effects of IS use in the SDMP is that some groups of activist stakeholders may deploy confrontational tactics, escalating conflicts with the organisation. For example, van Huijstee and Glasbergen (2010:592) report that 'collaborative interaction with businesses' is not always the preferred strategy of stakeholders trying to influence the organization. They found that some NGOs take a more confrontational approach and prefer ‘working together with other stakeholders’ instead of the organisation, and that they adapt their tactics over time.

In sum, new regulation on fair disclosure, obliging organisations to make material information public within 24 hours, may explain that stakeholders are overall satisfied
with the information available about strategic decisions (e.g. in the business media and on the internet through webcasting technology) and that additional use of IS has no influence on the level of satisfaction of stakeholders.

5.4 Research question 3: Moderators

5.4.1 Results for moderating effects (H2–H4)

Tables 5.11 to 5.14 also contain the results for the remaining hypotheses 2, 3 and 4. With regard to hypothesis 2, it was expected that politicality has a positive influence on the strength of the relationship between IS USE and SD performance. An exploratory factor analysis (EFA) of the measurements for politicality based on items from the literature showed that there were two distinct factors of which the first one was labelled POWER and the second INFO_ANARCH. POWER was interpreted as the power facet of information politics; whereas INFO_ANARCH was interpreted as a 'natural, and even sensible, response to extreme uncertainty' (Moch and Pondy, 1977:352), i.e. a spontaneous way of information behaviour of strategic decision makers under high pressure and uncertainty to increase the efficiency of decision making. Thus both variables were entered as moderating variables into the regression analyses. As these constructs measure different facets of the politicality expected to influence the relationships between IS USE and SD performance, the regression models are expected to show negative coefficients for both variables.

In the case of POWER, which reflected the power facet of information politics, the results lend support for only two of the four dimensions of SD performance. In Table 5.11, showing the results for the models with cost efficiency (SD PERCO) as
dependent variable, the coefficient for the interaction term (reflecting the moderating influence of POWER) is not statistically significant (0.032, n.s.). In the model that uses stakeholder satisfaction as dependent variable, the coefficient for the influence of the POWER variable on the relationship between IS USE and the satisfaction of stakeholders is negative (SD PERSKH; −0.199, p ≤ 0.1; see Table 5.14), although only at a significance level of 10%. For the models with speed (SD PERSPE; see Table 5.12) and the creation of strategic options (SD PEROPT; see Table 5.13) as dependent variables, the coefficients reflecting the influence of POWER on the relationship between IS_USE and SD performance dimensions are negative and statistically significant and thus in line with hypothesis 2.

With regard to the second facet of politicality, which was labelled information anarchy (INFO_ANARCH), the results show that the expected negative influence on the relationship between IS USE and the four dimensions of SD performance does not seem to exist in the sample; rather, three of the four coefficients are statistically significant and positive and thus contrary to hypothesis 2. More specifically, there seems to be a positive influence of INFO_ANARCH on the relationship between IS USE and cost efficiency (SD PERCO; 0.193, p ≤ .05; see Table 5.11), between IS USE and the speed of the SDMP (SD PERSPE; 0.253, p ≤ .01; see Table 5.12) and between IS USE and the creation of strategic options (SD PEROPT; 0.269, p ≤ .01; see Table 5.13). There was a nonsignificant influence of INFO_ANARCH on the relationship between IS USE and the satisfaction of stakeholders (SD PERSKH; 0.029, n.s.; see Table 5.14).

In hypothesis 3, environmental munificence was expected to have a positive effect on the strength of the relationship between IS USE and all dimensions of SD
performance. The analyses carried out when constructing the measurements for environmental munificence led to the identification of two distinct constructs, which were entered separately into the models.

A first facet of environmental munificence reflected the market environment (ENV_MUNI1). The findings show that this variable was positive in all the models, in line with hypothesis 3, but only statistically significant on the 10% level in the model using cost efficiency as dependent variable (SD PERCO; see Table 5.11). There is thus no clear-cut empirical support for hypothesis 3 when this facet of environmental munificence is used.

With regard to the second facet of environmental munificence that related to governmental support (ENV_MUNI2), the results show that there was a statistically significant influence only on the relationship between IS USE and the satisfaction of stakeholders (SD PERSKH; -0.299, p ≤ .05; see Table 5.14). Surprisingly, however, this influence was negative and thus not in line with hypothesis 3, in which a positive effect of environmental munificence was predicted.

The final hypothesis 4 suggested a negative influence of the degree of environmental dynamics on the relationship between IS USE and SD performance. The empirical results show that – contrary to this expected influence – the degree of environmental dynamics has a positive influence on the strength of IS USE at the 1% significance level for three of the four dimensions of SD performance and at the 10% significance level for the creation of strategic options as dependent variable (SD PEROPT; Table 5.13). The hypothesis regarding environmental dynamics is thus not supported by the empirical findings.
RQ3: To what extent is this relationship affected by contextual characteristics of the environment of the specific decision-making process?

The third research objective of this study focuses on the contextual characteristics of the environment of specific SDMPs, with the next section addressing political information behaviour, while section 5.4.3 looks at environmental factors.

5.4.2 Political information behaviour (politicality) (hypothesis 2)

In Chapter 5 the following hypothesis is tested:

**Hypothesis 2:** The degree of politicality, i.e. political information behaviour, is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.

With regard to this second hypothesis concerning the influence of politicality, the results are not as straightforward as expected. Using factor analysis, the existence of factors was tested, leading to a two-factor solution. A first factor, labelled ‘power influence’ (POLITICS → POWER), corresponds to measures suggested for the political behaviour construct in literature (e.g. Wildavsky, 1983; Mintzberg, 1994; Jacobides and Croson, 2001; Jaspersen et al., 2002). It was measured using two items reflecting the perceived role of power in the decision-making process. These items were (1) D.23 about special influence originating from special expertise leading to negative effects, and (2) D.24 asking about decision-makers which were primarily concerned with their own goals instead of the goals of the organisation. A second factor identified included two items D.17 and D.18, reflecting unauthorized self-organisation and the rigidity of information processing. This was named information
anarchy. Both constructs showed acceptable levels of reliability (POWER, $\alpha = 0.681$; INFO_ANARCH, $\alpha = 0.842$).

To put information anarchy into the context of existing research, literature and concepts, information anarchy – as well as information politics in general – can be seen as a balancing factor for the concept of procedural rationality that plays a central role in the organisational decision-making literature (Dean and Sharfman, 1993a, 1993b, 1996:372). Procedural rationality is defined as the extent to which the decision process involves the collection of information in making the choice (Dean and Sharfman, 1996:372). The term procedural is used to focus on the process of SDMP. Item to total correlations were computed. Four items were eliminated because of their low correlations. The politics variable was then recomputed using the remaining 20 items, with item to total correlations ranging from 0.32 to 0.88 and having a mean of 0.61. This instrument was deemed sufficiently reliable for the purpose of testing hypotheses.

The findings of this study show that two different facets of politicality (labelled POWER and INFO_ANARCH) have a moderating effect on the relationship between IS use and some aspects of SD performance. While the first facet of politicality, reflecting the power facet of information politics (i.e. POWER), provided some support for the hypothesis, the results with regard to the second facet of politicality, i.e. information anarchy, were contrary to the predictions. While two of the respective coefficients were negative, in line with expectations, the findings show that the moderating effect concerning the models with SD PERCO, i.e. cost effectiveness, and SD PERSKH, i.e. stakeholder satisfaction, as dependent variables were not statistically significant. The four dimensions of SD performance are reflected in the
four regression models (SD PERCO, SD PERSPE, SD PEROPT and SD PERSKH; see Chapter 5). In particular, for the models with speed (SD PERSPE) and creation of strategic options (SD PEROPT) as dependent variables, the coefficients reflecting the influence of POWER on the relationship between IS USE and the respective performance dimensions are negative and statistically significant and thus in line with hypothesis 2. The moderating effect of the POWER variable on the relationship between IS USE and the creation of strategic options (SD PEROPT) was weaker, i.e. at a significance level of 10%, than compared to speed (SD PERSPE). The weakening effect on the creation of strategic options could be interpreted in that actors driven by political interests are attempting to influence the SDMP in a way that strategic decisions are taken that benefit their position (e.g. in terms of resource allocation or further expanded influence) and hence have no interest in allowing the decision-making process to open up to create more options than those they can control. In contrast, the scope of decisions becomes wider and the number of strategic options increases as time progresses. Consequently, strategic decision makers become more varied and harder to influence a certain direction. Apparently, politically motivated actors have an interest to gain the advantages from the strategic decisions earlier rather than later.

A possible explanation might be found in literature on politics in organisations (see e.g. Pfeffer, 1981; Eisenhardt and Bourgeois, 1988). These authors argue that political interests may influence the SDMP under the conditions of a politicized organisational environment (i.e. characterized by open or hidden conflict). As such, a nonsignificant or even positive influence may be likely under the conditions of unstable environments mentioned by Eisenhardt and Bourgeois (1988) and others.
The importance of the political dimension as a contextual factor was confirmed by a number of the managers interviewed for this study. One top management consultant [Int #1], for example, suggested that politics is paramount in strategic decision making: ‘You have to understand the interests of all involved. And you have to take them seriously. Only by listening and negotiating with them [in his case, executives responsible for strategic business units] can you get their commitment. Otherwise, there is no chance for implementation’. Additionally, a manager [Int #2] explained that the best way to understand the political interests involved was ‘to work on the issues through business lunches and dinners. That’s my solution to focused communication: to meet on a one-to-one basis’. Access to information can be achieved through formal channels (e.g. formal written reports or exchanges at formal meetings) in formal networks, but also through the informal networks of the organisation (Van Emmerik et al., 2006). Based on anecdotal evidence, Josefowitz (1983) describes the places where information is shared in an informal way, e.g. during coffee breaks, in bathrooms, in car parks, or after work over a drink. She contends that informal networks are used to prepare or actually make decisions and to confirm deals. This creates the question of whether real decisions are made in the boardroom, or instead, if they are only ratified after they have been prepared in informal networks. Carpenter and Westphal (2001:639) report, in their review of the governance literature, that there is ‘considerable variance in the degree to which directors make an actual impact on strategic decision making, with some boards unable to monitor or advise management effectively’.

On the part of one interviewee [Int #3], a case was reported where strong internal opposition to an envisaged strategic solution was blocking any progress. The
interviewee, an external consultant to the case company’s board, said that to get their proposal through, correct timing was essential. They were given a hint by their boss that executives on the board of the organisation were in favour of the strategic solution prepared by the consultancy, although senior management resisted the idea. Time played for them as the opposing head of the steering committee, who oversaw the decision making, was working on other time-consuming projects, and he did not have the time required to work out an alternative plan. So the consultants bided their time and waited. Finally, the head of the steering committee was asked to present a promising solution at the next board meeting and shared his concerns with the consultants, and they agreed to help prepare a joint business case based on the solution promoted by the consulting team. Several authors (e.g. Allison, 1969; Crozier and Friedberg, 1980; March, 1981) have described such decision-making games. For example, Hickson et al. (1986:9) contends that an organisation ‘can be regarded as a collection of [decision-making] games’, an ‘ensemble des jeux’ (Crozier and Friedberg, 1980). Keen (1981) presents as his central argument ‘that information systems development is political as well as, sometimes far more so than, technical in nature’ (Keen, 1981:31). Hickson et al. (1986:9) report that strategic topics are usually ‘a particular crystallization of long-standing deeper and wider issues’. This is supported by this study’s survey as many decisions were taking up to four years, setting precedents for other decisions to come.

With regard to the second facet of politicality, which was labelled information anarchy (INFO_ANARCH), the results show that the expected negative influence on the relationship between IS USE and the four dimensions of SD performance does not seem to exist in the sample; rather, three of the four coefficients are statistically
significant and positive and thus contrary to hypothesis 2. More specifically, there seems to be a positive influence of INFO_ANARCH on the relationships between IS USE and cost effectiveness (SD PERCO; 0.193, p ≤ 0.05; see Table 5.11), between IS USE and speed (SD PERSPE; 0.253, p ≤ 0.01; see Table 5.12) and between IS USE and the creation of strategic options (SD PEROPT; 0.269, p ≤ .01; see Table 5.13). There was a nonsignificant influence of INFO_ANARCH on the relationships between IS USE and the satisfaction of stakeholders (SD Perskh; 0.029, n.s.; see Table 5.14).

On the part of the interviewees, there seems to prevail a high awareness for the political dimension of decision making and its importance for the smooth functioning of the SDMP, e.g. by using non-decision making (Bachrach and Baratz, 1970), i.e. tactics to delay decision making or using non-decision making (Bachrach and Baratz, 1970) by deliberately concealing information to prevent the pursuit of issues (McCalla-Chen, 2000:34). For example, one interviewee [Int #3], an external top management consultant, had to analyse the business processes of a technical unit to collect information for a strategic decision about the procurement of an ERP system on a worldwide level. To the embarrassment of the responsible company director, he found that the business processes were not fully documented and partly nonexistent. By delaying the decision process and concealing this information, his team developed and documented the needed processes with the help of the responsible company director. ‘Basically, we had to do his [the company director’s] homework; otherwise we would have lost a big contract. We could not afford that’. In the meantime, the consulting team avoided reporting and decision making about the analysed processes until the procurement of the ERP software had become politically wanted by the CEO.
as it helped to provide the organisation with some features required by the industry regulatory authorities.

A possible explanation of these findings is to understand information anarchy as 'informal behaviour' (Drory and Romm, 1990:1141, 1142) to increase the efficiency of decision making for strategic decision makers under high pressure and uncertainty and to gain additional freedom for better resource utilization. The findings of empirical research (e.g. Olsen, 1976; Levitt and Nass, 1989) suggest that some organisations can be accurately characterized as organized anarchies. This is supported by studies applying the garbage can model to the public sector, primarily from government and education (e.g. March and Olsen, 1976) or military organisations (March and Weissinger-Baylon, 1986). The result orientation with respect to the success of the SDMP could well accompany a rational approach, resulting in a high degree of rationality in the SDMP. However, there are a number of possible explanations and interpretations for the contrary results for the effect of information anarchy.

This counterintuitive finding seems to find some support in recent research by Mueller et al. (2007). Using survey data from top management teams in 42 organisations, Mueller et al. (2007) found that in both high- and low-dynamism environments, the instrumental use of information in decision processes was positively linked with organisational performance. In dynamic environments, while analyses for symbolic and control purposes were positively associated with performance, analysis for persuasion was negatively associated with performance.

A first explanation, based on Chenhall and Morris (1995), could be that information anarchy has a number of benefits that are so far not fully recognized in existing research. For example, Chenhall and Morris (1995) found that a more entrepreneurial
strategic mode has a positive impact on combined effects of communication processes and decision-relevant performance information. In contrast, the interaction was less significant for organisations with a more conservative strategic mode. While some authors (e.g. Cohen et al., 1972; Astley et al., 1982; Hart, 1992) have discussed a number of benefits of information anarchy in the SDMP, these suggestions remain largely theoretical. For example, Astley et al. (1982:359) suggest that ‘a particular solution may exist before a specific problem arises, and may then be attached to it as it comes along, however oddly in a logical sense’. So far, there has been little empirical investigation of this aspect of ‘organized anarchy’ (Cohen et al., 1972), and interesting questions remain: for instance do high professionalism and morale lead to an ambition for success by any means? In this sense, this study’s findings contribute to the ongoing research in this area.

A second explanation for, at first sight, irrational information behaviour, e.g. bypassing ‘official’ systems and information channels by avoiding storing strategically important information in the organisation’s databases, is the vulnerability of information processes on the strategic level. One interviewee [Int #1] stated that ‘sometimes you are dealing with information which in the wrong hands can cause serious harm. I favour direct word compared to digital data’. Information at the strategic level is potentially of high value for competitors, foreign government agencies, analysts of investment funds and also insiders such as main shareholders. Computer-based information can be transferred within seconds via Internet connections or other means to locations worldwide (Straub and Welke, 1998). Perrow (1986) offers several scenarios to explain the reasons for these activities: (1) firms may conspire with suppliers or customers to undercut competitors; (2) information
and knowledge about new technologies and product innovations may be used by competitors, through, for instance, the patent system, to gain control of the related intellectual property, or in some cases perhaps restrict their development to increase market control and thus size; and (3) information and knowledge gained through illegal means can reduce the cost of entry for potential competitors to markets where there is the attraction of large profits, especially in markets with larger and fewer firms: this is the case with this study’s case companies. The types of sensitive information that can be obtained by means of economic espionage range from knowledge about R&D (e.g. innovative technologies creating competitive advantage) to information about strategic decision makers and their opinions on certain issues (e.g. to find out about coalitions and potential results of the SDMP on certain topics affecting a competitor). Indirect strategic benefits from spying (Porteous, 1993; Whitney and Gaisford, 1996) go beyond the obvious direct benefits from access to valuable economic secrets. In some cases, certain countries are seen to use economic espionage as a form of ‘strategic trade policy’ (Whitney and Gaisford, 1996:627), which may improve a country’s actual or future competitive position.

5.4.3 Environmental factors

5.4.3.1 Environmental munificence (hypothesis 3)

Chapter 5 presents the test for the following hypothesis H3:

**Hypothesis 3**: The degree of environmental munificence is positively associated with the strength of the relationships between IS use and all dimensions of SD performance.
Concerning the first environmental factor, the third hypothesis suggests that the degree of environmental munificence is positively associated with the strength of the relationships between IS use and all dimensions of SD performance. The results of this study concerning this hypothesis are ambiguous. As discussed above, exploratory factor analysis (EFA) was carried out, with the result that two factors of environmental munificence were identified: First, a factor labeled *environmental munificence 1* which reflects the munificence of the markets of the organisation; and, second, a factor labeled *environmental munificence 2* reflecting the munificence of government(s). Reliability analysis, however, showed unacceptably low levels of Cronbach’s alpha. Therefore exploratory factor analysis (EFA) was carried out on the items suggested by Elbanna and Child (2007), in combination with other items relating to the environment. The EFA showed a two-factor solution, which was interpreted as follows. A first factor was called environmental munificence 1 (market; ENV_MUNI1; F.14, F.15, F.22) and reflected the munificence of markets. It comprised three items: first, the ease to predict actions of competitors; secondly, the ease to forecast consumer tastes in the industry; and thirdly, the existence of profitable opportunities in the organisation’s markets (α = 0.662). The second factor, labelled environmental munificence 2 (government; ENV_MUNI2; F.19, F.20, F.22), also comprised three items, which reflected government attitudes toward and support of the firm’s industry at the time of the strategic decision (α = 0.61).

The results of the data analysis regarding environmental munificence 1 (ENV_MUNI1) were statistically not significant except step 3 in the model for cost effectiveness of the SDMP (SD PERCO; Table 5.11). As expected, the influence on the relationship between IS use and the cost effectiveness dimension was positive,
albeit weak and only at the 10 % significance level (0.199, p ≤ 0.1; see Table 5.11).
This positive influence may be explained by more degrees of freedom for strategic
decision makers in decision situations characterised by a greater degree of
environmental munificence resulting in a more cost effective use of IS.

With regard to environmental munificence 2 (ENV_MUNI2), none of the models showed a statistically significant influence with the exception of the model for stakeholder satisfaction of the SDMP (SD PERSKH; Table 5.14 in Chapter 5).

Contradicting hypothesis 1d, the value is negative (-0.299, p ≤ 0.05; see Table 5.14).

One possible explanation is that environments with low munificence (i.e. high hostility) with respect to government reduce strategic decision makers’ degrees of freedom. This is owing to the heightened risks of failure which exist when firms have few resources and some options cannot be afforded; thus the importance of the ‘right choice’ is raised (Slevin and Covin, 1995). New regulation for registered companies, such as SOX (U.S. Congress, 2002) or the U.K. Turnbull Guidance (FRC, 2005), has created a heightened public awareness (e.g. shareholders, business analysts and regulatory authorities) regarding large registered organisations. According to one interviewee [Int #4], there is a sense that new developments in this area ‘require a high degree of communication with stakeholders and continuous monitoring of emerging topics’. In the aftermath of the WorldCom and Enron scandals (which is the time period in which the present study was carried out), the increasing scepticism of the wider public (including shareholders) may explain the negative impact on the relationship between IS use and stakeholder satisfaction with strategic decisions.
5.4.3.2 Environmental dynamics (hypothesis 4)

With regard to the second environmental factor, environmental dynamics, the final hypothesis 4 suggests that environmental dynamics is negatively associated with the strength of the relationships between IS use and all four dimensions of SD performance. Environmental dynamics was measured using three items suggested in literature (Baum and Wally, 2003; Elbanna and Child, 2007). This construct, labelled ENV_DYN, consisted of three items which reflected the frequency of product changes of the organisation, the life time of products/services in the industry, and the frequency of technology changes compared to other industries. These three items showed an acceptable level of reliability (F.12, F.13, F.16; $\alpha = 0.708$).

However, the empirical results show that – contrary to this expected influence – the degree of environmental dynamics has a positive influence on the strength of IS USE at the 1% significance level for three of the four dimensions of SD performance (SD PERCO, SD PERSPE, and SD PERSKH; Tables 5.11, 5.12 and 5.14) and at the 10% significance level for the creation of strategic options (SD PEROPT) as dependent variable (Table 5.13). The hypothesis regarding environmental dynamics is thus not supported by the empirical findings. Instead, the results suggest a positive influence of the degree of environmental dynamics on the relationship between IS use and the four facets of SD performance.

A possible explanation may lie in the macroeconomic environment of the time period in which the strategic decisions which this study has investigated were taken, namely after the Internet bubble had ended in 2000 and before the global financial crisis started at the end of 2008. This means that the time frame under investigation was in a period of relative macroeconomic stability with regard to the degree of the dynamics.
of the macroeconomic environment. Thus it was comparable from a macroeconomic view. However, the respondents have reported varying degrees of environmental dynamics for the environments of their respective organisations.

In the following paragraphs, the findings of this study with regard to environmental dynamics are interpreted according to the distinction of, first, more moderately dynamic markets of the organisation, and secondly, highly dynamic markets. This distinction is in line with the information processing view (Galbraith, 1977; Tushman and Nadler, 1978; O’Reilly and Pondy, 1979) positing that organisations adjust their information processing capacities to the different environments to deal with varying amounts of uncertainty.

The rationales behind this hypothesis were, first, with regard to stable environments, where IS use is characterized by the routines of elaborate planning techniques and the availability of tested solutions which can result in a managerial attitude of status quo bias and, consequently, a preference to follow precedents of earlier strategic decisions when confronted with the difficulties of the valuation of new strategic options (i.e. many options with low probabilities and high risk), this study’s findings indicate that IS use in SDMPs is contributing less to the effectiveness of the SDMPs. When the markets of the organisation are moderately dynamic, only moderate change occurs in the context of stable industry structure and predictability of competitors. Also, prices at customer and supplier markets are predictable. Dynamic capabilities resemble the traditional conception of routines, i.e. they are complicated, detailed, analytic processes that rely extensively on existing knowledge and linear execution to produce predictable outcomes. In stable environments, the valuation of strategic options is difficult because there are many options with low probabilities (Volberda, 1998).
Strategic decisions involve a high degree of risk because sufficient resources are required for investments, e.g. investing in new production technologies to sustain organisations during the downside of large operating variances (Bourgeois, 1980). The implication for the SDMP in stable environments is that the information processing is not specific at the higher levels of strategic decision makers, but the information flows that impact are processed through ICT based on routines and standard operating procedures involving lower operational levels of the organisation. Furthermore, in stable environments, the phenomenon of status quo bias has been found, i.e. experience leads managers to prefer solutions which are already in place or which have been tested before (Geletkanycz and Black, 2001) as there is probably less risk involved, and the search for new ways is unnecessary because already proven solutions are available. Volberda (1998:147) found that very elaborate planning rituals (e.g. strategic planning for several years, incremental strategic proposals) inevitably reduce creative thought and the related information processing by the members of the SDMP group.

Secondly, in contrast, in environments with a high degree of dynamism and highly dynamic markets characterized by volatile and uncertain conditions, where industry structure (e.g. market boundaries) is blurring (e.g. due to technological advances and product innovations), dynamic capabilities take on a different character. The processes involved with the SDMP are then more simple, experiential and unstable processes that rely on quickly created new knowledge and iterative execution to produce adaptive, but unpredictable, outcomes.

The implication of the findings of this study is that more dynamic environments create a need to communicate and process information in more rapid, but also flexible, ways.
IS use is contributing more to the effectiveness of the SDMP. Finally, this finding is in line with the information processing view, which states that as uncertainty increases (e.g. in more dynamic environments), more information must be processed.

This might be interpreted with regard to research conducted by Eisenhardt and Martin (2000). For example, Eisenhardt and Martin (2000:1106) found that effective patterns of dynamic capabilities, such as the SDMP, vary with market dynamism. This finding is also in line with earlier research by Cyert and March (1963) and Nelson and Winter (1982). Several authors hold that information processing in unstable environments has to be faster (e.g. Bourgeois and Eisenhardt, 1988) and more flexible to ‘offset threats or take advantage of new opportunities’ (Volberda, 1998:147). Accordingly, IS use supports the required short-term adaptation in dynamic environments, leading to higher performance of the SDMP. These information requirements call, then, for intensive use of a variety of IS to enable effective strategic decision making, e.g. based on simple rules, which are seen as an effective strategic decision method in highly dynamic environments (Brown and Eisenhardt, 1998). In dynamic markets’ fast-changing conditions and with the unpredictability of environmental factors, it may not be possible to deploy more elaborate planning methods. In contrast, high degrees of market dynamism with the need for short-term adaptation and highly efficient SDMPs may encourage innovative and creative strategic decisions, which require intense information processing to search for the best possible, but new and untested, solutions.

In sum, the results of this study contradict the hypothesized weakening impact of environmental dynamics on the relationship between IS use and SD performance. The rationale of hypothesis 4 was based on the open-systems view. Although the data do
not confirm the hypothesis itself, it is evident that the environment as a contextual factor is influencing the data, showing the relevance of the open-systems approach.

5.5 Control variables

5.5.1 Results for control variables

With regard to the control variable of industry (IND), industry characteristics are not significant in any of the four models (Tables 5.11 to 5.14). This is not expected as it contradicts contingency theory, and is therefore discussed further in Chapter 5.

5.5.2 Industry sector (IND)

With regard to the control variable of industry (IND), industry characteristics are not significant in any of the four models (Tables 5.11 to 5.14). This is not expected as it contradicts contingency theory, which holds that industry velocity impacts on organisations by constraining and shaping their strategies. One view of how high- and low-velocity industry conditions emerge is provided by Nadkarni and Narayanan (2007) explaining how collective assumptions of organisations can shape "industry velocity" through corporate practices (e.g. social networks and feedback mechanisms) and strategic activities. These practices may be strengthened by the multi-divisional structure of large organisations, i.e. their strategic business units (SBUs) and the respective products and services cover a range of industry sectors which may result in a "balancing" effect of the influences of various industry environments as strategies may be rather balanced crossing industries than adapted to micro climates of industries.
5.6 Summary of the results of the hypotheses tested

This chapter has presented the findings and further detailed examination and explanation relating the results to previous research. The following section 5.6.1 summarizes the findings of this study with regard to the hypotheses tests above. Section 5.6.2 outlines the empirical findings in more details and provides additional comments.

5.6.1 Overview

The following table presents the summary of the results of hypotheses testing of this study.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1a</strong>: Level of IS use and the cost efficiency associated with strategic decision making.</td>
<td>SD PERCO; 0.395***, p ≤ .001</td>
<td>Accepted</td>
</tr>
<tr>
<td><strong>H1b</strong>: Level of IS use and the speed associated with strategic decision making.</td>
<td>SD PERSPE; 0.393***, p ≤ .001</td>
<td>Accepted</td>
</tr>
<tr>
<td><strong>H1c</strong>: Level of IS use and the number of strategic options created during the SDMP.</td>
<td>SD PEROPT; 0.275**, p ≤ .01</td>
<td>Accepted</td>
</tr>
<tr>
<td><strong>H1d</strong>: Level of IS use and stakeholder satisfaction with SDMPs.</td>
<td>SD PERSKH; −0.212</td>
<td>Rejected</td>
</tr>
<tr>
<td><strong>H2</strong>: Degree of politicality on the relationships between IS use and all dimensions of SD performance.</td>
<td>SD PERCO; 0.032, n.s.</td>
<td>Rejected</td>
</tr>
<tr>
<td>First distinct factor: (1) POWER</td>
<td>SD PERSPE; −0.280**, p ≤ 0.01</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>SD PEROPT; −0.176**, p ≤ 0.01</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>SD PERSKH; −0.199, p ≤ 0.1</td>
<td>Rejected</td>
</tr>
<tr>
<td><strong>H2</strong>: Degree of politicality on the relationships between IS use and all dimensions of SD performance.</td>
<td>SD PERCO; 0.193*, p ≤ .05</td>
<td>Rejected</td>
</tr>
<tr>
<td>Second distinct factor: (2) INFO_ANARCH</td>
<td>SD PERSPE; 0.253**, p ≤ .01</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>SD PEROPT; 0.269**, p ≤ .01</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>SD PERSKH; 0.029, n.s.</td>
<td>Rejected</td>
</tr>
<tr>
<td><strong>H3</strong>: Degree of environmental munificence on the relationships between IS use and all dimensions of SD performance.</td>
<td>SD PERCO; 0.199, p ≤ .1</td>
<td>No clear-cut support</td>
</tr>
<tr>
<td>First distinct factor: (1) ENV_MUNI1 i.e. munificence of the markets</td>
<td>SD PERSPE; 0.143, n.s.</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>SD PEROPT; 0.150, n.s.</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>SD PERSKH; 0.184, n.s.</td>
<td>Accepted</td>
</tr>
</tbody>
</table>
H3: Degree of environmental munificence on the relationships between IS use and all dimensions of SD performance.  
Second distinct factor: (2) ENV_MUNI2 i.e. munificence of government(s)  

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H3:</td>
<td></td>
<td>SD PERCO: -0.080, n.s.</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD PERSPE: -0.037, n.s.</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD PEROPT: 0.068, n.s.</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD PERSKH: -0.299*, p ≤ .05</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

H4: Environmental dynamics on the relationships between IS use and all dimensions of SD performance.  

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H4:</td>
<td></td>
<td>SD PERCO: 0.299**, p ≤ .01</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD PERSPE: 0.270**, p ≤ .01</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD PEROPT: 0.173, p ≤ .1</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD PERSKH: 0.505***, p ≤ .001</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

TABLE 5.15: Summary of Results of Hypotheses Testing

5.6.2 Details

The following table outlines the empirical findings and the results of the hypotheses tests with regard to the first four hypotheses (H1a to H1d) in more detail:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a:</td>
<td>MLR; Table 5.11</td>
<td>SD PERCO: 0.395***, p ≤ .001</td>
<td>Accepted</td>
</tr>
<tr>
<td>H1b:</td>
<td>MLR; Table 5.12</td>
<td>SD PERSPE: 0.393***, p ≤ .001</td>
<td>Accepted</td>
</tr>
<tr>
<td>H1c:</td>
<td>MLR; Table 5.13</td>
<td>SD PEROPT: 0.275**, p ≤ .01</td>
<td>Accepted</td>
</tr>
<tr>
<td>H1d:</td>
<td>MLR; Table 5.14</td>
<td>SD PERSKH: -0.212</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

TABLE 5.16: Summary of Hypotheses Testing H1a to H1d

Overall, it is found that there is a positive influence of IS use on all facets of SD performance.
With regard to the other hypotheses H2 to H4, a moderating effect of environmental factors is found, in particular, for environmental munificence and environmental dynamics. The details are found in tables 5.11 to 5.14 above which also contain the results for the remaining hypotheses 2, 3 and 4, and further discussed in Section 5.4.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2: The degree of politicality, i.e. political information behaviour, is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.</td>
<td>MLR and EFA; see Table 5.11</td>
<td>SD PERCO; 0.032, n.s.</td>
<td>Rejected</td>
</tr>
<tr>
<td>First distinct factor:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) POWER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Table 5.12</td>
<td>SD PERSPE; -0.280**, p ≤ 0.01</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Table 5.13</td>
<td>SD PEROPT; -0.176**, p ≤ 0.01</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Table 5.14</td>
<td>SD PERSKH; –0.199, p ≤ 0.1</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

TABLE 5.17: Summary of Hypotheses Testing H2 (Factor POWER)

In the case of POWER, which reflected the power facet of information politics, the results lend support for only two of the four dimensions of SD performance. The hypothesis 2 with regard to the second factor of politicality (i.e. the construct labelled information anarchy) had to be rejected.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2: The degree of politicality, i.e. political information behaviour, is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.</td>
<td>MLR and EFA; see Table 5.11</td>
<td>SD PERCO; 0.193*, p ≤ .05</td>
<td>Rejected</td>
</tr>
<tr>
<td>Second distinct factor:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Table 5.12</td>
<td>SD PERSPE; 0.253**, p ≤ .01</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>Table 5.13</td>
<td>SD PEROPT; 0.269**, p ≤ .01</td>
<td>Rejected</td>
</tr>
</tbody>
</table>
TABLE 5.18: Summary of Hypotheses Testing H2 (Factor INFO_ANARCH)

The hypothesis testing for environmental munificence (H3) also had to be divided into two distinct constructs, which were entered separately into the models.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H3:</strong> The degree of environmental munificence is positively associated with the strength of the relationships between IS use and all dimensions of SD performance. First distinct factor:</td>
<td>MLR and EFA; see Table 5.11</td>
<td>SD PERCO; 0.199, p ≤ .1</td>
<td>No clear-cut support</td>
</tr>
<tr>
<td>(1) ENV_MUNI1 i.e. munificence of the markets of an organisation</td>
<td>Table 5.12</td>
<td>SD PERSPE; 0.143, n.s.</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Table 5.13</td>
<td>SD PEROPT; 0.150, n.s.</td>
<td>Accepted</td>
</tr>
<tr>
<td></td>
<td>Table 5.14</td>
<td>SD PERSKH; 0.184, n.s.</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

TABLE 5.19: Summary of Hypotheses Testing H3 (Factor ENV_MINI1)

It must be noted that the results are statistically significant on the 10% level in the model using cost efficiency as dependent variable (SD PERCO).

With regard to the second facet of environmental munificence that related to governmental support (ENV_MUNI2), the results show that there was a statistically significant influence only on the relationship between IS USE and the satisfaction of stakeholders (SD PERSKH; -0.299, p ≤ .05; see Table 5.14). Surprisingly, however, this influence was negative and thus not in line with hypothesis 3, in which a positive effect of environmental munificence was predicted.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H3:</strong> The degree of environmental munificence is positively associated with the strength of the relationships between IS use</td>
<td>MLR and EFA; Table 5.11</td>
<td>SD PERCO; -0.080, n.s.</td>
<td>Rejected</td>
</tr>
</tbody>
</table>
and all dimensions of SD performance.

Second distinct factor:

(2) **ENV_MUNI2**

i.e. reflecting the munificence of government(s)

<table>
<thead>
<tr>
<th>Table 5.12</th>
<th>SD PERSPE; -0.037, n.s.</th>
<th>Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 5.13</td>
<td>SD PEROPT; 0.068, n.s.</td>
<td>Rejected</td>
</tr>
<tr>
<td>Table 5.14</td>
<td>SD PERSKH; -0.299*, p ≤ .05</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

**TABLE 5.20: Summary of Hypotheses Testing H3 (Factor ENV_MUNI2)**

With regard to hypothesis 4, the empirical results show that – contrary to the expected negative influence – the degree of environmental dynamics has a positive influence on the strength of IS USE at the 1% significance level for three of the four dimensions of SD performance and at the 10% significance level for the creation of strategic options as dependent variable (SD PEROPT; Table 5.13) as shown in the following table:

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Method</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H4:</strong> Greater environmental dynamics is negatively associated with the strength of the relationships between IS use and all dimensions of SD performance.</td>
<td>MLR and EFA; Table 5.11</td>
<td>SD PERCO; 0.299**, p ≤ .01</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>Table 5.12</td>
<td>SD PERSPE; 0.270**, p ≤ .01</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>Table 5.13</td>
<td>SD PEROPT; 0.173, p ≤ .1</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>Table 5.14</td>
<td>SD PERSKH; 0.505***, p ≤ .001</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

**TABLE 5.21: Summary of Hypotheses Testing H4**

Concluding this thesis, Chapter 6 summarizes this study, explains its contributions, discusses the limitations of its findings and presents ideas for further research.
6 Conclusion

This chapter concludes the thesis by outlining theoretical and practical implications of the study. It also gives some recommendations for practice. The limitations of this study are addressed, and several directions for future research are suggested.

6.1 Summary and contributions

6.1.1 Summary

This study evaluates the use of IS in the SDMPs of large organisations. The two bodies of literature on the SDMP and on information processing are reviewed, and the processes of making SDMPs (i.e. ‘strategy formulation’; Andrews, 1980; Van de Ven, 1992) are found to be a central issue for organisations. Discrete strategic decisions taken between the years 2000 and 2008 are analysed through quantitative (survey) and qualitative methods (interviews). A Likert-scaled questionnaire survey was followed by nine semi-structured interviews with respondents. The central aim of this investigation is to examine the performance link between the uses of IS and a multidimensional construct of SD performance as well as the role of internal and external contextual factors for the strength of this relationship.

6.1.2 Contributions of this study

The following summary attempts to rank the contributions of this study with regard to their scientific importance.

(1) Firstly and most importantly, this study answers a perceived need for more complex conceptualizations of strategic decision making and environmental contingencies (Elbanna, 2006; Elbanna and Child, 2007; Miller, 2008) by adding the
aspect of information behaviour in a strategic context (use of IS within the SDMP). It looks into the relationship between IS use and SDMP effectiveness, focusing on a gap in empirical research concerning the impact of contextual factors on this relationship. More specifically, it extends existing research using variance theory by testing the moderating effects of power, market conditions and environmental dynamics. Results show the statistical significance of contextual factors influencing the relationship between IS use and SDMP, such as:

a. the extent of politicality. By identifying the significance of distinct factors within the power construct, this study contributes to the refinement of our understanding of power factors. It is an important and novel contribution to identify the importance of autonomous and non-ruled based information behaviour at the level of individual top managers (which was labelled ‘information anarchy’) because other researchers have conceptualized organisations as anarchies before at the corporate level (e.g. March and Olsen, 1976; Eisenhardt and Zbaracki, 1992). This finding is also important because it demonstrates that individual information anarchy (i.e. creating ‘own rules’; Walter et al., 2008:534) by top managers is not necessarily self-serving but leads to greater effectiveness of the SDMP.

b. Furthermore, the results of this study make a clear distinction between the munificence of markets and that of governments. This is important because it suggests a more focused approach while other empirical research has looked at the favourability of the environment in general.
c. On the other hand, hypotheses regarding a negative impact of environmental dynamics are rejected. This contribution is important because it emphasizes the difficulty of distinguishing between organisations active in fast-paced and slow moving industries, because multinational organisations and their SBUs are typically active across several industries at a worldwide level.

The implications of this theoretical contribution to normative theory are further elaborated in section 6.2. Details about the findings are presented in section 5.6.

(2) Secondly, this thesis provides a comprehensive conceptualization of SD performance which is supported by the data analysis because three of the four related hypotheses were accepted (H 1a to H1c). This contribution is relevant and important because adding to the knowledge of the ‘construct of organizational effectiveness is central to the organizational sciences’ (Cameron, 2005:311). While there is no ‘lack of self-help accounts that recommend relatively simple and uncomplicated prescriptions for achieving success, fulfillment, or effectiveness’, there is a lack of ‘empirical credibility and theoretical explanations for how and why the prescriptions work’ (Cameron, 2005:318). The findings of this study help to create awareness of the different facets of performance within the area of strategic decisions based on ‘detailed understanding through self-reports’ (Carroll and Johnson, 1990:117) of top managers. Furthermore, as empirical research has hitherto focused on performance issues at the corporate level, this is an important contribution toward a better understanding of the SDMP because it enables the measurement of the effectiveness of the SDMP at the level of particular decisions. More specifically, the novelty of this
contribution derives from the fact that four dimensions of SD performance and the related data were tested by computing four models based on SD effectiveness issues. The importance of this contribution is further strengthened by the acceptance of three of the four hypotheses; showing fitness of the model.

a. First, the data show significant support for the impact of IS use on the cost effectiveness of SDMP (H 1a). This finding is important because it contributes to the understanding of the nature of cost effects of IS use. Direct effects could not be found. For example, top managers prefer face-to-face meetings, i.e. meeting the representatives of other decision-making centres (e.g. directors of SBUs), which necessitates the expenditure of time and money on business travel instead of using video conferencing. However, interviewees reported indirect effects such as financially salient time savings through the avoidance of costly misunderstandings. This finding contributes to knowledge about the importance of indirect effects of IS use.

b. The data support the contention that IS use leads to significantly increased effectiveness in terms of speed of the SDMP and timeliness of decisions (H 1b). While only a minority of respondents (10 of 113; 8.8 %) considered that the decision was taken under time pressure that had a negative impact on decision quality, the majority of respondents (79 of 113; 69.9%) said time pressure had no such negative influence. This finding adds knowledge for SDMP research because it expands research from other areas of decision making where positive effects of IS use were attributed to more recent and complete information.
c. The generation of alternative strategic options is supported by IS use (H 1c). This finding is a contribution to the debate about the concept of choice in decision making because it shows that top managers can actually increase the effectiveness of the SDMP by using IS. It adds knowledge that the emergence of strategies from internal markets of information, e.g. from the communications with middle managers or in collaboration between multiple decision-making centres within the organisation, can be supported by IS use.

d. The fourth hypothesis (H 1d; satisfaction of stakeholders) is not supported by the data. The poor model fit with respect to stakeholder satisfaction contributes to the understanding of strategic communication facing heterogeneous stakeholder interests, which can only rarely reconciled by IS use. The findings show that organisational decision-makers aim to balance the interests of the power centres within the organisation; for example, interviewees reported that they explored extensively the understanding of all SBUs before the final report was presented to gain their commitment. However, even when a strategic decision attempts to integrate interests in such a way, special interest groups are usually critical or opposed toward the decision and toward the SDMP leading to it. They may deploy confrontational approaches, ‘working together with other stakeholders’ against the organisation (van Huijstee and Glasbergen, 2010:592) instead of collaborating with the organisation. Additionally, it contributes by adding knowledge about the difficulties of using IS for broader
participative approaches as collaboration with e.g. external stakeholders might meet difficulties.

(3) Thirdly, the descriptive findings of how real actors ‘do’ strategic decision making are a contribution because they document the importance of strategic conversations; strategic decision making of top managers, their consultants and sometimes middle managers as experts in small groups; the temporary organisation of strategic projects with project-based communication behaviour; a mix of communication media including telephone and email that are often used simultaneously, complemented by face-to-face meetings of all types (formal and informal) and backed up by organisational reports (e.g. from ERP systems). This study contributes to the knowledge about the SDMP because it shows that strategic decision makers ‘negotiate’ strategic decisions and integrate those stakeholders whom they perceive as decisive across the organization.

Furthermore, these findings about the information behaviour of top managers justify the inclusion of factors derived from political and behavioural models of the SDMP to complement the purely rational perspective of decision-making. This study also furthers an understanding of the importance of phenomena such as consensus seeking and the building of alliances or strategic conversations as forms of communication within the SDMP. A critique of the rational model of the SDMP is supported by the findings which demonstrate the importance of its political dimension.

(4) Another contribution are the findings about the ways in which information processing is organized in SDMPs. First, this study finds that strategic projects are organized as ‘temporary organizations’ (Packendorff, 1995; Lundin and Söderholm,
characterised by the short-cyclical nature of decision projects. Furthermore, SDMPs are based on the interactions among a small group of actors within SDMPs. Regarding theory, this contributes to the area of small group theory and its application to strategic decision making. With regard to practice, the insight about the small size of the group of key decision makers can become important for when assessing existing or designing new IS/IT solutions with special features for small group interaction. On the other hand, the hesitation of key actors with regard to privacy, information richness and security to substitute personal face-to-face contacts with IT-based communication could serve as a reality check for IT providers and designers.

(5) With regard to prescriptive theory, this study contributes to the debate about what organisations should do differently. The contribution to practice is to create awareness regarding the above prescriptive theoretical contribution that the SDMP is an important business process at the strategic level. This is relevant because it is the ‘value of decision research’ to reveal that decision making is ‘subject to improvement if we understand the decision task and the decision makers’ (Carroll and Johnson, 1990:19). This study also strengthens the concept of choice in decision making because its findings show that the effectiveness of the SDMP can be increased significantly by managerial information behaviour and use of IS. This result contradicts other theories which claim that SD performance is mainly influenced by the environment (see Dean and Sharfman, 1996).

Managing SDMPs can help to achieve significant gains in terms of cost, time respective speed, generation of strategic options and stakeholder satisfaction. As acknowledged in the literature, different types of decision-making processes can be ‘quite distinct, in
terms of the activities involved and the influences encountered, as well as the conditions under which they are used' (Sabherwal and King, 1995:177). There is a range of design variables (Huber, 1990:48) available to manage SDMPs in a way that both the rational and political dimensions of the SDMP are taken into account, for example, by winning support for a strategic decision from the beginning, not just at and after the point when a decision is made.

Regarding the form of communication, this study finds that strategic conversations and symbolic management is found to be especially important in conveying the meanings of strategic decisions and the ritual of SDMP. The finding of the importance of 'strategic conversations' (Chermack et al., 2007) helps reviewing existing IS applications and deciding on strategic systems because solutions are needed which support this type of communication behaviour. Furthermore, strategic conversation skills (Chermack et al., 2007) are at the core of SDMP effectiveness, and it is important for personnel development to be aware that such skills can be developed and improved, and that it is worth focusing on them.

In the next section, the implications of these empirical findings to theory and practice are presented in more detail.
6.2 Implications for theory and practice

6.2.1 Theoretical implications

In the following sections, the implications of this study and its contributions to theory and research are described according to three major types of theoretical contribution in decision-making literature (Hickson et al., 1986:325; Kleindorfer et al., 1993:177; Bazerman, 1999:179): descriptive, prescriptive and normative. The main findings and contributions to theory are presented using this structure.

6.2.1.1 Contribution to descriptive theory

This study examines the question of how actual strategic decision makers perform their strategic information processing (SIP) activities (see section 2.2.5). Both perspectives of individual (e.g. Bazerman, 1999) and organisational decision making (e.g. March, 2002) are covered, focusing on large profit-making organisations with headquarters in Western industrialized countries. The findings from both the survey and the interviews show that the SDMP is typically organized in the form of small project groups forming a ‘temporary organization’ (Packendorff, 1995; Lundin and Söderholm, 1995). Strategic decision making is organized as strategic projects with a duration between one and 48 months and a mean of 13 months. The people involved in the SDMP are found to be a small elite group of senior managers, external and internal advisors.

Information in these temporary SDMP organisations is processed through information exchanges between a limited number of SDMP group members (generally less than 30 and most often less than 10 people), either on a one-to-one basis, e.g. as strategic conversations (i.e. ‘verbal interactions within superior-subordinate dyads focusing on
strategic generalities’; Westley, 1990:337–338), or at group level. However, communication can also happen on a wider scale with relevant internal and external stakeholders such as employees, shareholders, customers and suppliers, at the level of the organisation or as public relations with a wider audience. Strategic decision makers work on tight time schedules and from different locations (e.g. headquarters, unit bases, airports, hotels etc.). The communication processes in SDMP temporary organisations are similar to those of project communication management (PMI, 2002): processes for communication planning, information distribution, performance reporting and managing stakeholders.

However, the temporary short-cyclical nature of decision projects (i.e. after the decision is taken, the project organisation is dissolved, consultants join new decision projects and executives concentrate on other strategic issues and projects) challenges some of the goals of permanent organisations. The permanent organisational form can work with existent precedents from earlier SDMPs so that successive similar problems can be ‘programmed’ (Simon, 1960:5) along a narrower, more recognized, course with fewer alternatives, in an increasingly routine way (Hickson et al., 1986:10).

In the SDMP, the valuable experience and data from precedents are scarce. Learning from experience and organisational learning (e.g. Cohen and Sproull, 1991) could generate valuable insights about information processing in the SDMP, e.g. through postdecisional evaluations and feedback about IS use and decision outcomes (Huber, 1991). Eisenhardt and Martin (2000:1106) found that well-known learning mechanisms guide the evolution of dynamic capabilities (such as the SDMP) and underlie path dependence, e.g. repeated practice accelerates the formation of dynamic capabilities (Argote, 1999; Eisenhardt and Martin, 2000:1117).
However, the evidence of this study shows that none of the interviewees, when asked about lessons learned, reported any learning outcomes improving the decision-making process itself. One executive [Int #5] confirmed the importance of learning by experience, but said that the only ones who learn and profit from the SDMP are ‘external consultants. We just do not have time for it. It is regrettable’. Several other executives [Int #6, #7 and #9] said that there was no need and no money to institutionalize process improvement or process management in the SDMP. This contradicts the assumption of the rational approach that decision making follows a rational sequence of decision steps, where ‘best practices’ can be identified and are documented. It is found that IS use influences the four different dimensions of SD performance significantly. However, in certain contexts, e.g. politically charged situations or dynamic organisational environments, this influence is changing. These changes can be better understood when the issue of how to adequately measure the performance of strategic decision making processes (SD performance) is addressed.

6.2.1.2 Contribution to prescriptive theory

Developing explanatory theory to ‘specify what organisations should do differently to make better decisions’ (Bazerman, 1999:179), e.g. to help decision makers and their organisations to improve their performance in the usage of IS, is an important concern (Bettis, 1991:317, 318; Shapira, 2002), given the complexities and constraints of real-life SDMPs. Criteria for judging the usefulness of research findings ‘depend on the needs of users, and the different ways in which research results are used’ (Shrivastava, 1987:78). The findings of this study contribute to several debates: first, to the issue of using information systems in SDMPs; secondly, to the issue of the SDMP influencing dynamically the organisational culture through symbolic management; and thirdly, to
the linked questions of how commitment to a strategic decision can be achieved and how so-called resistance to strategic decisions can be overcome.

First, findings concerning the use of information systems and the interdependence with SD performance provide support for the suggestion of several authors that decision making processes need to be managed. SDMPs are a complex sequence of activities supported and facilitated by information processing (e.g. communication, coordination and information gathering) making related managerial IT skills a strategic capability and a source of competitive advantage (e.g. Mata et al., 1995).

The present study finds that managers prefer to face-to-face, both formally and informally. However, they use email and telephone as communication media to follow up or transfer more detailed information simultaneously. Additionally, information from organisational data bases (Intranet, ERP systems) is used to back up the SDMP at different stages (e.g. from proposal to formal decision). This strategic information processing (SIP) is achieved through IS use within a group of strategic decision makers and across different functions involved in the decision-making process (e.g. specialists, executives at SBUs or operational managers).

Secondly, an important issue is the cultural dynamics in SDMPs. For example, one manager [Int #6] said, ‘Mao said: Punish one, teach a thousand. For us, it is the opposite. We have learned here: when six people deliver a successful strategic project e.g. in our R&D unit, then we have to make it known in our organisation. People will take note, and they will take it as guidance for their own projects and decision making’. Practitioners seem well aware of the spin-off effects of effective SDMPs on the whole organisation. In the literature, Hatch (1993:668) gave the example of the organisational dynamics surrounding the introduction of a daring strategic plan. She
explained these dynamics as a process of value realignment with a novel artefact (e.g. the strategic plan) ‘by challenging established values, fostering an alteration in the values of at least some viewers, whose appreciation diffuses until the work is accepted by a wider audience’.

Thirdly, the rational conception of the SDMP is generally taken to imply a commitment to a decision that can be realized only after the decision is made (i.e. strategy formulation) in a second phase (i.e. strategy implementation; Andrews, 1971). However, one of the interviewees [Int #2] talked about dealing with so-called resistance to strategic decisions as a main concern. He said, ‘The idea of resistance is just a misconception. I do not like it at all. If you need commitment, prepare a good business case, which is a good starting point. You have to think how to convince others right from the beginning’. He continued, ‘This is why I use business lunches or dinners to talk to others. I have to understand what their interests are’. Reflecting organisational reality, a politically aware attitude of strategic decision makers, characterized by an appreciative understanding of the interests and concerns of relevant stakeholders is the best way to secure their commitment. Creating political support through coalition building, the SDMP itself needs to be understood as interactively mutually influencing each other, i.e. the ‘residue left by such actions as strategic decisions – commitment, redistribution of resources, and quasi resolution of conflict may precipitate further coalition formation in organisations and thus serve to trigger future strategic issues’ (Narayanan and Fahey, 1982:32). In this sense, signs of resistance are understood not as confrontational but as indicative of missing support and a need for better understanding and use of political processes in SDMPs. To conclude, the present study found that the impact of IS use on the performance of
strategic decision making processes (SD performance) is significantly influenced by contextual factors, e.g. by political information behaviour.

6.2.1.3 Contribution to normative theory

The intention of this study is also to provide a more comprehensive conceptualisation of SD performance; contributing to the clarification of ambiguous results in previous studies using different performance concepts. However, this study does not attempt to develop a complete explanatory model of IS performance, but rather to contribute to a better understanding of contextual moderating factors such as the formalisation of decisions, environmental characteristics and information politics and to specify falsifiable theory for organisational decision-making research (Bazerman, 1999:179)

On the basis of abstract models, normative theory contributes, through creating and testing hypotheses, to answering the question of how decision makers should ideally perform SDMP activities using the IS in the most appropriate and context-aware manner. Accordingly, this study discusses and empirically investigates the relationship between the use of IS for SD performance in the context of strategic decision making, and the factors that might affect this relationship.

One theoretical contribution of this study relates to the perspectives provided by organisational theory for research on SDMPs, i.e. the rational system view is seen as insufficient, and both natural and open systems perspectives have to be taken into account when analysing the importance of IS use for the SDMP. This is based on the supported hypothesis 2, which was developed from assumptions of the natural view, and hypothesis 3, based on the assumptions of the open systems view of organisation.

In addition, hypothesis 4, based on the open systems view, while not supported in the expected direction, is statistically significant. This highlights the need for further work
with regard to the SMDP in terms of the processes of how organisations in more dynamic markets organize their information processing differently from those in more certain and stable environments. Overall, the findings contribute to research on IS use as well as the SDMP by highlighting the importance of transcending the rational system approach and integrating contextual factors (e.g. politicality and environment) when analysing the performance of strategic decision making.

The findings contribute to bridging the gap in variance theory concerning IS use in the SDMP. This study extends existing research by integrating factors, such as information anarchy and environmental munificence, identified on the basis of information processing and media research theory as moderating factors on the performance link of IS use.

6.2.2 Contribution to practice

The results of this research contribute to improving managerial awareness of a number of contextual factors that were identified, appreciating the complexity of the performance link of IS. Specifically, the following contributions to managerial practice result from this study.

6.2.2.1 Awareness for the need of ongoing monitoring and evaluation efforts

This study helps to create awareness among management and IS consultants of the need to continuously evaluate media choices and information practices across the life cycle of information systems. Evaluation ex ante (e.g. in a business case prior to IT investment decisions) does not suffice in improving and optimizing information behaviour as it does not provide insight into actual media choice and IS use. This
requires ongoing monitoring and evaluation efforts to improve decisions regarding management and change of business processes, the design of information processes and communication media for the SDMP, and can raise awareness with regard to potentially unwanted, negative context factors.

This study found that managers need to have a better understanding of the impact of IS use on organisational performance, and a better understanding of the benefits, costs and risks associated with financial and social capital investments in developing such infrastructure. The more efficient utilisation of resources and an improved competitive position are the benefits. Failing to understand this can have disastrous consequences such as inappropriate resource allocation and competitive disadvantage (Irani, 2008:89). However, the link between decision-making context and information processing is complex. For example, the effects of information processing of upper echelons (UE) and the resulting decision-making culture on the culture of the whole organisation through symbolic management are difficult to assess as they are grounded in subjective interpretations and shared assumptions of individuals, i.e. when lower levels in the organisational hierarchies observe and interpret the SDMPs of UEs using the organisational narratives (Mitroff and Kilmann, 1975; Dandridge et al., 1980; Gershon and Page, 2001) for making sense of their world (Fiske, 1993).

6.2.2.2 SDMPs as business processes at the strategic level
To reap the benefits of integrated use of information systems through media multiplicity and synchronicity, it is essential to understand and manage the business processes and the processes of strategic decision making itself. This recommendation is in line with Kakabadse and Kakabadse (2000:97), who suggest a new role for IS/IT managers and their IS/IT staff because ‘the information processing needs of the new
global organization’ require the development of new business process management skills. To leverage computer-based communication through process management, leading to efficient and effective information flows, it is not enough to only invest in IT. The business value of ICT infrastructure is ‘limited less by computational capability and more by the ability of managers to invent new processes, procedures and organizational structures that leverage this capability’ (Brynjolfsson and Hitt, 2000:24). Ultimately, this results in understanding media selection as a strategy that extends ‘beyond the technical efficiency focus of conventional adaptation thinking’ (Staber and Sydow, 2002:408) and focuses instead on the alignment with business processes. The contribution of this research, i.e. the contextualization of SDMPs as a business process at the strategic level of an organisation, highlights that an understanding of the environmental factors of such business processes is a prerequisite for their improvement.

6.2.2.3 Design of IS/IT solutions for the SDMP
Companies that are planning the assessment and design of IS for their SDMP information integration and for managing communication options may find suggestions in this thesis for the evaluation of managerial and technical IS. When ERP systems coexist alongside other information systems (Themistocleous and Irani, 2001) the respective information processes and communication media may create integration problems. In line with Weston (2003), ICT support in SDMPs must be primarily focused on providing a clear flow of consistent, real-time information, both within and between heterogeneous and disparate systems to ultimately create competitive advantage (Porter and Millar, 1985; Powell, 1992; Powell and Dent-Micallef, 1997; Davenport and Prusak, 1998).
In organisations contemplating support of the SDMP with ICT and mobile devices, e.g. SMS and electronic messaging, these should be implemented not just as efficient channels for exchanging messages while overcoming temporal and geographical constraints, but also as mechanisms for maintaining group relations and organisational interaction (Steinfield, 1986). Ideally, this should be accompanied by some organisational development (OD) initiative, preferably including training programs and team development. This is supported by the research of Mitroff and Emshoff (1979:11), who conclude that they ‘see little hope in the organization-wide implementation of whatever is finally produced’ to improve the SDMP, unless OD work plays an integral role in the methodology. The qualitative data of this study show that active management of all the dimensions of SD performance is highly valued and used by actors in the SDMP. The findings of this study contribute to a better understanding of information behaviour and will help decision makers learn how to deal with barriers in information flows, the design of particular training programs, and an overall OD concept.

6.3 **Limitations**

The proposed conceptual model focuses on IS use in the SDMP, i.e. on how IS use impacts SD performance in the specific context of the SDMP. This context has been chosen because of the importance of such decisions. However, it might be the case that the relationship and the moderating factors identified in this study are different in the context of different types of decisions.
6.3.1 Methodology

The detailed research methods of management science and the social sciences in general, e.g. how do researchers pose questions to the subjects of the study and how do the respondents and interviewees answer to the questions as well as to the researcher as social scientist, are sources of bias (i.e. the general invalidity of research results). The following paragraphs discuss various kinds of response bias and the adequate measures/precautions suggested in the literature to check for these biases.

6.3.1.1 Survey

In business research, owing to difficulties in access to strategic decision makers as corporate elites (Welch et al., 2002), to obtain a truly representative sample of respondents, several possible errors (i.e. sampling bias) have to be accounted for. Given the practical impossibility of providing for a perfectly random sample, the sampling process needs to achieve a reasonable approximation to a random sample. The sampling approach for the present study (i.e. snowball sampling; e.g. Blumberg et al., 2008:255) is categorised as a non-probability sampling technique (e.g. Blumberg et al., 2008:259). Snowball sampling has ‘found a niche in recent years’ (Blumberg et al., 2008:259), ‘where respondents are difficult to identify and are best located through referral networks’. As discussed in more detail in section 4.2.2.1, the starting points for the snowball sampling procedure were sufficiently diverse, i.e. ninety-four managers from the researcher’s network of contacts were asked to support this research through referrals (i.e. snowball sampling); and the sample was expanded to 448 individuals. Additionally, predictive validity has been checked (Blumberg et al., 2008:254) confirming that ‘quota sampling has generally been satisfactory’.
Another potential limitation is common method bias, which is seen as a potential problem in all behavioural research (Podsakoff et al., 2003), yielding potentially misleading conclusions (e.g. Doty and Glick, 1998). Although the necessary steps to avoid/reduce common method bias (see e.g. Podsakoff and Organ, 1986; Podsakoff et al., 2003) have been taken and adequate safeguards were deployed (see Section 5.2.6), the possibility of a common method bias affecting the results cannot be fully excluded.

6.3.1.2 Interviews
Rater bias, e.g. social desirability response bias (Paulhus, 1984; Becker, 1998:159), is a methodological problem of interviews that needs to be discussed as it is a possible threat to data quality and a possible limitation to the present study. This interviewee behaviour creates self-serving biases and method variance. However, this study’s interviewees were executives and top management consultants, who typically have clear opinions about the topic and are aware of their roles, i.e. upper-level executives ‘well versed in the practice and evaluation of business decisions are representative of the field’ (Ford and Gioia, 2000:708). It is recommended that human factors (e.g. cues and nonverbal interaction) during the interview should be observed and accounted for (‘interviewer as instrument’; Brown, 2006). Horowitz and Brown (1996:115) assert that a means to accomplish such accountability in the service of richer evaluation data is by ‘making explicit those elements implicit’ during an interview; specifically, they suggest that systematically noting such factors to the respondent during the interview ‘allows a new understanding to emerge’ and ‘advances the methods and interpretation of evaluation research findings’. However, during the interviews there was no indication for any self-serving biases. Additionally, template analysis (Crabtree and
Miller, 1999; King, 2004), the method for the analysis of the interview data deployed in the present study, allows to compare the emerging key themes and subthemes across all interviewees. Therefore, it can be concluded that, given the above conditions, rater bias is no limitation to the interpretation of the interviews conducted during the present study.

6.3.2 Limitations because of the content-process divide in strategic decision research adopted for this study

Because this study did not focus on the content of the strategic decision itself, but rather on the use of IS during the SDMP and its impact on SD performance, it has concentrated exclusively on the process dimension of strategic decision making, allowing contributions through research on process management in the SDMP (e.g. Mitroff and Emshoff, 1979).

Despite important parallels between the research fields of strategic content and the SDMP, two limitations apply to the interpretation of this study’s findings. First, this study refers only to the strategic decision making process, not to the content of strategic decisions. While the survey instrument included a question about the content underlying the strategic decision, and while it was positively tested against benchmarking distributions of strategic content of other research, this study has purely focused on the strategy process. Secondly, the study has focused on the SDMP of strategy formulation and has not covered any issues of strategy implementation.

However, the contributions of this study help to show that the information behaviour of strategic decision makers makes a difference. It needs to be stressed that this study has not attempted to heal the content-process divide, but merely taken sides from the
pragmatic point of view of which strand of literature can best support the phenomena-context separation.

6.3.3 Cross-cultural differences and the effect of national culture
This study has opted to concentrate on Western decision-making culture, which is clearly a limitation. Practical reasons, such as access by the author to networks and contacts, travel costs etc.; but also theoretical reasons (e.g. Miller et al., 1999) have led to this decision. Cross-cultural differences in decision making are a topic long discussed in the literature (e.g. Hickson, 1987; Schneider, 1989; Carr and Pudelko, 2006) but one which remains unresolved. At present, there is increasing evidence for differences between national cultures in analyzing and conceptualizing strategic decisions. For example, Shachaf and Hara (2007) describe how managers use different media according to national context and suggest focusing on the cultural aspects of media selection. Wilson (1997:560–561) found that ‘differences in national cultures are particularly significant for the transfer of innovations and the associated information, and may also affect the way members of different cultures view the possibility of information acquisition’. Graham et al. (1994) contend that national and cultural differences persist, for example, in business problem solving in negotiations. Differences between Chinese- and English-speaking cultures are claimed to be caused by differences in judgement involving probabilities such as probability judgement, e.g. confidence judgement (e.g. Yates et al., 1998) and risk preference (Weber and Hsee, 1998).
This is somehow surprising as globalization and rationalization pressures in the context of increasingly ‘professionalized’ managerial practices are seen to result in the
convergence of management practices (e.g. Carr and Pudelko, 2006) in the area of strategy; and the general trend highlighted by DiMaggio and Powell (1983:148) that ‘organizations are becoming more homogeneous’. Accordingly, Hickson et al. (1974) have developed the culture-free hypothesis, that the context of organisations is culture-free, which is empirically confirmed by several studies (e.g. Budde et al., 1982) focusing on Western organisations.

Empirical research on cross-cultural differences in decision making is scarce. Issues include cultural aspects central to the SDMP, information processing and media choice. For example, concerning the speed of the SDMP, Hickson et al. (1986) have shown differences in perceptions of time between different nationalities, i.e. taking more time over decisions or being faster. With regard to the role of discord and dissent in organisational decision making, there are a range of studies examining different decision styles and conflict resolution models. Consensual decision making is more common among Japanese managers than among U.S. managers because of the great emphasis that Japanese culture places on consensus (Rajagopalan et al., 1993). Tinsley (1998) found some support for the view that managers from different national cultures prefer to use different conflict resolution models, e.g. U.S. managers prefer to integrate interests, Japanese executives tend to defer to status power and German executives preferentially apply bureaucratic regulations. This is supported by the findings of Martinsons and Davison (2007) that business leaders from the United States, Japan and P.R. China tend to have a distinctive prevailing decision style reflecting differences in cultural values and the relative needs for achievement, affiliation, power and information. However, these findings should be treated with caution as the compared groups were mostly questioned with regard to monocultural
situations. Therefore Tinsley (1998:321) emphasizes that the ‘intercultural generalizability’ of these findings is limited. Some authors (e.g. Lowe, 2001) have even argued that it is not possible for Western social science to understand the complexities of other cultures, e.g. Chinese management and decision making. This ‘raises doubts about the global applicability of IS such as decision support systems and executive information systems’ (Martinsons and Davison, 2007:284).

In sum, the issue of how to operationalize (in a culture-sensitive way) the construct of a ‘mindset of a decision maker’ is unresolved, as is the question whether cultural differences have any impact on the SDMP, respective of the relationship between IS use and SD performance. There is no consensus yet on the question of whether existing models and instruments can be applied to respondents from different cultures and national identities, e.g. by adjusting parameters of existing models, as suggested by Farley and Lehman (1994); or if they can be applied at all, as argued by Shenkar and von Glinow (1994).

In summary, the focus of this study on managers working in organisations of Western industrialized countries to avoid uncontrolled effects of national culture differences is justified with respect to the sampling design. However, the results of this research are not necessarily applicable to decision-making processes with non-Western decision makers.

### 6.4 Future research

Additional work is clearly needed fully to explore the strengths and weaknesses of the current methodology. The following sections offer some avenues for future research.
6.4.1 Current trends in strategic management research

The present study shows that a combination of physical, human and technological resources is used at the corporate level to decide and communicate the strategic direction of the organisation. Currently, in strategic management research, there is a growing trend to conceptualize the SDMP as dynamic capabilities (Eisenhardt and Martin, 2000; Dixon and Day, 2007; Ambrosini and Bowman, 2009; Easterby-Smith, Lyles and Peteraf, 2009). This research is interesting as it allows new insights into the SDMP from a combination of the theoretical positions of the resource-based and the dynamic capability views of the firm (Bowman and Ambrosini, 2003). Empirically, the dynamic capabilities view offers a range of processual concepts, for example, the concept of “absence” (e.g. Feldman and March, 1981:177; Eisenhardt and Martin, 2000:1112) which can be applied to investigate further the phenomenon of “non-decisions” (see Section 2.3.1). The dynamic capability view seems to be a promising route for further research on the SDMP, for example with regard to organisations in environments of economic crisis (e.g. Grewal and Tansuhaj, 2001).

6.4.2 New developments in information processing theory

An interesting extension of this study could be to test new developments in the area of information processing theory through a qualitative research approach. Media synchronicity theory (Dennis and Valacich, 1999) views the synchronicity of the communication as the critical dimension, rather than the richness of the medium. Synchronicity is defined by Dennis and Valacich (1999:5) as ‘the extent to which individuals work together on the same activity at the same time; i.e. have a shared focus’. Media can support synchronicity to a greater or lesser extent, and
synchronicity interacts with two fundamental communication processes: the process of conveyance (generating, pooling and examining of information) and the process of convergence (evaluating information, coming to a consensus about values, priorities and interpretations). However, media can also support the expression of dissent (Stanley, 1981:13) to avoid ‘managerial miscalculations and major strategic and tactical errors’.

Recently, Kock (2005) attempts to conceptualize new features of e-collaboration based on media richness theory, e.g. operationalizing the ‘media naturalness’ of a computer-mediated communication medium as the similarity of the medium to the face-to-face medium, i.e. the ‘ability of communication media to support co-located and synchronous communication employing facial expressions, body language, and speech’ (Kock, 2005:120). Kock (2005:117) emphasizes that in the presence of new possibilities of e-collaboration, there is a ‘wealth of empirical evidence that provides direct support for the notion that human beings prefer the face-to-face medium for a variety of business tasks that involve communication, which seems to provide support for the media richness hypothesis’. However, one problem that remains from a sociological perspective is ‘that the media richness hypothesis is built on a vacuum, as no underlying explanation was ever presented by media richness theorists for our predisposition toward rich [or face-to-face] media’ (Kock, 2005:117). New research on computer-supported cooperative work (e.g. Ackerman, 2000; Dey et al., 2001) may contribute to filling this gap and may help to create an extension of the information processing view (e.g. Levitt et al., 1999) with new insights into microlevel information processing and the human-computer interface.
6.4.3 Individual differences of managerial information processing

Several researchers (e.g. Trevino et al., 1990; Alexander et al., 1991) have focused on individual differences of decision makers (e.g. different individual skills, experiences and knowledge) claimed to impact the performance of the SDMP. For example, different team members of top management teams have different perspectives on ‘the problem’, caused for example by their different professional and/or academic backgrounds (education in a certain academic discipline, specialist training etc.), resulting in different approaches to decision-making tasks. Weick (2002:333) suggests that when evaluating a problem, ‘if people look for different things, when their observations are pooled they collectively see more than any one of them would see alone’, thus creating the required variety for the SDMP.

While this research has concentrated more on the information processing dimension of IS use, there is also a research tradition focusing on the personal and cognitive characteristics of individual decision makers and their impact on media choice and information processing patterns. The cognitive processes of decision makers are also used to explain the high degree of unpredictability of strategic decision making (Bacharach et al., 1995). The underlying issue is ‘whether outcomes of decision processes are seen as primarily attributable to the actions of autonomous actors or to the systemic properties of an interacting ecology. Is it possible to describe decisions as resulting from the intentions, identities and interests of independent actors? Or is it necessary to emphasize the ways in which individual actors, organizations, and societies fit together?’ (March, 2002:10).

Individual differences also include the individual emotional states in SDMPs. Dietz and Stern (1995:n.2) emphasize that ‘it seems reasonable that emotional states have an
important influence on choices’. Similarly, Eisenhardt (1989:573) identifies ‘emotion as integral to high-stakes decision making’, e.g. intense emotions such as frustration, distrust and loyalty (Eisenhardt and Bourgeois, 1988). This line of research may ‘bring the person back’ (Molenaar, 2004:201) and finally bridge the idiographic-nomothetic divide with regard to information processing and decision-making theory, by combining research methods and methodologies from both psychology and sociology.

6.4.4 The impact of source choice and source accessibility on media selection

Another interesting extension of media richness in information processing theory is related to source choice and source accessibility. After media choice, these are the most essential factors in decision making because they are fundamental requirements for information seeking. Christensen and Bailey (1997:375) emphasize that the source ‘from where one gets information is not independent of the channel through which information is transferred’.

One consequence for information gathering in SDMPs is the inhibition of information seeking owing to the lack of an easily accessible source, or the possible imposition of higher costs than the enquirer is prepared to pay (Wilson, 1997:561). With regard to the concept of selective exposure presented by Wilson (1997:557), he found a tendency to select those information sources and information that were likely to confirm prior beliefs, attitudes and knowledge. However, at the level of examining information to determine its value, the same selective processes are likely to be in play. This is confirmed to a degree by Yzerbyt and Leyens (1991), who carried out experiments to test the theoretical proposition that people would request less information when presented with negative information on the personalities of
individuals than they would if the earlier information was positive. In other words, more information was requested when the incoming information confirmed initial perceptions of the person than when those perceptions were disconfirmed (Wilson, 1997:568).

To conclude, research on source choice and source accessibility can be an interesting extension of information processing theory to contribute to a fuller understanding of information acquisition behaviour and the development of a new generation of enterprise strategy management systems (Wagner, 2004).

6.4.5 Integrating different perspectives to deal with strategic decisions' complexity

In the field of management sciences, overcoming barriers through the use of context-relevant analysis is a long-standing imperative. Research on the use of information systems deploying a multilevel research approach, addressing individual, organisational and ‘societal’ levels of communication, can be a meaningful contribution, as, for example, in the case of strategic decisions where multiple levels of communication are relevant: dyads of two individual decision makers (e.g. a top-level executive and a subordinate or advisor), group levels (e.g. the top management team or a steering committee), the level of the entire organisation (e.g. employees as relevant stakeholders) and the level of society in general (e.g. environmental protection, product safety etc. as strategic issues of a wider concern). Bamberger (2008) contends that the micro-macro gap in management research can be narrowed by further developing context theories. This is in line with suggestions to combine organisational and individual levels of analysis, e.g. by Corner et al. (1994)
for research on information processing, and by Payne (2002) for decision-making research. Concerning these multilevel research approaches, Morgeson and Hofmann (1999) call for careful consideration of issues about collective phenomena, e.g. the fallacies of reification and personification, when examining collective behaviour. Schwenk (1989:177) has argued that different perspectives on strategic decision making can be combined ‘to deal with the full complexity of strategic decisions’. With respect to culture, Schultz and Hatch (1996) plead that others use multiple paradigms. According to Shapira (2002), the main feature is the incomplete integration of psychological aspects of decision making (e.g. see the preceding discussion about individual differences) with organisational characteristics that affect decision making in organisations. However, with respect to the fragmentation-integration dilemma (Volberda, 2004), there still seems to be a long way to go toward a synthesis of effective approaches, opening new avenues of research to narrow the micro-macro gap in management research (Bamberger, 2008).
Appendices

A. References


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### B. Measurement Items

#### B.1 Strategic decision making process (SDMP)

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of analysis</td>
<td>(1.1) A specific strategic decision</td>
<td>Carroll and Johnson (1990), Dean and Sharfman (1996: 379)</td>
</tr>
<tr>
<td>Objective for decision making</td>
<td>(2.2) What was the primary objective for decision making? (= Strategic content)</td>
<td>Mintzberg (1994)</td>
</tr>
<tr>
<td>Contextual factors</td>
<td>(2.3) Most important factor? Why? (2.11) Overall corporate strategic decision-making</td>
<td>Dean and Sharfman (1996)</td>
</tr>
<tr>
<td>Decision making process</td>
<td>(2.6) Please, would you describe the decision process? (2.7) What were the major obstacles/challenges? (2.8) How have you overcome these challenges?</td>
<td>Dean and Sharfman (1996), Simons (1994; 1991), Meier et al. (2003:9),</td>
</tr>
<tr>
<td>Information processing And information systems (IS) used</td>
<td>(1.2) Decision-making process (from decision recognition), major factors involved and information needs (1.3) Collection of data and information (1.4) Reporting of data and information, major challenges, obstacles, and surprises (1.5) Expectations of stakeholders</td>
<td>Galbraith (1977; 1973), Van de Ven et al. (1976), Egelhoff (1991;1982), Malnight (2001), Meier et al. (2003)</td>
</tr>
</tbody>
</table>

TABLE: Measurement Items for SDMP
### B.2 Information systems used for strategy development or strategic feedback

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary data and information</td>
<td>(2.4) Primary data and information considered?</td>
<td>Meier et al. (2003)</td>
</tr>
<tr>
<td>Type of information systems</td>
<td>(2.5) What type of information systems were involved? (e.g. formal performance measurement, informal networks, meeting and reporting structures, coordination and communication systems)</td>
<td>Van de Ven et al. (1976), Schwaninger (1994), Felix (2003), Irani (2005), Neely (2005)</td>
</tr>
<tr>
<td>Role of ERP and IT as Decision support</td>
<td>(2.12) What role do you see enterprise resource planning (ERP) systems playing in strategic decision making? (2.13) Do you anticipate an increased role of technology for supporting strategic decision making?</td>
<td>Meier et al. (2003), Neely (2005), Brignall and Ballantine (2004), VanLengen (2005)</td>
</tr>
<tr>
<td>Lessons Learned</td>
<td>(2.14) What have been some of the most important lessons learned in your experience in strategic decision making?</td>
<td>Crossan, Lane and White (1999)</td>
</tr>
<tr>
<td>Formal IS System</td>
<td>(2.15) What information systems are used to support decision-making processes? Are these automated or manual systems?</td>
<td>Wildavsky (1983:30), Simons (1994; 1991)</td>
</tr>
</tbody>
</table>

**TABLE : Measurement Items for Strategic Use of IS**
## B.3 Procedural rationality

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent of information</td>
<td>How extensively did the decision makers look for information in making this decision?</td>
<td>Cyert and March (1963), Feldman and March (1981), Hickson et al. (1986), Langley (1995)</td>
</tr>
<tr>
<td>Extent of Analysis</td>
<td>How extensively did the decision makers analyze relevant information before making a decision?</td>
<td>Mintzberg et al. (1976), Bourgeois and Eisenhardt (1988), Ciborra (2000)</td>
</tr>
<tr>
<td>Type of Analysis</td>
<td>How important were quantitative analytic techniques in making the decision? (e.g. formal analysis, data mining of operations data, etc.)</td>
<td>March and Simon (1958), Mintzberg et al. (1976), Langley (1995)</td>
</tr>
<tr>
<td>Intuition vs experience based decisions</td>
<td>How important were intuitive judgments based on experience?</td>
<td>Kiesler and Sproull (1982), Eisenhardt (1989b), Mintzberg (1994), Khatri and Ng (2000)</td>
</tr>
<tr>
<td>Combination of rational and intuitive decisions</td>
<td>Was a combination of rational and intuitive analysis used?</td>
<td>Simon (1987), Eisenhardt (1989b), Khatri and Ng (2000:79)</td>
</tr>
<tr>
<td>Dominating process</td>
<td>How would you describe the process that had the most influence on the decision and the relating information flows?</td>
<td>Mintzberg et al. (1976), Fredrickson (1984), Ciborra (2000)</td>
</tr>
<tr>
<td>Decision making effectiveness</td>
<td>In general, how effective were the decision makers at focusing their attention on crucial information and ignoring irrelevant information?</td>
<td>Simon (1978), Feldman and March (1981)</td>
</tr>
</tbody>
</table>

**TABLE : Measurement Items for Procedural Rationality**
### B.4 Political information behaviour

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on individual or Collective goals</td>
<td>Were decision makers primarily concerned with their own goals, or with the goals of the organisation?</td>
<td>Bacharach and Lawler (1980), Pfeffer (1981), Mintzberg (1994), Jacobides and Croson (2001)</td>
</tr>
<tr>
<td>Openness</td>
<td>To what extent were decision makers open with each other about their interests and preferences in the decision?</td>
<td>Pfeffer (1981), Neilsen and Rao (1987), Eisenhardt and Bourgeois (1988)</td>
</tr>
<tr>
<td>Influence on Decision</td>
<td>To what extent were the information flows concerning the decision affected by the use of power and influence among stakeholders?</td>
<td>Bacharach and Lawler (1980), Pfeffer (1981), Jacobides and Croson (2001)</td>
</tr>
<tr>
<td>Negotiated Decision</td>
<td>To what extent were the information flows concerning the decision affected by negotiation among decision makers?</td>
<td>Pfeffer (1981), Ciborra (2000)</td>
</tr>
<tr>
<td>Unauthorized Self-organisation</td>
<td>Are formal information systems (IS) accompanied by informal practices? e.g. Does irrelevance of formal systems lead to bypassing or ignoring? Are IS so rigid that systems are used differently than planned (bootlegging)? Have parallel systems taken over? (Counter productivity)</td>
<td>Wildavsky (1983)</td>
</tr>
<tr>
<td>Organisational power and information behaviour</td>
<td>Hierarchical information mechanisms and relationships: Have you experienced a dominant coalition leading to a dominant rationale?</td>
<td>Mintzberg (1983; 1984), Jaspersion et al. (2002:400)</td>
</tr>
<tr>
<td>Clusters of influence</td>
<td>Does special expertise lead to special influence?</td>
<td>Wildavsky (1983), Mintzberg (1983)</td>
</tr>
</tbody>
</table>
Does this have negative effects (e.g. counter productivity, irrational procedures and behaviour) on information flows?

**TABLE : Measurement Items for Political Information behaviour**

**B.4 IS performance and problematic areas**

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance of decision making process</td>
<td>How do you rate the performance of a specific decision-making process? Is this typical of most strategic decisions?</td>
<td>Dess and Robinson (1984), Dean and Sharfman (1996)</td>
</tr>
<tr>
<td>Problems concerning information flows</td>
<td>Have you experienced any problems concerning information flows from operational to strategic management levels?</td>
<td>Jeston and Nelis (2006), Neely and Bourne (2000), Markus and Benjamin (1997)</td>
</tr>
<tr>
<td>Retention of information</td>
<td>Have you experienced that information was retained or communication refused?</td>
<td>Neilsen and Rao (1987), Wildavsky (1983)</td>
</tr>
</tbody>
</table>

**TABLE : Measurement Items for IS performance**
C. Survey and Questionnaire

C.1 Survey instrument

This section shows the survey questions used for this study.

This questionnaire is part of a PhD research investigating how traditional and IT-based information systems (IS) can support the process of strategic decision-making. Your valuable contribution will be appreciated greatly. The information you provide will be used for statistical purposes only, and will be kept anonymous and treated with strict confidentiality.

Part A. Your present job responsibilities and personal background

A.1 Please indicate your functional area (please tick one):

- [ ] Accounting
- [ ] Finance
- [ ] Marketing/Sales
- [ ] Manufacturing/Operations
- [ ] Research and Development
- [ ] Human Resources
- [ ] Corporate Administration
- [ ] Information Systems/ IT Department
- [ ] Consulting
- [ ] Other (please specify): ____________
A.2 **Management level** (please tick one):

- [ ] Advisor or Consulting role
- [ ] Mid-level Manager (supervising other managers)
- [ ] Executive (Top) Level Manager
- [ ] Other (please specify): ________________________

A.3 Your Job Title: __________________________

A.4 _____ years in the organization

A.5 _____ years of professional experience

A.6 Gender:  O Male  O Female

A.7 Age: [years] ______

A.8 Nationality:

A.9 Current country of residence:

**Part B.** The questions below are about information gathering in strategic decision making.

Please recall a situation within the last five years where you have been involved in making or supporting **one specific strategic decision**.

B.1 Please tick one of the following categories most adequate for the strategic decision you have chosen:

- [ ] Technology (e.g. investing in infrastructure)
- [ ] Products (New Product development)
- [ ] Reorganizations or a merger/acquisition
- [ ] Services (The buying or making)
- [ ] Personnel (e.g. benefit plans, assessments)
- [ ] Financing (how to garner funds)
- [ ] Marketing (e.g. new market channnels)
- [ ] Location (of plant sites or sales offices)
- [ ] Controls to monitor performance (e.g. key performance indicators – KPI)
- [ ] Other (please specify): _________
B.2 Please specify the strategic decision you were involved in more in detail:

______________________________________________________________________

B.3 From the initiation of the decision making process to the final decision, how long did it take?

Duration: From [Month/Year]: ____/____ to: [Month/Year]: ____/____

B.4 The impact of this strategic decision was on the following level of the organisation:

- [ ] Corporate/ worldwide
- [ ] Business unit
- [ ] Country/ national market
- [ ] Plant level
- [ ] Group/ Team

Please give your opinion about the statements listed below by circling the appropriate number.

Part C. Please recall ONE specific strategic decision

[7-point Likert scale; from “7” = strongly agree to “1” = strongly disagree]

C. 1 This specific strategic decision set parameters for subsequent decisions.
C. 2 Consequences would have been serious if something went wrong.
C. 3 The decision could not be delayed.
C. 4  It was generally seen that the decision was important.
C. 5  The decision was taken under time pressure that influenced negatively the quality of decision making.
C. 6  It was clear what kind of information had to be collected.
C. 7  There was uncertainty about the actions to be taken.
C. 8  It was difficult to predict the outcomes of the decision.
C. 9  The goals were clear for the participants.
C.10  There was adequate freedom in addressing the decision.
C.11  The initial perception of the decision was not clear.
C.12  The motivation to make the decision was known to all participants.
C.13  There was confidence in making the right choice.
C.14  The decision was highly complex in terms of factors which had to be taken into account.
C.15  This specific strategic decision was not unusual for our company:
      yes [ ]  no [ ]  (Please tick.)
C.16  The decision making process was typical for our company:
      yes [ ]  no [ ]  (Please tick.)
C.17  Circle the approximate number of people who were primarily responsible for this strategic decision in your company:
      1 , 2 , 3 , 4 , 5 , 6-9 , 10-19 , 20-29, more: ________

At the time of the strategic decision, how often did you use the following ways of communication to gather information for the decision?

[7-point Likert scale; from “7” = Use several times a day; “6” = Use about once each day; “5” = Use several times each week; “4” = Use about once each week; “3” = Use less than once a week; “2” = Use less than once a month; “1” = Don’t use at all.]

C.18  Face-to-face communication in formal meetings
C.19  Face-to-face communication in informal meetings
C.20  Personal e-mail correspondence, letters, Memos, etc.
C.21  Telephone
C.22 Video conferencing
C.23 SMS, Messaging
C.24 E-Mailig list (e.g. to steering committee, project team members)
C.25 Intranet Portal
C.26 Company newsletter, Company reports
C.27 Corporate television broadcast
C.28 Formal reporting, documentation
C.29 ERP system
C.30 Performance measurement system using key performance indicators (KPI)
C.31 Other: (please specify)

**IT system maturity** At the time of the strategic decision …

[7-point Likert scale; from “7” = strongly agree to “1” = strongly disagree]

C.32 The IT system supporting our decision making was not changed during the period of the decision making.
C.33 The IT system was running stable during this period.
C.34 Overall, the IT system was easy to use.
C.35 Overall, I found the IT system useful in this decision making process.
C.36 The IT system supporting our decision making had been running for ______ years at that time.
C.37 I had been using this IT system for ______ years at that time.

**Part D. Degree of functional alignment of business and IS processes**

D.1 Which of the following statements is the most adequate description of the process management in your organisation at the time of the strategic decision: (Please tick one.)
▪ The IT processes followed the business processes, e.g. decision-making processes were reflected in the design of IT processes.

▪ The IT processes were constraining the business processes, e.g. IT processes (e.g. ERP system) were constraining decision-making processes.

▪ Processes were not managed (e.g. designed, documented, improved) in our organization.

Consider the difference between operational and strategic decisions when you answer the next set of questions. **Operational decisions** involve day-to-day processes and procedures that impact one part of a company, whereas **strategic decisions** are more long-term and have a more company-wide impact. **Front line employees** are those working in production or customer service, mainly on operational issues.

**Centralization.** At the time of the strategic decision …

[7-point Likert scale; from “7” = strongly agree to “1” = strongly disagree]

D.2 Front line employees participated in the strategic decision process.

D.3 Our top management team determined our strategic plan alone.

D.4 We tried to achieve consensus in this company about major strategic changes.

D.5 Our top management was involved in optimizing day-to-day operations.

D.6 We gave front-line employees freedom to make operational decisions about production, service, and customer-oriented problems.

D.7 The strategic decision team and I made day-to-day decisions about front-line operations.

D.8 Our front-line employees would have said they were free to change things to get better products/services for customers.
Consider the difference between routine and non-routine tasks in your company as you answer the following questions. **Routine tasks** occur repetitively, and **non-routine tasks** occur occasionally.

**Formalisation.** During the decision making process when working on routines …

[7-point Likert scale; from “7” = strongly agree to “1” = strongly disagree]

D. 9  Our company had highly formalized channels of communication for routine processes and practices.
D.10  Our standard operating procedures (SOP) manual helps us deal with routine problems.
D.11  Our front-line managers were ‘on their own’, even with routine tasks.

**Informalisation**
During the decision making process when working on **non-routine tasks**

D.12  Personnel had to follow formal procedures for non-routine processes.
D.13  I could get the information that I need when I face unusual problems without going through channels.
D.14  There are no written instructions for doing non-routine tasks.
D.15  Front-line managers were allowed to figure out the best way to complete non-routine tasks.
D.16  The irrelevance of formal rules leads to them being bypassed or ignored.
D.17  IT systems are so rigid that systems are used differently than planned.
D.18  IT systems are not useful, so parallel systems are being used.

**Information Behaviour**
At the time of the specific strategic decision …

D.19  The company gathered relevant information.
D.20  Relevant information was being analyzed.
D.21  Analytic techniques were used.
D.22 Attention was focused on crucial information.
D.23 Special influence originating from special expertise led to negative effects.
D.24 Decision-makers were primarily concerned with their own goals instead of the goals of the organisation.
D.25 Decision-makers were open with each other about their interests and preferences in the decision.
D.26 The decision-making process is dominated by a few people.
D.27 Information flows were not affected by the use of power and influence among stakeholders.
D.28 Information concerning the decision was affected by the negotiation among decision makers.
D.29 There was a two-way communication both top-down and bottom-up.
D.30 Informal information relationships and networks were common.
D.31 Information relationships and mechanisms were hierarchical.

Part E. Benefits

Please indicate which benefits were created by the use of the following different ways of communicating:

[7-point Likert scale; from “7” = strongly agree to “1” = strongly disagree, “0” = not applicable]

The cost of decision making was reduced through the use of ...

E. 1 Face-to-face communication in formal meetings
E. 2 Face-to-face communication in informal meetings
E. 3 Personal e-mail correspondence, letters, Memos, etc.
E. 4 Telephone
E. 5 Video conferencing
E. 6 SMS, Messaging
E. 7 E-Mailing list (e.g. to steering committee, project team members)
The speed of decision making was increased through the use of ...

More strategic options were created through the use of ...
E.34 SMS, Messaging
E.35 E-Mailing list (e.g. to steering committee, project team members)
E.36 Intranet Portal
E.37 Company newsletter, Company reports
E.38 Corporate television broadcast
E.39 Formal reporting, documentation
E.40 ERP system
E.41 Performance measurement system using key performance indicators (KPI)
E.42 Combined use of all information systems.
E.43 No benefits were created through the above ways of communication.

Part F. **Satisfaction with strategic decision**

The stakeholders of this strategic decision (e.g. top management team, employees, analysts, customers) …

[7-point Likert scale; from “7” = strongly agree to “1” = strongly disagree]

F.1 … were generally satisfied with this decision.
F.2 … received the needed information.
F.3 … were satisfied with the use of computer-based information systems.

*The outcome of the specific strategic decision* has had a **positive impact** on your organisation’s performance with regards to:

F. 4 Growth.
F.5 Profitability.
F.6 Shareholder value.
F.7 Organisational effectiveness.
F.8 Decision-making effectiveness.
F. 9 Information technology (IT) performance in strategic decision-making.
F.10 Your organisation has the following number of employees: ___________ in total.

F.11 Our organisation’s industry sector: ____________________

F.12 Our firm frequently changed its products and practices to keep up with competitors.

F.13 Products/services quickly became obsolete in our industry.

F.14 Actions of competitors were quite easy to predict.

F.15 Consumer tastes were fairly easy to forecast in our industry.

F.16 Technology changed more quickly in our industry than in other industries.

F.17 Governmental policies (tariffs and taxes, public service, etc.) frequently changed.

F.18 There were few external threats to the survival and well-being of our firm.

F.19 Our markets were rich in investment capital.

F.20 Economic development programs offered sufficient support for our business community.

F.21 Our firm operated in a threatening business environment.

F.22 Our markets were rich in profitable opportunities.
## C.2 Rotated Component Matrix

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.18 Face-to-face Communication in formal meetings</td>
<td>.539</td>
<td>.478</td>
<td>.041</td>
<td>.358</td>
<td>.072</td>
</tr>
<tr>
<td>C.19 Face-to-face Communication in informal meetings</td>
<td>.727</td>
<td>-.062</td>
<td>.039</td>
<td>.300</td>
<td>.076</td>
</tr>
<tr>
<td>C.20 Personal e-Mails</td>
<td>-.027</td>
<td>.252</td>
<td>-.106</td>
<td>.747</td>
<td>-.035</td>
</tr>
<tr>
<td>C.21 Telephone</td>
<td>.052</td>
<td>-.223</td>
<td>.066</td>
<td>.807</td>
<td>.128</td>
</tr>
<tr>
<td>C.22 Video Conferencing</td>
<td>.071</td>
<td>-.039</td>
<td>.827</td>
<td>.053</td>
<td>.185</td>
</tr>
<tr>
<td>C.23 SMS, Messaging</td>
<td>.152</td>
<td>.195</td>
<td>.834</td>
<td>-.093</td>
<td>.119</td>
</tr>
<tr>
<td>C.24 E-Mailing list</td>
<td>.085</td>
<td>.750</td>
<td>.305</td>
<td>-.028</td>
<td>-.255</td>
</tr>
<tr>
<td>C.25 IntraNet Portal</td>
<td>-.078</td>
<td>.066</td>
<td>.186</td>
<td>.211</td>
<td>.707</td>
</tr>
<tr>
<td>C.26 Company newsletter</td>
<td>-.011</td>
<td>.610</td>
<td>.197</td>
<td>.009</td>
<td>.622</td>
</tr>
<tr>
<td>C.27 Corporate TV</td>
<td>.346</td>
<td>-.116</td>
<td>.077</td>
<td>-.128</td>
<td>.588</td>
</tr>
<tr>
<td>C.28 Formal Reporting/Documentation</td>
<td>.352</td>
<td>.722</td>
<td>-.208</td>
<td>.030</td>
<td>.295</td>
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<tr>
<td>C.29 ERP System</td>
<td>.762</td>
<td>.104</td>
<td>.204</td>
<td>-.182</td>
<td>-.034</td>
</tr>
<tr>
<td>C.30 Performance measurement system with KPI</td>
<td>.755</td>
<td>.370</td>
<td>.033</td>
<td>-.111</td>
<td>.105</td>
</tr>
</tbody>
</table>

**TABLE: Principal Component Analysis (Extraction Method)**

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 10 iterations.
The above Principal component analysis (PCA) was used as extraction method to find component clusters of informations systems (IS) used in the SDMP. Only Column 1 shows values (Cronbach’s alpha) of above 0.7 for several IS. Therefore, these IS were used for the further calculations. The other columns 1 to 5 show only values of 0.7 or above for those IS which were not or only rarely used as reported by respondents.

Cluster identified in Column 1:

- C.19 Face-to-face Communication in informal meetings .727
- C.29 ERP System .762
- C.30 Performance measurement system with KPI .755
- C.18 Face-to-face Communication in formal meetings .539

Cluster identified in Column 2:

- C.24 E-Mailing list .750
- C.28 Formal Reporting/Documentation .722

Cluster identified in Column 3:

- C.22 Video Conferencing .827
- C.23 SMS, Messaging .834

Cluster identified in Column 4:

- C.20 Personal e-Mails .747
- C.21 Telephone .807
Cluster identified in Column 5:

C.25 IntraNet Portal .707  
C.26 Company newsletter .622  
C.27 Corporate TV .588
D. Interviews

D.1 Interview guide

This interview guide was used for the data collection through interviews.

I. Lead-in

<table>
<thead>
<tr>
<th>Thank you.</th>
<th>Thank you for your time and participation in this research.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe study.</td>
<td>I am examining information flows related to strategic decision-making. The focus is on information systems (IS) used in large firms for strategic feedback, i.e. aggregated data from operations management as input for strategy development and control. I am trying to describe the processes of different information systems including the roles of both human beings and technical systems as actors.</td>
</tr>
<tr>
<td>Implications.</td>
<td>Certain information processes may be higher performing given certain conditions as perceived by the company and documented in company documents.</td>
</tr>
<tr>
<td>Why important.</td>
<td>Develop practical advise for the design, management and evaluation of information systems.</td>
</tr>
<tr>
<td>Appreciate.</td>
<td>By soliciting executive insight into these processes</td>
</tr>
</tbody>
</table>
from specific experiences, I hope to develop a better and more useful model. I will analyse recurring themes between companies and aggregate some empirical data. This research should develop significant analytical tools and help develop information systems theory.

<table>
<thead>
<tr>
<th>Rapport and trust.</th>
<th>Showing knowledge on company based on background reading results in rapport and trust with the interviewees.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidentiality.</td>
<td>Your responses are confidential.</td>
</tr>
</tbody>
</table>

II. Today's agenda

(1) Firstly, I would like to ask you to reflect on a specific strategic decision in which you were involved and describe the information process, from the determination of the decision, including the data collected and reported. What were the major challenges, how were they overcome? What was the significant learning or insights gained during the process?

(2) Secondly, I will ask you some open-ended questions about specific strategy and information system details not covered in your discussion.

(3) Only for internal key informants in phase two: Thirdly, I will administer a short survey with rating scales on specific factors and performance perceptions.

Part 1
(1.1) Please describe a specific strategic decision in which you were involved at (the company you advise/ your company).

(1.2) Describe the decision-making process beginning with the recognition of the need for a decision. What were the major factors considered? What information was needed in this process?

(1.3) How was this data and information collected?

(1.4) Then how data and information was reported, major challenges, obstacles and surprises. How were performance measurement systems like balanced scorecards or others relevant?

(1.5) Finally the expectations of parties involved, significant learning or insights gained during the process, satisfaction and performance.

Part 2

(2.1) Type of strategic decision? Formal? Repeated or unique?

(2.2) Primary objective for decision making?

(2.3) Most important factor, why?

(2.4) Primary data and information considered?

(2.5) What type of information systems were involved? (e.g. formal performance measurement, informal networks, meeting and reporting structures, coordination and communication systems)

(2.6) Please, would you describe the decision process?

(2.7) What were the major obstacles/ challenges?

(2.8) How have you overcome these challenges?

(2.9) How would you judge the performance of this specific decision making process?

(2.10) Is this typical of most strategic decisions?

(2.11) Describe the company’s overall corporate strategic decision making.

(2.12) What role do you see playing enterprise resource planning (ERP) systems in strategic decision making?
(2.13) Do you anticipate an increased role of technology for supporting strategic decision making?

(2.14) What have been some of the most important lessons learned in your experience in strategic decision making?

(2.15) What information systems are used to support decision-making processes? Are these automated or manual systems?

Part 3 – Closing.

(4.1) Do you have any further documentation that could be useful?

(4.2) Referrals to other executives in your firm or from other firms?
Thank you.
D.2 List of Interviewees

With regard to ethical practice (see section 5.1), the list of interviewees does not contain any names of individuals or their organisations. Confidentiality is kept at any moment of the research process from data collection to publication and data storage.

<table>
<thead>
<tr>
<th>Int #1</th>
<th>Personal Information</th>
<th>German, Male Engineering and Management background</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Vignette</td>
<td>Decision about Global Performance Initiative with target setting in cooperation with heads of all SBUs Duration: 3 months</td>
<td></td>
</tr>
<tr>
<td>Industry Sector</td>
<td>Energy and Electronics Industry</td>
<td></td>
</tr>
<tr>
<td>Organisation</td>
<td>Engineering conglomerate</td>
<td></td>
</tr>
<tr>
<td>Function/Role/Level</td>
<td>Senior inhouse consultant reporting to Board of Directors, Member of global project team based at corporate headquarters</td>
<td></td>
</tr>
<tr>
<td>Type of Strategic Decision involved in</td>
<td>The strategic decision was about preparing and agreeing on enterprise-wide performance indicators as the basis for corporate performance evaluations on a global level. Most of the project was done in the global project team whose members negotiated with heads of the SBUs and prepared the proposal for the board. Altogether, the project took three months until the proposal was accepted.</td>
<td></td>
</tr>
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<table>
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<tr>
<th>Int #2</th>
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<th>English, Male, 40 years</th>
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<tbody>
<tr>
<td>Case Vignette</td>
<td>Decision about new service proposition Year: 2005 Duration: 6 months</td>
<td></td>
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<tr>
<td>Industry Sector</td>
<td>Mobile Telecommunications</td>
<td></td>
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<tr>
<td>Organisation</td>
<td>Multinational Mobile Communications Provider</td>
<td></td>
</tr>
<tr>
<td>Function/Role/Level</td>
<td>Executive at board level, national organisation</td>
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</tr>
<tr>
<td>Type of Strategic Decision involved in</td>
<td>The strategic decision was about the introduction of new services and the related specifications in the year 2005. The decision process took six months.</td>
<td></td>
</tr>
<tr>
<td>Int #3</td>
<td>Personal Information</td>
<td>Austrian living in Germany, Male, 50 years</td>
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<tr>
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<tr>
<td>Case Vignette</td>
<td>Decision about global technology implementation</td>
<td>Year(s): 2005-2006 Duration 14 months</td>
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<tr>
<td>Industry Sector</td>
<td>Software and telecommunications</td>
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<tr>
<td>Organisation</td>
<td>Software company (ERP software)</td>
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</tr>
<tr>
<td>Function/Role/Level</td>
<td>Global Account Manager Communications, strategic advisor to CEO, national level</td>
<td></td>
</tr>
<tr>
<td>Type of Strategic Decision involved in</td>
<td>The decision was about the procurement and implementation of a technology platform for one of the top five customers worldwide. It took 14 months, including a break of three months, in the years 2005 and 2006.</td>
<td></td>
</tr>
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<table>
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<th>Int #4</th>
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<tbody>
<tr>
<td>Case Vignette</td>
<td>KPI for post-merger integration</td>
<td>Year(s): 2000-2002, 24 months duration</td>
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<tr>
<td>Industry Sector</td>
<td>Electric and Electronics sector</td>
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<td>Organisation</td>
<td>Global engineering conglomerate</td>
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<tr>
<td>Function/Role/Level</td>
<td>Principal consultant</td>
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<tr>
<td>Type of Strategic Decision involved in</td>
<td>Formulating and implementing key performance indicators for new integrated system of formerly two companies over 24 months</td>
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<table>
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<tr>
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<tbody>
<tr>
<td>Case Vignette</td>
<td>Worldwide reorganisation of decentralized IT-organisation in SBU's and central HQ service unit,</td>
<td>Year(s): 2003-2005, 3 years duration</td>
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<tr>
<td>Industry Sector</td>
<td>Chemical industry</td>
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<tr>
<td>Organisation</td>
<td>Global chemical company</td>
<td></td>
</tr>
<tr>
<td>Function/Role/Level</td>
<td>Head of IT, IT top manager reporting to board, international level</td>
<td></td>
</tr>
<tr>
<td>Type of Strategic Decision involved in</td>
<td>Restructuring the IT at headquarters into decentralized units at SBU's, transformation of former corporate IT into service-oriented unit supporting SBU's over 36 months, involving strategic, technical and HR implications</td>
<td></td>
</tr>
<tr>
<td>Int #6</td>
<td>Personal Information</td>
<td>US-American living in Belgium, Male, 51 years</td>
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<tr>
<td>Case Vignette</td>
<td>Establishing new global distribution for products Year(s): 2005-2007, 27 months duration</td>
<td></td>
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<tr>
<td>Industry Sector</td>
<td>Manufacturing</td>
<td></td>
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<tr>
<td>Organisation</td>
<td>Manufacturing company</td>
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<tr>
<td>Function/Role/Level</td>
<td>Executive at global headquarters</td>
<td></td>
</tr>
<tr>
<td>Type of Strategic Decision involved in</td>
<td>Planning and implementing new distribution system at global level, involving software, personnel, strategic planning and setting up of new distribution centres in different continents</td>
<td></td>
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<table>
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<tr>
<th>Int #7</th>
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</thead>
<tbody>
<tr>
<td>Case Vignette</td>
<td>Setting of key performance indicators for worldwide supply chain management Year: 2002, 6 months duration</td>
<td></td>
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<tr>
<td>Industry Sector</td>
<td>Food sector</td>
<td></td>
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<tr>
<td>Organisation</td>
<td>Global food company</td>
<td></td>
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<tr>
<td>Function/Role/Level</td>
<td>Supply Chain Manager, reporting to Board of Directors, international level</td>
<td></td>
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<tr>
<td>Type of Strategic Decision involved in</td>
<td>Planning and preparing board decision on KPIs for worldwide supply chain management within six months from April to September 2002</td>
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<tr>
<td>Case Vignette</td>
<td>Adoption of a performance model as a basis for business planning to raise capability</td>
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<tr>
<td>Industry Sector</td>
<td>Personal care products and Cosmetics</td>
<td></td>
</tr>
<tr>
<td>Organisation</td>
<td>Industry conglomerate</td>
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<tr>
<td>Function/Role/Level</td>
<td>HR Director</td>
<td></td>
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<tr>
<td>Type of Strategic Decision involved in</td>
<td>Design and implementation of worldwide performance model for corporate management information system, 14 months duration</td>
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<tr>
<td><strong>Int #9</strong></td>
<td>Personal Information</td>
<td>German, Female, 43 years, Engineer</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td><strong>Case Vignette</strong></td>
<td>New Product Development at global level</td>
<td></td>
</tr>
<tr>
<td><strong>Industry Sector</strong></td>
<td>Chemical industry</td>
<td></td>
</tr>
<tr>
<td><strong>Organisation</strong></td>
<td>High-tech textile company</td>
<td></td>
</tr>
<tr>
<td><strong>Function/Role/Level</strong></td>
<td>Chief Technical Officer and Head of R&amp;D, Member of the Board of Directors</td>
<td></td>
</tr>
<tr>
<td><strong>Type of Strategic Decision involved in</strong></td>
<td>New Product Development from end of 2004 to beginning of 2005, five months duration, with corporate-wide implications (e.g. R&amp;D, production)</td>
<td></td>
</tr>
</tbody>
</table>
D.3 Themes and subthemes derived from the interview data

The following table shows the themes which were identified by using this method.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-theme(s)</th>
</tr>
</thead>
</table>
| Information processing                           | - Communicating in a small group of strategic decision makers and advisors  
- Organizing as a temporary organisation  
- Multiple information systems are used, sometimes simultaneously, e.g. to engage face-to-face, in meetings, and follow-up activities  
- Use of strategic conversations and trickling down of information in the organisational hierarchy |
| Attitude of managers                             | - High professionalism (“Failure is not an option.”)  
- Using all necessary means  
- Information anarchy (i.e. achieving task is more important than keeping to “rules”)  
- Using adequate IS to achieve their task  
- High motivation (e.g. working long hours, permanent availability) |
| Political information behaviour                  | - Skilful use of different political techniques e.g. alliance building, use of specialist knowledge  
- Awareness of stakeholder interests  
- Communicating with stakeholders (e.g. business luncheons, regular meetings) |
| Communicating as engaging                        | - Engaging others in face-to-face meetings or telephone conversations  
- Close follow-up  
- Meetings as important loci of decision making (e.g. boardroom meetings, steering committees) |
| Adaptation of communication behaviour to environmental circumstances | - Awareness of environment (markets, government action, interests of external stakeholders)  
- Good use of information systems in time-critical situations  
- Fast reaction and enactment of decision situations  
- Timing of communication acts |

Note: Template analysis (Crabtree and Miller, 1999; King, 2004) was used for the development of this table.
Practice gives words their meaning.

LUDWIG WITTGENSTEIN, Remarks on Colour, §317