"THIS HAS BEEN QUITE SOME CHAOS."

Integrating information systems after a merger
– a case study

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TIIVISTELMÄ

Fuusioiden ja yritysostojen määrä on jatkuvassa kasvussa ja yhä useammat yritykset painivatkin fuusion jälkeisten integraatioprosessien kanssa. Näistä vaikeimpana on pidetty tietojärjestelmien yhdistämistä. Sekä fuusion jälkeistä organisaatioiden integraatiota että fuusion jälkeistä tietojärjestelmien integraatiota käsittelevä tieteellinen kirjallisuus on kuitenkin huomiota herättävän vähäistä.

Tämä väitöskirja pyrkii vastaamaan kysymykseen "Mikä vaikuttaa fuusion tai yritysoston jälkeiseen tietojärjestelmien integraatioon ja miten integraatio muotoutuu?"

Fuusion tai yritysoston jälkeinen tietojärjestelmäintegraatio käsitteellistetään tässä väitöskirjassa organisaatiomuutoksen tyypiksi ja kyseinen ongelmakenttä hahmotellaan. Väitöskirjaan valitun prosessinäkökulman avulla siitä on voitu luoda pitkittäinen empiirinen kuvaus. Väitöskirja tuottaa ensimmäisen kattavan analyysin kyseisen prosessin ja sen lopputulosten osa-alueista.

Tämä tutkimus esittelee uusia ja hienojakoisempia käsitteitä ilmiön ymmärtämiseen ja teoreettisia työkaluja tuodaan muista taustateorioista. Väitöskirjan osana on tehty empiirinen tapaustutkimus, jotta näitä käsitteitä on voitu kehittää edelleen. Kyseiset käsitteet kuvaavat kontekstin sekä johtamisen ja muiden ihmisiin liittyvien aspektien vaikutusta fuusion jälkeiseen tietojärjestelmien yhdistämisprosessiin.

Johtopäätös on, että kyseessä on sotkuinen prosessi, jonka kulkuun ja lopputuloksiin vaikuttavat lukuisat tekijät, toimijat ja interaktiot. Väitöskirja sisältää myös fuusion tai yritysoston jälkeisen tietojärjestelmien integroinnin onnistumisen käsitteellistämisen. Nämä tulokset on yhdistetty viitekehykseen, jota esitetään ensimmäiseksi askeleeksi kohti fuusion tai yritysoston jälkeisen tietojärjestelmien integraation teoriaa.

ASIASANAT

Fuusiot ja yritysostot, fuusion jälkeinen integrointi, fuusion jälkeinen tietojärjestelmien integrointi, fuusio, yritysosto, yritysoston jälkeinen integrointi, yritysoston jälkeinen tietojärjestelmien integrointi

ACKNOWLEDGEMENTS

I am indebted to numerous people and certain institutions for helping and supporting me in this research and for making it not only possible but also a rewarding experience.

I would like to express my gratitude to Professor Hannu Salmela, who acted as my supervisor and provided valuable support. Hannu's feedback on my papers has helped me to improve them significantly. He was there to discuss my dissertation with me when I felt I was getting lost, and I never left his office without a sense of direction. I also wish to thank him for often reminding me of the examiners' requirements and thereby helping me to keep on track.

I would like to thank my first supervisor, Professor Reima Suomi, for having convinced me to do a Ph.D. in Information Systems Science, having introduced me to TUCS and having helped me to apply for the TUCS Graduate School Position. I am also grateful to him for having helped me to get started with the Ph.D. work and for using his network to find the case companies for this study.

I would like to express my gratitude to the professors who taught me a lot during and after the research visits I paid to their universities. I wish to thank Professor Karlheinz Kautz, Copenhagen Business School, for what he taught me about doing research and writing papers. I can see a significant improvement in my writings. I would also like to thank Professor Ojelanki Ngwenyama, Ryerson University, for patiently "beating my head" until I finally started understanding what science is. Ojelanki's teaching, including the challenging and rewarding seminars on Fridays, enabled me to take a giant leap forward as a young scientist. I am also very grateful to Professors Leena Suhl, Universität Paderborn, and Isaías Custódio, Universidad de Sao Paulo, for making my research visits to their universities so fruitful. I wish to thank Leena for the helpful and valuable discussions on the nature of research and matters related to instruction and the process of writing a Ph.D. dissertation, and Isaías for his constant support and encouragement.

I am grateful to Professor Mikko Ruohonen, University of Tampere, for acting as my opponent. I would also like to thank Mikko and Associate Professor Peter-Axel Nielsen, Aalborg University, who acted as my external examiners and provided valuable comments that helped me to improve the quality of this dissertation.

I wish to express my gratitude to the researchers who have co-authored papers with me during this process, and through that helped me to develop my ideas and to learn a lot: Professor Karlheinz Kautz, M.Sc.Stefan Hennigsson, Lund University, Ph.D. Maarit Viljanen, TSE, and Ph.D. Petri Parvinen, HSE. I also wish to thank all the other people who have helped me to develop my

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1   INTRODUCTION

Whilst the number of mergers and acquisitions (M&As) is ever increasing, merging firms continue to struggle with post-M&A integration processes. For example, on May 4th 2007, 500 US Airlines passengers missed their flights from Charlotte-Douglas International Airport. On that day too, thousands of US Airways passengers suffered long delays, and some passengers claimed they had not been able to speak to a ticket agent after waiting for more than two hours. This happened because of a problem with the reservation system and the fact that the automated kiosks did not work. The reason for all this was that on the same day the airline was trying to combine the reservation systems of US Airways and America West two years after their merger in 2005. (Post-gazette.com March 05, 2007)

1.1   Motivation

The aim of this dissertation is to further understanding of the integration of information systems (IS) after an acquisition. The principal motivation for conducting such a study was the practical and administrative importance of the subject. Mergers and acquisitions have become a prominent corporate strategic tool worldwide. Therefore, more and more firms face the challenges of integrating their operations, personnel, information systems and R&D after the deal is closed. However, studies indicate a failure rate[1] for corporate M&As ranging from 50 percent to 80 percent (e.g., Turner 2000: 50-70%; Bekier, Bogardus et al. 2001: up to 80%; Kelly 2006: nearly two thirds).

Epstein (2004) states that the execution of the M&A strategy through the post-M&A integration process is among the most important factors that lead to M&A failure. Turner (2000), in turn, cites a PricewaterhouseCoopers' survey concluding that integrating information systems is the most difficult aspect of post-M&A integration, and nearly three out of four of the companies surveyed had reported such problems.

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[1]   The definition of merger failure is discussed in Section 2.2.1.

The M&A situation poses special challenges in terms of IS integration. Operational personnel and lower-level managers very seldom have any personal incentives for favouring post-M&A consolidation and integration (Haspeslagh and Jemison 1991), and therefore there is an elevated risk of resistance. The exploitation of synergy from post-M&A IS integration is affected by organisational differences (Weber and Pliskin 1996), and as different procedures and processes should be harmonised, cultural clashes – power struggles over whose system will be chosen, for example – may arise. These problems are aggravated by the fact that instead of having to deal with one set of various stakeholders and intra-organisational sub-cultures, the decision makers may need to manage at least as many of these as there are merging organisations. Finally, the information systems tend to be ignored in the merger or acquisition planning process (Buck-Lew, Wardle et al. 1992; Stylianou, Jeffries et al. 1996), or their implications are not fully considered (McKiernan and Merali 1995). The IS personnel are often excluded from the pre-M&A negotiations (Calabrese 1991), but after the deal has been closed they are expected to reconcile the systems quickly (McKiernan and Merali 1995; Wijnhoven, Spil et al. 2006), without having enough time for planning and preparation (Calabrese 1991).

Several authors (e.g., Merali and McKiernan 1993; McKiernan and Merali 1995; Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999) argue that successful IS integration is related to a successful M&A outcome. However Henningsson (2007) notes that existing research on post-M&A IS integration is justified only in terms of logical reasoning on the significance of IS for modern business, or with reference to "pioneer" articles published in well-reputed journals. However, Weber and Pliskin (1996) conclude that it has importance in some cases, and Henningsson (2007) shows that its value may lie in its support of other organisational resources. Moreover, business journals have recently recognised post-M&A IS integration as an important and relevant topic (e.g., Montana 2000; Harrell and Higgins 2002; Honore and Maheia 2003; White-Dollmann 2004).

Another reason for conducting this study was that the scholarly literature on post-M&A IS integration is scarce, as noted in, I/S-Analyzer 1989; Cossey 1991; Merali and McKiernan 1993; McKiernan and Merali 1995; Stylianou, Jeffries et al. 1996; Goodwin 1999; and Mehta and Hirschheim 2004, for example. This is discussed in Section 2.3. Much of this literature is scattered and provides findings that are sometimes conflicting, as described in the following sections. All these factors make post-M&A IS integration an interesting and relevant topic for research.

1.2   Scope, objectives and research questions

This study focuses on the integration of computer-based information systems after a merger or an acquisition in the context of the related organisational change. Whilst the whole study focuses on post-M&A IS integration, the case studies and thesis papers address post-acquisition IS integration in particular. Being a multi-faceted, multidimensional, complex and context-bound phenomenon, post-M&A IS integration and the related organisational change can – and should – be studied from various perspectives in order to foster interesting discoveries and relevant contributions to the practice. Organisational-change initiatives generally focus on changing various aspects of the organisation simultaneously. Post-M&A IS integration may be sought for various reasons, for example to gain economies of scale, to standardise operative behaviour, or to obtain report standardisation and data integration (Giacomazzi, Panella et al. 1997). Such a transformation necessitates changes in all aspects of the organisation, identified by Applegate (1994) as the technical systems, the people, the organising structure and management practices. The focus of this study is on the integration of information systems in support of integrating the core business processes. Both empirical cases studied represent an acquisition situation in which the primary acquisition-related capability transfer occurred by means of resource sharing, and the need for strategic interdependence was high (Haspeslagh and Jemison 1991).

The overall objective of the study is to enhance understanding of the integration of computer-based information systems after a merger or an acquisition in the context of the related organisational change.

The research on post-M&A IS integration is reviewed and analysed in order to identify the factors affecting the chosen aspects of the process presented in the existing literature. In addition, concepts for understanding the process and the outcome are brought in from other background theories. An empirical study is carried out in order to further develop these concepts and to shed light on the dynamics of post-acquisition IS integration in the cases studied. The aim of this research is to provide a comprehensive analysis of the process and product of post-M&A IS integration, and to identify additional and more-finely-grained concepts for analysing them, with a view to producing results that add to the existing understanding of this phenomenon.

Given the aim of the study to enhance understanding of post-M&A information systems integration, the main research question is:

RQ: What influences the post-M&A integration of information systems, and how is it shaped?

In order to answer this question it is necessary to consider the dimensions of this type of organisational change: the organisational context and various

aspects of post-M&A IS integration, the change episode, and the outcomes (cf. Applegate 1994). These dimensions give the grounds for choosing the focus and sub-questions of the study, as explicated in more detail in Section 2. In sum, the sub-questions are:

SQ1. How does the organisational context affect the post-M&A IS-integration process?

SQ2. How do managerial and other human dimensions affect the post-M&A IS-integration process?

SQ3. What constitutes success in post-M&A IS integration?

This dissertation is meant for two audiences. First of all, it should be of interest to researchers studying post-M&A IS integration: the aim is to contribute to this emerging body of literature by suggesting additional and more-finely-grained concepts, and in the process of suggesting these concepts, to provide the grounds for future research. Secondly, as post-M&A IS integration is a relevant managerial problem, the dissertation is also directed towards actors in organisations taking up such a challenge. These actors include the managing director and other members of the top-management team, the chief information officer, the integration project manager, and members of the integration team, for example. In addition to these, consultants assisting companies to integrate their information systems after a merger or an acquisition are also likely to benefit from the results of the study.

This work may also serve as a basis from which practitioners will be able to plan and execute post-M&A IS integration given their enhanced understanding of the complexities and dynamics. They may, as a result, be less likely to underestimate these complexities and problems, which in turn will reduce uncertainty and the risk of failure.

1.3   Key concepts

The term *mergers and acquisitions* (M&As) is used in this dissertation to *cover both activities; the merger of equals, and merger by acquisition* in which the parties are non-equal in terms of their size and power, or then the terms are used interchangeably (Granlund 2003; Parvinen 2003; Mehta and Hirschheim 2004; Wijnhoven, Spil et al. 2006).

The wording "mergers and acquisitions (M&As)" is used in the introductory part of this dissertation when both activities are covered and when reference is made to prior literature that does not explicitly specify whether it is dealing with mergers or acquisitions. The terms "acquisition" and "post-acquisition" are used to emphasise that the situation in question involves the power difference between the "acquirer" and the "acquired" parties. These

terms are used both in the literature review when explicit reference is made to situations in which one of the parties is larger and more powerful, and with reference to the empirical cases studied, as they concern acquisition cases in particular. The acquired party may be an entire company or a smaller asset (Wijnhoven et al 2006).

This conceptualisation has evolved over time during the writing of this dissertation. The term "*merger*" is frequently used in the literature on mergers and acquisitions to cover both mergers of equals and mergers by acquisition, and this conceptualisation was originally followed here. The new conceptualization of M&As was introduced during the final phases of the editing process in order to clarify the use of these concepts. Similarly, the thesis papers use the terms "merger" and "post-merger" to cover both mergers and acquisitions, especially in the reviews of previous literature employing the term in this sense. The motivation for this was twofold: first, it follows the conventions of the existing body of literature and may therefore help the potential reader to find the papers, for example, and secondly, the conceptualisation evolved during the process of writing this thesis. The term *"acquisition"* is used to explain the situation when reference is made to the empirical acquisition cases.

Mergers and acquisitions are frequently described as phased *processes* (Haspeslagh and Jemison 1991) that can be roughly divided into pre-M&A activities, closing the deal, and post-M&A integration. A process view on post-M&A IS integration has been taken by Jonston & Yetton (1996), Granlund (2003) and Wijnhoven et al (2006), for example.

Very few articles define *integration* explicitly. In this dissertation it is defined as the '*blending together of organisational components*' (cf. Shrivastava 1986; Mehta and Hirschheim 2004). These components include the information infrastructure, the technical systems, the structure, the people and tbe management systems (Applegate 1994). They are explained in more detail in Section 2. Finally, the 'blending together of organisational components' inevitably implies *change*.

1.4   Introducing the empirical part of the study

The empirical part of this dissertation consists of two case studies. The case study approach made it possible to gain an in-depth understanding of the dynamics and complexities of post-M&A IS integration, and to develop a context-based, process-oriented description and explanation of the phenomenon that acknowledges the individuals as actors.

The empirical data came from two main case sites as well as a case provided solely by the co-author of the first thesis paper. The first main case is a printing house, called PrintComp (a pseudonym) here, which achieved its current form by acquiring a factory from a competitor. The other main case study concerns the acquisition of Regional Telecom (pseudonym) by an international telecom company. Both cases are interesting in this context as they pursued deep information systems integration after the acquisition, and various contextual, managerial and other human dimensions as well as their interactions influenced the processes and products involved. The third case, Trelleborg, was used to compare and contrast the findings from the Telecom case reported in Paper 1.

1.5   The organisation of this book

This dissertation is organised in two parts: a synopsis and the original research papers. The synopsis sketches out an overall picture of post-M&A IS integration by organising and integrating the thesis papers. It introduces Applegate's (1994) framework for IT-enabled organisational change and modifies it to suit the study of post-M&A IS integration. It is then used as an overall thesis framework that relates the results achieved from the other frameworks to each other, and serves as an "umbrella" for these components of this research. The synopsis also reviews the existing literature and provides an overview of the thesis papers.

There are five main sections in the introductory part. Section 1 presents the motivation, scope, prior literature, research questions and the outline of the study. Section 2 explains how the organisational-change perspective can be used to understand post-M&A IS Integration, and introduces the thesis papers. Section 3 explicates the methodological choices made. The main findings reported in the thesis papers are summarised in Section 4. Finally, Section 5 presents the contributions to theory and practice, and gives suggestions for future research.

The four thesis papers form the second part of the dissertation. The papers and their themes are summarised in Table 1.

Table 1.   The thesis papers and their themes

Reference	Theme	Perspective	Case(s)	Sub-question(s) addressed
PAPER 1: *Shaping the Post-Merger Information Systems Integration Strategy.* Hawaii International Conference On System Sciences HICSS-40 January 3-6, 2007, Big Island, Hawaii, USA *(in cooperation with Stefan Henningsson)*	Dynamics of strategic post-merger IS integration planning	IS planning	Telecom Ltd & Trelleborg	SQ2
PAPER 2: *Managing The Change Process Of The Post-Merger Enterprise Systems Integration: A Case Study.* The International Journal of Information Systems and Change Management. Vol. 1, No 1. 2007	Dynamics of post-acquisition IS integration	Business Process Change	PrintComp Ltd	SQ1, SQ2
PAPER 3: *A framework for understanding post-acquisition IS integration.* TUCS Technical Reports, No 833, August 2007. *(in cooperation with Karl Kautz)*	Dynamics of post-acquisition IS integration process	Structuralist, individualist and interactive process perspectives	PrintComp Ltd	SQ1, SQ2
PAPER 4: *Evaluating success in post-merger IS integration – a case study.* The Electronic Journal of IS Evaluation (EJISE). Vol. 8 Iss. 3 Dec. 2005, pp 143-150.	Description of the aspects of post-merger IS integration success	IT evaluation	PrintComp Ltd	SQ3

The four thesis papers are introduced in more detail in Section 2.8.

2 THEORETICAL BACKGROUND AND PRIOR LITERATURE

Roubar idéias de uma pessoa é plágio. Roubar de várias, é pesquisa.
(Anonymous)

This section introduces a framework for IT-enabled organisational change and adopts it to suit the study of post-M&A IS integration. Thereafter, prior literature on post-M&A integration and post-M&A IS integration is reviewed in sub-sections 2.2 and 2.3, respectively.

The contributions of the prior literature on post-M&A IS integration are organised along the concepts of context, aspects, change episodes and effectiveness. Section 2.4 describes the various aspects of the phenomenon and justifies the choice of focus for this study, namely the link between the changes in IS and changes in technical systems. Sections 2.4, 2.6, and 2.7 review previous research on the context, change episode and success in post-M&A IS integration respectively, and give the grounds for the sub-questions addressed.

2.1 Introducing the framework for IT-enabled organisational change

This sub-section adopts a descriptive framework for IT-enabled organisational change and adapts it to post-M&A IS integration. Since the blending of organisational components after an acquisition alters the organisations concerned, it is relevant to study post-M&A IS integration through the lens of an accepted framework of organisational change.

Pettigrew and Whipp (1991) identify content, process and context as the three essential dimensions of strategic change, which they conceptualise as a continuous process that occurs in given contexts. These concepts make it possible to capture the interplay between strategic change and competitiveness holistically, and to understand mergers and acquisitions (or even sequences of them) as a strategic act motivated by certain targets and objectives related to the desired products and markets (content) for example, formulated and implemented by change managers but yet a continuous, iterative and uncertain process that is embedded in the external and internal context. In a way, post-M&A integration could be understood as a sub-process of this bigger picture,

and post-M&A IS integration as a sub-process of this sub-process. Having explained the relationship of the process of post-M&A IS integration to the interplay between strategic change and competitiveness, I will move on to analyse its components.

This study adapts and builds on the *descriptive* framework developed by Applegate (1994) in order *to enhance understanding of the problem space*. Secondly, the thesis framework is used *to organise the contributions of prior literature to post-M&A IS integration*, thereby furthering understanding of this integration process as well as identifying gaps in the literature. Thirdly, understanding the problem space entails *choosing the focus and the specific topics of the study, as well as understanding the relationships between them.* In other words, the thesis framework is used to map the contributions of the individual papers. It also allows identification of the topics that fell outside the scope of the study but would be fruitful and relevant for future research.

Like Applegate's (1994) framework, the thesis framework is an insightful descriptive framework that mainly concerns the organisational structure before and after the transition. It acknowledges the dynamics during the change episode but does not focus on them. Given the aim in this dissertation to understand the change episode, other frameworks that facilitate the study of some of the dynamic aspects were sought, as explained in Section 2.8. The value of the thesis framework in relation to these others lies in the fact that it (i) shows where other frameworks could be used, and (ii) explains the relationships between the results achieved by relating the other frameworks to each other, and thereby serves as a portmanteau (or an "umbrella") for these components in this research.

Applegate's (1994) framework emphasises the fact that changing organizing structure and technical systems alone does not suffice and that people and management practices also need to – and will – be changed simultaneously. As post-M&A integration processes require changes in work routines, cultural habits and behaviour,, organisational actors continuously have to learn and change. Therefore, change agents must also attend to the blending of the political, social and cultural aspects, which are frequently difficult to address. The framework is depicted in Figure 1.
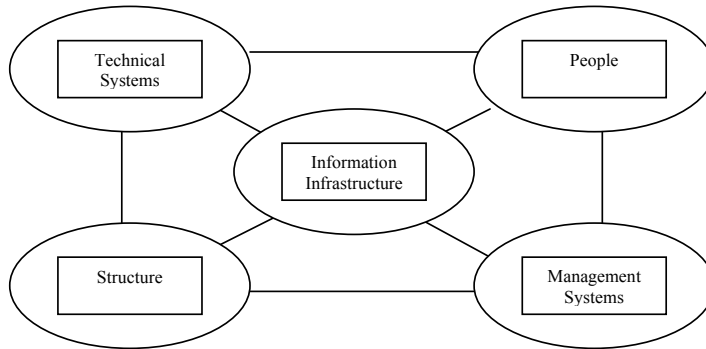
Figure 1.   A framework for IT-related organizational change (Applegate 1994, p. 20; simplified)

Technical systems consist of core business processes, product/process technology and tasks Applegate (1994). The focus of the empirical case studies in this dissertation lies in examining the change in information systems in support of changing technical systems in order to achieve operational synergies. This is inherently interlinked with changes in structure (including unit groupings, coordinating mechanisms and power and authority), as well as with changes related to people (including roles, career development, training, and skills and knowledge) and in management systems (including planning and control, culture, and incentives and rewards) (ibid.).

Alongside these aspects of change, Applegate (ibid.) notes that the context and outcomes as well as the process, must also be accounted for in studies of IT-enabled organisational change, as depicted in Figure 2.
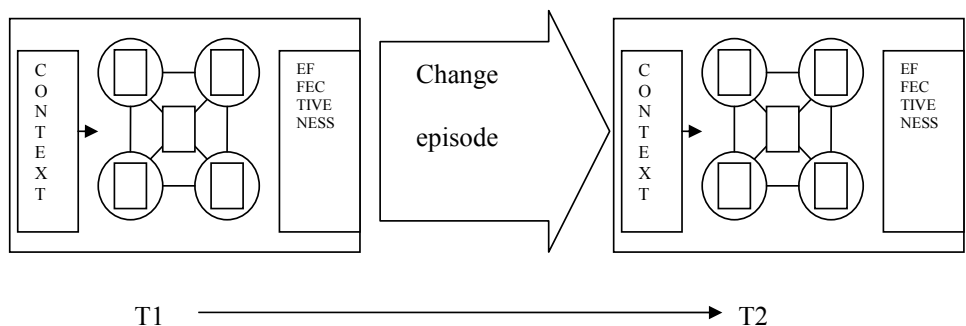
Figure 2.   A longitudinal perspective on IT-enabled organisational change (Applegate 1994, p.21; simplified)

Figure 2 depicts the longitudinal perspective on organisational change, incorporating the organisational context, aspects of change, and organisational effectiveness before (T1) and after (T2) the change. Applegate's (1994) definition of organisational effectiveness covers process performance, stakeholder satisfaction, and results.

The change episode covers planning and managing both the change and the change mechanisms.

Since post-M&A IS integration includes blending two (or more) organisations into a new configuration, Applegate's (1994) Framework for IT-enabled organisational change is modified to suit this context, as depicted in Figure 3.
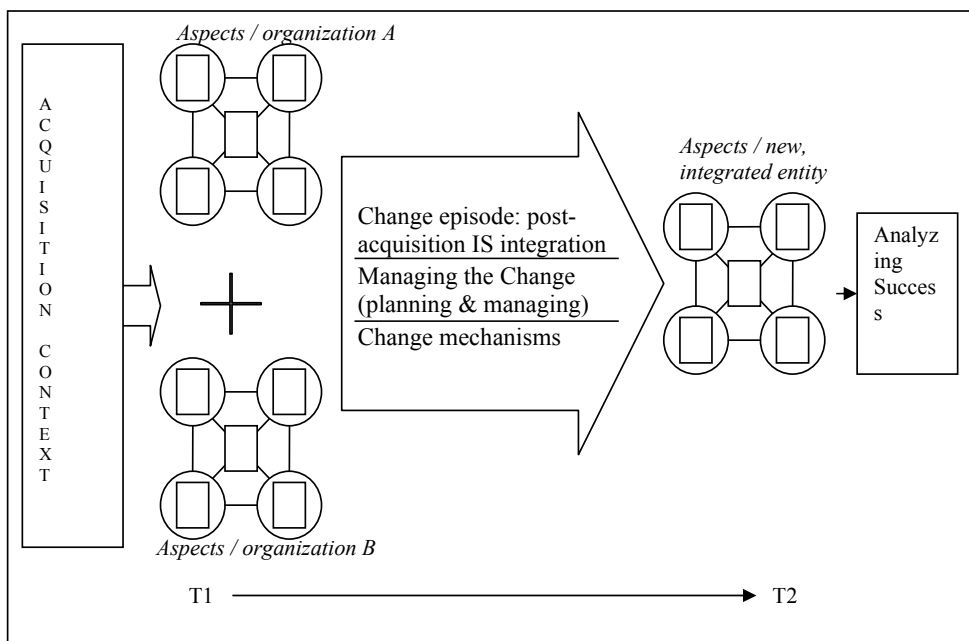
Figure 3.   A framework for analyzing post-M&A IS integration

Figure 3 illustrates how the organisational aspects of the two (or more) merging companies are blended together during post-M&A IS integration. Blending the technical systems, the structure, the people and the management systems imposes special challenges on the responsible managers, which is also reflected in the role of IS integration problems play in overall post-M&A management, and even in M&A failure (cf. Section 1.1).

This integration takes place in an organisational *context* that is characterised by an acquisition situation that is often riddled with uncertainties, and cultural and political turmoil, etc. as described in Section 2.5. Applegate (1994) bases her view of organisational change taking place in relation to the organisation's

environment on the work of contingency theorists, noting that the managers determine the environmental domain in which the organisation operates, and that organizations possess the ability to influence and create that environmental context.

Analysis of the organisational aspects and the environment allows examination of the interplay among the environmental context, the organisational design and the information infrastructure, but it fails to capture the sequence of the evolutionary and revolutionary changes through which the organisation proceeds when it undergoes IT-enabled organisational change. In order to understand the full magnitude of the change process, it is necessary to examine the *change episode*. This type of longitudinal view captures the relationships between stimuli, decision/action sequences (here: planning and managing the change), change mechanisms, and forces for alignment (Applegate 1994). This, in turn, enables the detailed mapping of the process through which the organization is transformed from its configurations at time T1 to the new, integrated configuration at time T2.

Applegate (ibid.) draws on writings on open systems and contingency theory in noting that a framework for analysing IT-enabled organisational change may be developed for analysing *effective* organisations, and hence she includes the concept of organisational effectiveness in her framework. Her definition of organisational effectiveness covers process performance, stakeholder satisfaction, and results.

The process of post-M&A IS integration may result in any level of effectiveness – higher, lower or equal to the effectiveness of the previous configuration(s). For example, it may happen that the level of effectiveness is very high at time T1, but falls during the post-M&A IS-integration process and is merely satisfactory at time T2. In this case, even if the effectiveness of the new configuration is satisfactory, the process has actually lowered the performance level, and the IS integration may even be considered a failure. Therefore, the choice was made in this dissertation to address the outcomes of post-M&A IS integration in a narrower sense, focusing on its success, as explained in Section 2.7.

2.2 Prior research on post-M&A integration

2.2.1 On M&A success

Mergers and acquisitions have become a prominent corporate-strategy tool. They have been subject to academic study for decades, and as a result there is a vast body of literature covering various aspects of the phenomenon. This sub-section provides a brief summary of the previous research, focusing on M&A success and the integration phase. The following sub-section 2.3 reviews the literature on post-M&A IS integration.

Both explanations and indicators of overall M&A success are varied, multifaceted, and debated over. The most commonly used indicators of success are stock prices, financial performance, synergy, and evaluations of the managers of the companies involved. Other approaches are also used. For example, mergers and acquisitions are regarded as failures if they are later divested or liquidated, and in some studies the indicators of success appear implicitly in the case descriptions. Several studies use multiple indicators of success (Vaara 1996). Similarly, various indicators of M&A failure have also been suggested. Failure has been defined variously as "no net growth" or "share performance below the industry average" (Bekier et al. 2001), and indicators such as "failure to create value" or "destroying value" have also been cited.

As the general patterns of M&A activity have changed, explanations for success or failure have also evolved. In the great M&A boom in the 1960s and early 1970s, most combinations were of the conglomerate type. (Cartwright and Cooper 1995) The conclusion these authors drew from research on this era was that the main factors contributing to M&A failure included power struggles at the top-management level, relative partner size, the context (i.e. the degree of hostility surrounding the bid), post-M&A managerial exhaustion, and apathy as a result of difficult and protracted negotiations, as well as insensitivity towards grieving and anxious managers and employees.

The next wave of M&As in the 1980s and 1990s were more frequently of the horizontal or related type, and involved partnerships between the organisations in the same business branch. They tended to perform more successfully as there was more opportunity to transfer product knowledge and expertise, and to offer more potential for achieving economies of scale. However, this also required deeper and wider integration among the people concerned in terms of their systems, procedures, practices and organisational

cultures. Hence, the organisational culture is a noticeable factor affecting M&A outcomes (Cartwright and Cooper 1995).

The emergence of the "softer" or human side is also apparent in the research. According to the review conducted by Vaara (1996), the explanations for success or failure in M&As include: (1) strategic fit, (2) cultural fit, (3) the management of the merger or acquisition process, (4) employee resistance, and (5) other explanations such as environmental factors, management turnover, the method of financing, the relative sizes of the organisations, prior acquisition experience, the pre-acquisition performance of the acquiree, and organisational age.

Larsson and Finkelstein (1999) present an integrative model of M&A performance in which they identify three major antecedents of synergy realisation: combination potential, organisational integration, and employee resistance. These, in turn, are affected by similarity in managerial style, cross-border combination and relative size. Furthermore, according to Singh and Zollo (1998), value creation can be explained in terms of the characteristics of the target firm, the factors related to post-M&A decision-making, and factors related to learning to manage integration processes.

It has been stated that the corporate culture and other "softer" organisational issues are among the main causes behind success or failure in an M&A situation. Most people resist change, and cultural change is among the most difficult because culture provides the foundation for one's life. It is for this reason that attempts to implement organisational, procedural, and other M&A-related changes are resisted or even "sabotaged". In addition, high levels of layoffs bring insecurity, anxiety and stress that lower the morale and decrease productivity. Furthermore the members of staff who are most employable elsewhere – and probably the ones the new organisation wishes to retain – may leave. (e.g., Buono et al. 1985; McKiernan – Merali 1995; Franck 1990; I/S Analyzer 1989).

However, despite the complexity and importance of the cultural factors, the strategic fit, financial leverage and tax loss tend to play a far greater role in the analysis of the potential advantages and disadvantages of the merger or acquisition (e.g., McKiernan – Merali 1995; Franck 1990; Buono et al. 1985). Similarly, Parvinen (2003) identifies five streams of M&A literature – the finance stream, the process stream, the strategy stream, the human and organisational stream, and the economics- and law-related stream – and concludes that the literature on post-M&A integration is sparse despite its importance to the overall merger or acquisition performance.

2.2.2   The integration phase

Mergers and acquisitions are often seen as processes consisting of between seven and nine phases (e.g., the setting of strategic objectives, search and screening, strategic evaluation, financial evaluation, negotiation, contracting, designing the integration strategy, designing an integration plan, and executing the integration plan) (Jemison and Sitkin 1986; Haspeslagh and Jemison 1991). Post-M&A integration is a gradual and interactive process in which the individuals from two or more organisations learn to co-operate in the transfer of strategic capabilities.

The depth of post-M&A integration may vary from maintaining the *status quo* in both companies to annexation (or a merger of equals), and the need for it is derived from the motives behind the merger or acquisition. Motives such as increasing the overall size of the firm or deriving synergies in marketing require different degrees of integration. (Shrivastava 1986; Datta 1991; Haspeslagh and Jemison 1991) It has also been stated that the need for strategic interdependence and organisational autonomy affect the necessary degree of integration (Haspeslagh and Jemison 1991). However, Pablo (1994) found that not only task-related issues, but also cultural and political factors were important in determining the desired depth of integration.

The importance of post-M&A integration lies in the fact that the value creation can only begin when the organisations begin to work towards the purpose of the acquisition. In other words, the integration is the source of value creation. (Shrivastava 1986; Haspeslagh and Jemison 1991; Habeck, Kröger et al. 2000) Furthermore, as mentioned in Section 1, integration problems may lead to merger or acquisition failure (Epstein 2004).

M&A processes are case-specific and idiosyncratic by nature (Bower 2001; Huysman, Leonard et al. 2002; Granlund 2003). The different M&A motives affect the post-M&A processes (Bower 2001), including IS integration (Giacomazzi, Panella et al. 1997). The motives could be classified as over-capacity, geographic roll-up, product or market extension, R&D, and industry convergence (Bower 2001).

Other factors affecting post-M&A integration include the quality of the acquired company, the size of the merging companies, the diverse strategies used to acquire the firms, and the complexity of the technologies and production systems that need to be integrated. Furthermore, the acquisition target is often selected on a strategic or financial basis, and issues of organisational and cultural fit are ignored in the pre-M&A planning (Shrivastava 1986; Haspeslagh and Jemison 1991; McKiernan and Merali 1995).

However, major integration problems include those related to integrating the information systems and cultures (Turner 2000). The importance of cultural and human integration is demonstrated by Birkinshaw, Bresman et al. (2000), for example, who found out that the level of human integration already completed mediated the relationship between the task integration and acquisition success. Weber and Pliskin (1996) also found corresponding results in their study on banks: organisations that engaged in high levels of IT integration outperformed those that did not integrate, and IT integration was strongly affected by cultural issues.

After reviewing the 567 M&A-related articles published in 65 management science journals in the 1990s, Parvinen (2003) concluded that "*post-integration management… enjoy[s] conspicuously little attention*". For the purposes of this dissertation, I examined the titles of the articles reviewed by Parvinen (2003), and found 15 that had any reference to the post-M&A-integration phase. The following table summarises the foci and methods of data collection of these and of more recent writings on post-M&A integration.

Table 2.   Foci and methods of data collection of prior contributions on post-
            M&A integration

Focus	Methods	Reference
managing PMI		
the allocation process in M&As	case study	(Meyer 2001)
the impact of communication on the negative effects of mergers	longitudinal field experiment	(Schweiger and Denisi 1991)
decision-making: determinants of the depth of post-acquisition integration	decision-making exercise (56 respondents)	(Pablo 1994)
creating transition structures in M&As and alliances	(trade journal)	(Marks and Mirvis 2000)
post-acquisition management and learning in a European east-west context	survey incorporating some qualitative inquiry	(Villinger 1996)
the ethics of organisational transformation (including mergers)	(book review)	(Sandelands 1991)
cultural issues in PMI		
the role of the national and corporate cultural fit in M&As	survey	(Weber, Shenkar et al. 1996)
cultural compatibility index	survey	(Veiga, Lubatkin et al. 2000)
conflicting cultures in mergers	experiment	(Weber and Camerer 2003)
acculturation in acquired organisations	theoretical	(Elsass and Veiga 1994)
acculturation in mergers	case survey (50 cases)	(Larsson and Lubatkin 2001)
cultural and HRM issues	(trade journal)	(Tetenbaum 1999)
human issues in PMI		
human issues in post-M&A management	(trade journal)	(Marks and Mirvis 1992)
individuals' resistance to PM-knowledge transfer	multiple longitudinal case study	(Empson 2001)
the role of integration managers in mergers	(trade journal)	(Ashkenas and Francis 2000)
top-management turnover in domestic vs. cross-border acquisitions	ex post facto analysis of secondary quantitative data (390 companies)	(Krug and Hegarty 1997)
top-management turnover in acquisitions	survey	(Krug and Hegarty 2001)
other PMI issues		
the role of IS/IT in acquisitions	mixed: case study research + survey	(McKiernan and Merali 1995)
antecedents of acquisition performance (management styles, post-acquisition integration, reward and evaluation systems)	survey	(Datta 1991)
target selection, preparation & PMI	case description	(Mirvis and Marks 1992)
knowledge transfer in international acquisitions	mixed: survey & case	(Bresman, Birkinshaw et al. 1999)

Table 2 shows how cultural and human issues dominate the research on post-M&A integration. This has also been observed by other authors (e.g., Merali and McKiernan 1993; McKiernan and Merali 1995), who note that the issues of strategic, cultural and organizational fit have been extensively studied in the literature, but who also suggest that there may be other, perhaps more significant reasons for poor ex-post performance, including the IS integration. Moreover, Weber and Pliskin (1996) conclude that post-M&A IS integration indeed affects performance in some cases. Another prominent feature in the literature is the dominance of quantitative methods, with only a few case studies to provide in-depth insights into post-M&A processes and activities. This dissertation aims at contributing to the filling of these gaps by providing an in-depth case study of post-acquisition IS integration.

2.3   Prior research on post-M&A IS integration

Scholarly literature on post-M&A IS integration is scarce, as noted by I/S-Analyzer 1989, Cossey 1991, Merali and McKiernan 1993, McKiernan and Merali 1995, Stylianou, Jeffries et al. 1996, Goodwin 1999 and Mehta and Hirschheim 2004, among others. The above literature review verified this. I examined the titles of the 567 M&A-related articles reviewed by Parvinen (2003) and found 15 that had any reference to the post-M&A-integration phase. Upon inspection, only one of them (McKiernan and Merali 1995) contained the words "Information Systems" or the equivalent.

I also searched through the following ten reputable IS journals (identified by Mylonopoulos and Theoharakis 2001; Vessey, Ramesh et al. 2002, for example) for published research papers: Information Systems Research (ISR), the Journal of Management Information Systems (JMIS), MIS Quarterly (MISQ), Communications of the ACM, Information and Management, Management Science, Harvard Business Review, Decision Sciences, Decision Support Systems, and the European Journal of Information Systems (EJIS). The search covered all papers electronically available at the end of 2005. Within the journals I searched for articles that contained the words "merger" and "acquisition", as this would also cover articles containing words such as "mergers", "acquisitions", "post-merger" and "post-acquisition". In short, I found only five articles, four in Information & Management and one in MISQ. Table 3 below shows the results of this search.

Table 3.   Literature search in major journals

	From	*To*	*Papers found by means of the keywords*	*Papers on post-M&A IS integration*
ISR	1990	2005	17	0
JMIS	1984	2005	18	0
MISQ	1984	2005	14	Main and Short 1989
Communications of the ACM	1984	2005	70	0
Information and Management	1996	2005	12	Stylianou et al. 1996 Weber and Pliskin 1996 Giacomazzi et al. 1997 Robbins and Stylianou 1999
Management Science	1984	2005	65	0
Harvard Business Review	1984	2005	251	0
Decision Sciences	1984	2005	28	0
Decision Support Systems	1997	2005	13	0
EJIS	1993	2005	48	0
TOTAL			*536*	*5*

As Table 3 shows, 536 articles were found by means of these keywords, but only five were accepted for this analysis because the terms "merger" and "acquisition" were also used in other contexts. For example, the term "acquisition" was used in the contexts of acquiring information systems, technology, knowledge, staff, and clients, for example, and there were numerous papers on M&As among Internet and telecom companies, in other words on M&As but not on post-M&A IS integration. Finally, Pan and Viña (2004) discuss all kinds of situations requiring financial-data integration, including mergers and acquisitions. I also found one article (Buck-Lew et al. 1992) in Information & Management outside the time range provided by the electronic library in question. The following table summarises the purposes and methods of the articles published in the core journals consulted.

Table 4.   Prior contributions on post-M&A IS integration: core journals

Purpose	Method	Reference
To propose a decision-support model for strategic post-merger IS integration decisions based on the characteristics of M&A, focusing on the manufacturing sector	survey	Giacomazzi et al. 1997
To develop a conceptual model that examines the relationship between the measures of IS integration success and components that affect it	survey	Stylianou et al. 1996
To investigate the potential contribution of IS integration to the effectiveness of mergers and acquisitions	survey	Weber and Pliskin 1996
To examine IS professionals' ability to generate positive outcomes as a result of the integration of acquirer and target information systems	survey	Robbins and Stylianou 1999
To describe the post-M&A IT planning at Baxter and the role of this effort in building a partnership: would the "minimalist", de-centralized approach work for the IS function of the case company?	case description	Main and Short 1989
To describe why IT fit should be explicitly considered and assessed in corporate acquisitions	case description	Buck-Lew et al. 1992

A few observations can be made based on the above table. First, the scarcity of articles in the ten top IS journals calls for more high-quality research on post-M&A IS integration. Secondly, among the articles found in these journals, two older ones (Main and Short 1989 and Buck-Lew, Wardle et al. 1992) are case descriptions and the other four (Stylianou, Jeffries et al. 1996, Weber and Pliskin 1996, Giacomazzi, Panella et al. 1997 and Robbins and Stylianou 1999) use survey data. The studies using the survey method consist of causal models based on deterministic assumptions (Markus and Robey 1988), and largely discount the importance of human intentions and action in shaping post-M&A IS integration. Furthermore, they are variance models and thus do not adequately capture the contextual and process issues that are fundamental to examining organisational change (Orlikowski 1993; Walsham 1993; Applegate 1994). However, post-M&A processes are essentially about change, which suggests that there is a need for research using more varied methodological approaches and aiming at producing process theories.

Next, the key contributions to post-M&A IS integration are briefly reviewed with regard to their contents. Weber and Pliskin (1996) investigate the potential contribution of IS integration to the effectiveness of mergers and acquisitions. They found, first, that banks that engaged in high IS integration outperformed those that avoided it, and secondly that high cultural differences between organisations were negatively associated with M&A effectiveness. Giacomazzi et al. (1997), Main and Short (1989) and Buck-Lew et al. (1992) address issues related to post-M&A IS-integration planning. Giacomazzi et al. (1997) established that strategic IS integration decisions in manufacturing firms were based on a mix of both technical and organisational factors. The principal factors included integration simplicity (economies of scale, centralised architecture, the same country, the search for integration or vice versa) and differences in management needs (kind of business and need for integrating databases). Buck-Lew et al. (1992) describe how the assessment of the IT fit (i.e. the match between the technology infrastructure, the people and the organisation behind the technology, and the quality of information used to support the operations and strategy of the organisation) is an important factor in the evaluation of an acquisition since it helps to create realistic expectations and provides insights into the complexities of the integration effort. Finally, Main and Short (1989) describe a real-life case of post-merger IT planning and the role of this effort in building a partnership between IT and business executives. They found that the merger created an opportunity for improving IS/business alignment and other aspects of managing the information systems in the company.

Stylianou et al. (1996) and Robbins and Stylianou (1999) examine the relationship between measures of IS integration success and the components that affect it. Apart from past integration experience, the critical factors involved in achieving a net positive outcome of post-M&A IS integration are managerial in nature and are largely controllable. Successful integration requires high-quality planning, positive top-management support, high-quality end-user communication, and a high level of end-user involvement in strategic IS decision-making. (Robbins and Stylianou 1999; cf. Stylianou et al. 1996) A large number of changes in IS policies and procedures was found to have a negative impact on IS staff (Stylianou et al. 1996). On top of all this, an emphasis on IS standardisation was found to have a positive influence on the success of post-M&A IS integration (Robbins and Stylianou 1999; cf. Stylianou et al. 1996), and incompatibility in programming language to affect it negatively (Stylianou et al. 1996). Finally, the exploitation of synergy from IS integration is affected by organisational differences (Weber and Pliskin 1996).

Since there was a scarcity of literature on post-M&A IS integration in the core journals, it was necessary to start looking for articles published in journals other than those ranked as major. A search for papers published in other journals was therefore conducted by looking through databases, studying the references lists of the papers found, and taking suggestions given by colleagues. The journals in question included, for example, the Journal of Strategic Information Systems, the Journal of Global Information Management, Long Range Planning, Accounting, and the Auditing & Accountability Journal. Table 5 below summarises all the papers found.

Table 5.   Prior research on post-M&A IS integration

Focus	*Method*	*Reference*
Change episode: shaping the strategy		
technical, organisational and strategic issues at the level of the IT organisation	case study research	(Johnston and Yetton 1996)
strategic PMI-IS decisions	survey	(Giacomazzi, Panella et al. 1997)
choice of IT governance structure in cross-border acquisitions	case study research	(Chin, Brown et al. 2004)
(strategic) IT integration decisions after a merger	theoretical	(Mehta and Hirschheim 2004)
post-M&A IT integration strategy	case study research	(Wijnhoven, Spil et al. 2006)
process of PMI-IS planning & partnership building	case description	(Main and Short 1989)
Change episode: the PMI-IS change process and managing it		
"issue of IT in friendly take-overs"; IT fit	case description	(Buck-Lew, Wardle et al. 1992)
Commercial Systems Project aimed at integrating all aspects of international commercial activities. An IS was the core of this project and an enabler of the change.	case description	(Jelassi and Dutta 1993)
management of IS/IT issues in acquisition management	mixed: case study research + survey	(Merali and McKiernan 1993)
the role of IS/IT in acquisitions	mixed: case study research + survey	(McKiernan and Merali 1995)
post-M&A IS integration success and the factors influencing it	survey	(Stylianou, Jeffries et al. 1996)
the contribution of IS integration to M&A effectiveness	survey	(Weber and Pliskin 1996)
post-acquisition IS integration & its outcomes	survey	(Robbins and Stylianou 1999)
knowledge transfer in post-acquisition integration	theoretical	(Huysman, Leonard et al. 2002)
(1) the role of MAS in the PMI of cultures (2) the post-M&A MAS integration process, decision-making & emergence of the form of the system	case study research	(Granlund 2003)
The Use of Service Oriented Architectures (SOA) in M&A	theoretical + qualitative (interv)	(Henningsson, Svensson et al. 2007)
Effectiveness		
the role of IS in M&A	Theoretical + illustrative case study	(Henningsson 2007)
(See also Robbins and Stylianou (1999) and Stylianou et al. (1996) for their conceptualisation of post-M&A IS integration effectiveness.)		

Analysis of the articles listed in the above table revealed that they covered the whole integration cycle from strategic planning via execution to outcome measurement. It was thereby confirmed that a longitudinal view of post-M&A IS integration could prove fruitful.

This observation was combined with the understanding gained in writing what was the first paper in chronological terms (Paper 2), which also had an exploratory role in this research process. The preliminary understanding was that post-M&A IS integration is about change, and this was verified in the process of carrying out the research that led to the writing of Paper 2, which is based on a change-management framework. Reflection on this research project and the empirical data collected resulted in a more comprehensive understanding of post-M&A IS integration as a form of organisational change, and facilitated the selection of the other frameworks used in this dissertation. The thesis framework (as introduced in Section 2.1) allows for the studying of post-M&A IS integration as organisational change, and it also takes into account the longitudinal perspective.

2.4   Aspects of change related to post-M&A IS integration

The analysis of the literature on post-M&A IS integration presented in this sub-section gives the grounds for articulating the *focus of this study*, namely *the link between changes in IS and changes in technical systems*. It also firmly sets the problems of post-M&A IS integration in their organisational context.

According to Applegate (1994), the key aspects of organisational change include the technical systems, the people, the organizing structure, and the management practices. When the goal is fundamental change – as it often is when full organisational and IS integration is desired after a merger or an acquisition – an episode of such a transformation may include changes in each of the dimensions. The existing literature on post-M&A IS integration also accounts for some of these interdependencies.

The importance of linking changes in IS and changes in technical systems (core-business processes, tasks) is easily understood in cases in which synergies are sought in production, for example, and deep IS integration is needed to enable this. Merali and McKiernan (1993) and McKiernan and Merali (1995) conclude that viewing IS integration as merely reactive may prevent some organisations from exploiting IS proactively in order to reshape and reposition the company in its competitive environment. McKiernan and Merali (1995) note that one of the reasons for this failure is that the integration is driven solely by an urgent need for operational consolidation. Furthermore, Henningsson, Svensson et al. (2007) suggest that a poor understanding of the

business processes negatively affects post-acquisition integration when service-oriented architecture is used as a tool.

Stylianou, Jeffries et al. (1996) note the link between changes in IS and changes for the IS staff: a large number of changes in IS policies and procedures has a negative impact on the IS staff. Johnston and Yetton (1996) recognise the IT individual's skills and roles as one of the elements of the IT configuration, and suggest that incompatibility in the IT configurations troubles the integration.

The literature on post-M&A IS integration also touches on the link between the system and the people (roles, education, career development, skills & knowledge) in terms of user acceptance (Henningsson, Svensson et al. 2007) and user satisfaction (Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999), for example.

Changing the organizing structure requires the change agent to pay attention to unit groupings, coordinating mechanisms, and the way authority and responsibility are shared. In M&A situations in which organisational integration is desired, these changes are frequently present as units may be regrouped and control and coordination mechanisms for the new organisation must be designed. However, the literature on post-M&A IS integration largely ignores this aspect. An exception to this is the work of Henningsson (2007), who shows that the value of IS integration may lie in supporting the desired transformation of the organisational structure. He concludes that the management's ability to align IS and organisational development is among the key factors contributing to successful post-M&A IS integration. Johnston and Yetton (1996) established the IT structure as one of the components of the merging firms' IT configurations, mismatches among which may trouble integration.

Finally, management practice comprises defining how planning and controlling is carried out in the organisation, choosing the incentive schemes, and managing the organisational culture. When organisational integration is desired after a merger or an acquisition, all these need to be unified, and these integration processes are often intertwined with IS integration processes. According to Weber and Pliskin (1996), exploiting synergy from post-M&A IS integration is affected by cultural differences between the merging organisations, and Granlund (2003) suggests that cultural conflicts play an important role in the post-M&A integration of management-accounting systems. Johnston and Yetton (1996) found that incompatibilities in IT configurations negatively affected integration, and recognised IT management processes and IT strategy as elements of the IT configuration. Chin, Brown et al. (2004), in turn, established that the organisational culture (cultural differences between the acquired or merged units) and IT competence were

among the factors affecting the formation of the post-M&A IT governance structure. Moreover, differences in existing databases and applications (Stylianou, Jeffries et al. 1996; Manwani and O'Keefe 2003), as well as technical integration problems (e.g., Merali and McKiernan 1993), have been blamed for problems in post-M&A IS integration. On the other hand, higher data-sharing across applications (Stylianou, Jeffries et al. 1996) and an emphasis on IS standardisation (Robbins and Stylianou 1999), as well as appropriate system-development methodologies (Jelassi and Dutta 1993), have been found to be positive factors in obtaining desired outcomes. However, Wijnhoven, Spil et al. (2006) conclude that integrating the hardware and the software is rather easy, but integrating the IT policies and the organisational procedures requires socialisation processes.

2.5   The context of post-M&A IS-integration-related change

Change related to post-M&A integration takes place in the organisational context of the M&A situation. This sub-section positions the first sub-question of this study in relation to the other components of the dissertation, and justifies its choice:

SQ1. How does the organisational context affect the post-M&A IS-integration process?

Applegate (1994) established that the environmental context, the organisational context, internal and external resource availability, and the stimulus for change all contribute to strategy. It is also acknowledged in the literature on post-M&A IS integration that the blending of organisational components takes place in the M&A context. M&A processes are case-specific and idiosyncratic, and this has an effect on both the strategy and the other phases and elements in the post-M&A integration of information systems (Huysman, Leonard et al. 2002; Granlund 2003).

These idiosyncrasies may explain why the previous literature suggests several different or even contradicting antecedents for adopting certain types of post-M&A IS-integration strategy. As Wijnhoven, Spil et al. (2006) note, it has been suggested that the relation between the merger or acquisition ambition and the targeted level of IS integration is linear, but in practice there are intermediating priorities and conditions. For example, Johnston and Yetton (1996) suggest that the merger or acquisition strategy determines which integration strategy may be the most effective. Giacomazzi, Panella et al. (1997) state that the strategic IS-integration decision depends on a mix of both technical and organisational factors, principally the simplicity of the integration (economies of scale, centralised architecture, the same country, the

search for integration or vice versa), and differences in management needs (the kind of business and the need for integrating databases). Mehta and Hirschheim (2004) suggest that how and when IS-integration decisions are made could be analysed from three perspectives: business/IT strategic alignment, the Wall Street effect, and acquirer/target power differentials. However, Wijnhoven, Spil et al. (2006) found that there were intermediating priorities and conditions, such as user participation, location integration, type of IS, organisational participation in an IS user organisation, and physical limitations. They also note that the chosen integration objectives influence organisational integration, and ultimately the success of IS integration.

Other contextual issues affect success, too. For example, Stylianou, Jeffries et al. (1996) and Robbins and Stylianou (1999) found that organisational M&A management factors, including the quality of the merger or acquisition planning and IS participation in it, played an important role in determining the outcomes of post-M&A IS integration. Stylianou, Jeffries et al. (1996) also note that programming-language incompatibilities have a negative effect, and Merali and McKiernan (1993) and McKiernan and Merali (1995) place IS management maturity among the determinants of integration effectiveness.

There are two observations worth making based on the previous contributions related to the organisational context of post-M&A IS integration presented above. First, the literature is scattered and the findings are sometimes in conflict. In addition, my preliminary experience of the cases studied suggests that contextual issues affect not only the strategy but also the overall process. Therefore, more research is needed. Furthermore, the thesis framework describes the building blocks of the context, but the aim of this dissertation is to enhance understanding of the dynamics of post-M&A IS integration. This gives rise to the first sub-question of the study, as presented at the beginning of this sub-section.

The second observation is that all this literature concerns the *content* of the strategic integration decision and largely ignores the decision-making *process,* although Chin, Brown et al. (2004) touch on this area in their investigation of the post-M&A choice of IT governance structure. This gave rise to the choice of the post-M&A IS-integration planning process as one of the topics of this dissertation.

2.6   The change episode in post-M&A IS integration

The concept of the change episode is used to describe the transformation from the old organisational configurations to the new configuration. The initiatives for post-M&A IS integration often focus on changing various aspects of the

organisation from its pre-M&A state to a new, integrated mode. The aim may be to seek economies of scale in IS operations, to support the integration of business operations, or to integrate reporting/data (cf. Giacomazzi, Panella et al. 1997). As this sub-section illustrates, the literature describing the change process in post-M&A IS integration is scattered and sometimes presents conflicting findings. Therefore, more research is needed. This gives rise to the second sub-question of this study:

SQ2. How do managerial and other human dimensions affect the post-M&A IS-integration process?

Managing post-M&A IS integration should begin before the merger or acquisition deal is closed by conducting proper IT/IS due diligence analysis that enables the better planning and exploitation of merger or acquisition opportunities as well as more realistic expectations (Buck-Lew, Wardle et al. 1992; Merali and McKiernan 1993; McKiernan and Merali 1995). After this, strategic decisions are made concerning the level of integration (ranging from none through different modes of partial integration to full consolidation of IS) and the consequent IS system. Robbins and Stylianou (1999) note that high-quality integration planning plays an important role in achieving positive outcomes, and Henningsson (2007) similarly suggests that the managerial capability to align IS with the organisational development and in other respects to manage it should be regarded as a stable key success factor.

The failure to recognise the strategic role of post-M&A IS integration precludes some organisations from exploiting IS and its proactive capacity to reshape and reposition them in their competitive environments (McKiernan and Merali 1995; cf. Merali and McKiernan 1993). As mentioned in Section 2.2, several authors (Johnston and Yetton 1996; Giacomazzi, Panella et al. 1997; Mehta and Hirschheim 2004; Wijnhoven, Spil et al. 2006) have attempted to explain strategic decisions concerning post-M&A IS integration.

Managing post-M&A IS integration appears frequently to be problematic (Merali and McKiernan 1993; McKiernan and Merali 1995; Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999), but its importance is underlined in the findings of Robbins and Stylianou (1999): apart from past integration experience, the critical factors in achieving a positive outcome are managerial in nature and largely controllable. First, management of the organisational merger or acquisition has been found to play an important role (Stylianou, Jeffries et al. 1996). This includes the quality of the planning (Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999), IS participation in it (Stylianou, Jeffries et al. 1996), as well as high-quality IS integration planning and a high level of end-user involvement in strategic IS decision-making (Robbins and Stylianou 1999). Finally, ex-post reviews are often not carried out, which may have implications especially for companies that have chosen a

strategy of growth by acquisition as they thus fail to exploit the learning opportunity (Merali and McKiernan 1993; McKiernan and Merali 1995).

The management of change and expectations, project management, project-team composition (the mix of business and technical skills), and the management of interest groups (identifying and managing all relevant stakeholders) have been found to play an important role in the implementation of these decisions (Jelassi and Dutta 1993).

The significance of top management's commitment has been acknowledged by Jelassi and Dutta (1993), Robbins and Stylianou (1999), and Merali and McKiernan (1993), and McKiernan and Merali (1995) note the importance of IS maturity. Robbins and Stylianou (1999) emphasise the importance of high-quality end-user communication, and Stylianou, Jeffries et al. (1996) found that a large number of changes in IS policies and procedures had a negative impact on IS staff, and that this may eventually reduce the chances of successful integration.

Finally, several studies (I/S-Analyzer 1989; Weber and Pliskin 1996; Granlund 2003; Chin, Brown et al. 2004) have found that organisational cultures and the subsequent conflicts affect post-M&A IS integration. The lack of a common language (Granlund 2003) adds to these problems. Issues to do with politics and the power structure (Merali and McKiernan 1993; McKiernan and Merali 1995; Granlund 2003)), including power differentials between the acquirer and the target (Mehta and Hirschheim 2004), also play a role.

2.7   Post-M&A IS integration success

In order to exploit the learning opportunities of IT-enabled organisational change, it is necessary to measure its effectiveness (Applegate 1994). Along the same lines, Merali and McKiernan (1993) and McKiernan and Merali (1995) found that completion of the post-acquisition IS integration cycle required an evaluation of both the acquisition process and the integration. This part of this dissertation *focuses on the evaluation of post-M&A IS integration*, which requires an understanding of the nature of its outcomes.

The third key component in Applegate's (1994) framework, organisational-effectiveness measures, concerns evaluation of the process performance, stakeholder satisfaction, and the results in order to provide relevant information to support the decision-making. The framework builds on the vast body of knowledge that has produced frameworks for analysing and designing effective *organisations*. This dissertation, in turn, addresses the outcomes of post-M&A IS integration in a narrower sense, focusing on its success. Thus,

the concept of success is also part of the thesis framework (Figure 3). The dissertation thereby builds on and complements earlier key conceptualisations of post-M&A IS-integration success developed by Stylianou, Jeffries and Robbins (1996) and Robbins and Stylianou (1999).

This sub-section illustrates the complex and multi-faceted nature of success in post-M&A IS integration, and shows how much of the literature ignores it or addresses success only implicitly. This gives the grounds for asking the last sub-question in this dissertation:

SQ3. What constitutes success in post-M&A IS integration?

Much of the literature on post-M&A IS integration does not define success, (e.g., Buck-Lew, Wardle et al. 1992; Merali and McKiernan 1993; McKiernan and Merali 1995; Weber and Pliskin 1996; Giacomazzi, Panella et al. 1997; Mehta and Hirschheim 2004). Some of it does address the issue implicitly, stating that IS integration is expected to be carried out within a predefined time-frame, and without disrupting the work of employees or inconveniencing customers (I/S-Analyzer 1989; Kubilus 1991; Merali and McKiernan 1993).

Perhaps the most comprehensive definition of post-M&A IS-integration success in the literature was first presented by Stylianou, Jeffries and Robbins (1996), and then further refined by Robbins and Stylianou (1999). They recognised that outcome here is a multi-dimensional construct. The dimensions include, first, improved IS capability (Robbins and Stylianou 1999), success in integrating the systems, and the integration process (Stylianou, Jeffries et al. 1996), including IS resource utilisation (Robbins and Stylianou 1999). The second dimension concerns the ability to exploit M&A opportunities and to avoid problems (Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999). Henningsson (2007) shows that IS integration may realise its value in the support of other resources, for example in enabling and helping the transformation of the organisational structure. Finally, there is the dimension of user satisfaction (Robbins and Stylianou 1999) with the integrated systems and the integration process. Stylianou, Jeffries et al. (1996) acknowledge the importance of (at least some of) the stakeholders' perceptions. In sum, this sub-section has explained how success in post-M&A IS integration appears to be complex and multi-faceted, and that much of the literature ignores it or addresses it only implicitly. The seminal works by Stylianou, Jeffries et al. (1996) and Robbins and Stylianou (1999) comprehensively address the complexities of post-M&A IS-integration success. However, they neither make use of the vast body of literature on IS evaluation nor do they verify the concepts empirically. The last sub-question of this study was designed to complement, build on and fill in the gaps in the contributions of prior research.

2.8 The thesis papers in the light of organisational change, and their theoretical homelands

As explained earlier in Section 2, the thesis framework sketches out the problem space and thus enables understanding of the key characteristics of post-M&A IS integration. Its value in this dissertation is that it facilitated the choice of focus and the identification of the specific research topics, and shed light on how all these were related to each other.

As an insightful descriptive framework, it is not intended to capture the dynamics of post-M&A IS integration. Instead, it is more concerned with the endpoints, in other words the organisational structures before and after the change episode. It is acknowledged that dynamics are present during the episode, but the focus is not on them. As the aim was to arrive at an understanding of the change episode, frameworks that would enable consideration of some of its dynamic aspects were sought. Further, the thesis framework serves as a portmanteau in terms of mapping the contributions of the individual papers.

Since post-M&A IS integration as a whole is too complex to be dealt with in one dissertation, the choice was made to focus on the dynamics of planning the strategy, the dynamics of the change episode, and its overall success, as explained in earlier sections. This choice is also reflected in the four articles comprising the bulk of the dissertation. Table 1 in Section 1.5 summarises the themes, theoretical approaches and cases used for each of the papers.

Section 2.8.1 introduces the framework that was used to examine the dynamics of planning the post-M&A IS-integration strategy, and Section 2.8.2 presents the two frameworks that made it possible to study the contextual factors and the dynamics of the change episode.

The final focal point in the framework concerns the outcomes of IT-enabled organisational change. Merali and McKiernan (1993) and McKiernan and Merali (1995) found that in order to complete the post-acquisition IS integration cycle, evaluations of both the acquisition process and the IS integration were needed. The fourth paper of this dissertation addresses success in post-M&A IS integration. Section 2.8.3 explains the theoretical homelands of this part of the study.

2.8.1 The dynamics of planning a post-M&A IS integration strategy

Paper 1 (*Shaping the Post-M&A Information Systems Integration Strategy; in cooperation with Stefan Henningsson*) focuses on the *process* of creating the vision for post-M&A IS integration and therefore addresses sub-question 2. As

described in Section 2.2, the existing literature on post-M&A IS-integration strategies is concerned with the *content* of the strategic decision and largely ignores the decision-making *process*. This paper was written as a first attempt to fill this gap. The paper builds on existing literature on the IS-strategy process.

Strategic IS has been a subject of academic study since the 1970s, and there is a large body of literature on the topic. The seminal works from the past two decades cover various aspects of the phenomenon (e.g., Pyburn 1983; Earl 1993; Sambamurthy, Zmud et al. 1994; Segars and Grover 1999). For example, Earl (1993) identifies five approaches to strategic IS planning based on different underpinning assumptions, approach emphases, major outcome influences and "slogans". Segars and Grover (1999) provide one of the most recent and most rigorous summaries of the literature, also tying their ideas to Minzberg's seminal work. They summarize this literature in a six-dimensional framework, consisting of Comprehensiveness, Formalization, Focus, Flow, Participation, and Consistency. The first thesis paper uses these concepts, discusses them in the light of previous literature on post-M&A IS integration, and adapts them to the post-M&A context. This enhances understanding of the complexities and idiosyncrasies involved in the strategic planning.

2.8.2   The dynamics of the change episode in post-M&A IS integration

Paper 2 *(Managing the Change Process of the Post-Merger Enterprise Systems Integration: A Case Study)* focuses on the change environment and the management of change, thereby addressing sub-questions 1, 2 and 3. It is based on a business-process-change framework originally suggested by Motwani, Mirchandani et al. (2002). The business-process-change perspective was chosen because, first, post-M&A IS integration – when the consolidation of information systems is desired – is essentially about change. Secondly, the focus in this dissertation is on the change dimension that links the production-control information system(s) and the technical systems, and especially on the changes in core business processes. This choice of focus permeates all of the thesis papers, but is most prominent in Papers 2 and 3, which concentrate more closely on this dimension.

Paper 2 builds on two pillars: the research findings on post-M&A IS integration and the literature on the implementation of Enterprise Systems. One of its main building blocks is the Business Process Change (BPC) framework for studying ERP implementation proposed by Motwani, Mirchandani et al. (2002). It is noted that the factors they present and those presented in factor studies on ES implementation success overlap to a vast

extent. This is especially true of the factors that are management-related. There is also some overlap with the success issues identified in the literature on post-M&A IS integration. However, there are also several factors that do not coincide with those included in Motwani et al.'s (2002) model.

Based on a synthesis of prior literature, Paper 2 builds on five elements. First, the change environment consists of strategic initiatives, learning capacity, cultural readiness, IT leveragability and knowledge-sharing capacity, and network relationships, as suggested by Motwani, Mirchandani et al. (2002). Secondly, factors related to the software and the vendor, to the company's expertise and resources, and M&A issues also need to be considered. Finally, managing the ES integration is discussed in terms of change management and process management.

Paper 3 *(A Framework for post-acquisition IS integration; in cooperation with Karlheinz Kautz)* takes a longitudinal perspective on post-M&A IS integration and contributes to answering sub-questions 1, 2 and 3. Like Paper 2, it also focuses on the change dimension that links production-control information systems and changes in the core business processes (technical systems).

It examines the context and aspects of change as well as the change episode by adapting an analytical framework to suit the study of post-M&A IS integration. The analytical framework used draws on the structuralist, the individualist and the interactive process perspectives.

The framework has previously been used in the IS field in studies on similarly complex phenomena, namely the implementation of software-process-improvement innovations in software organisations and the emergence of IS development methods conducted by Kautz and Nielsen (2004), Kautz (2004) and Madsen, Kautz et al. (2006), respectively. These three perspectives were described and originally used by Slappendel (1996) to analyse research on innovations in organisations. She notes that innovation may be defined as a new idea, practice or material artefact, but that the term "innovation" could also refer to an idea or an object that is perceived of as new to the environment in question, and to the process through which new ideas, objects and practices are created, developed or reinvented. M&A activities present a dramatic change in a company's life-cycle and post-M&A integration processes create opportunities for organisational innovations. Thus, this theoretical lens was also found appropriate for this research. The three perspectives allow for focusing on the structural characteristics, the actions of individuals belonging to relevant stakeholder groups, and the complex and dynamic interaction between a socially constructed structure and purposeful human action over time.

The framework also has general relevance as it contributes to the discussion on structure and agency (Giddens 1997), which is one of the major subjects of debate in the social sciences in general and in information systems in particular (e.g., Rose et al. 2005 in Madsen, Kautz et al. 2006).

The elements constituting the three perspectives are developed further in Paper 3, and adapted to suit the analysis of post-acquisition IS integration. The contributions of the previous studies are thereby integrated and complemented, and a coherent framework is formed for understanding what influences the post-acquisition IS integration process, and how it is shaped.

The structuralist perspective is used to describe the static characteristics related to the acquisition context and the aspects of change. The individualist perspective helps to explain the action sequences that took place. Much of the prior literature on post-M&A IS integration focuses on structural and individualistic issues, and hence these perspectives build on this body of literature.

Finally, the interactive-process perspective explicates how the change process emerged over time in interaction between structure and action. Much of the prior literature views the post-M&A IS integration process as a straight-forward exercise with unidirectional causalities. However, Merali & McKiernan (1993) and McKiernan & Merali (1995) suggest that subsequent acquisitions form an iterative process, and that in order for the organisation to realise the full potential of the acquisitions, it must also complete (and iterate) a learning cycle. Granlund (2003), who draws on several theoretical perspectives including Giddens' (1997) structuration theory, suggests that structure and action are inseparable. The interactive-process perspective adopted in this study supports this view. The framework presented in Paper 3 follows Walsham (1993) as well as Kautz (2004) and Madsen, Kautz et al. (2006), and utilises the concepts of *content of change*, *social context* and *social process* to describe the interactive process of post-acquisition IS integration.

2.8.3   Understanding success in post-M&A IS integration

The fourth paper *(Evaluating success in post-merger IS integration – a case study)* discusses the outcomes of post-M&A IS integration and addresses sub-question 4. This part of the dissertation focuses on the evaluation of IS integration.

The lack of generally acceptable IS evaluation measures for assessing an information system's success has led researchers to develop surrogate measures based on subjective evaluation (Saarinen 1996). Attempts to assess

post-M&A IS integration also face these challenges, and the multi-faceted nature of M&A processes adds complexity to this task.

Much of the literature on post-M&A IS integration offers no definition of its success (e.g., Buck-Lew, Wardle et al. 1992; Merali and McKiernan 1993; McKiernan and Merali 1995; Weber and Pliskin 1996; Giacomazzi, Panella et al. 1997; Bentley 2002). Some authors use vague or implicit definitions by mentioning obtainable benefits (Cossey 1991; Weber and Pliskin 1996; Goodwin 1999), or quoting potential problems (I/S-Analyzer 1989; Cossey 1991; Kubilus 1991; Merali and McKiernan 1993). Exceptions to this include the studies by Stylianou, Jeffries et al. (1996) and Robbins and Stylianou (1999), which provide the most comprehensive definition of post-M&A IS-integration success so far. They illustrate its complex and multi-faceted nature, yet none of them manage to exploit the vast body of literature on IS evaluation.

In an attempt to narrow this gap, the fourth thesis paper builds on earlier writings on post-M&A IS-integration success and on the vast body of literature on IS evaluation. Much of this literature is summed up in the models introduced in DeLone-McLean (1992; 2003). Paper 4 compares the success issues proposed in the literature on post-M&A IS integration with those presented in the DeLone-McLean model (2003), and synthesises them into a framework.

3   METHODOLOGICAL CHOICES

"Miten kukaan noin vuorenvarma voisi olla oikeassa? Se osoittaa, että olette väärässä." D.H. Lawrence

3.1   The case-study approach to studying post-M&A IS integration

3.1.1   The case-study approach

The case-study approach was adopted in this research on the post-M&A integration of information systems. The approach – referring to case studies focused on research – has been accepted in the IS field since the 1980's (e.g., Lee 1989, cf. Benbasat, Goldstein et al. 1987). Eisenhardt (1989) describes it as "*-- a research strategy which focuses on understanding the dynamics present within single settings*" (p. 534). Yin (1984 p. 23) defines the case study as an empirical inquiry that "*investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.*" Furthermore, with regard to defining IS case studies, the definition presented by Lee (1989 p. 34): "*--examination of a real-world MIS as it actually exists in its natural, real-world setting*", seems to be a derivative Yin's (1984) definition.

   Case studies allow variation (Yin 1984; Dubé and Paré 2003). They serve a variety of different research purposes (exploratory, descriptive or explanatory (Yin 1984; Eisenhardt 1989)) and philosophical beliefs (Walsham 1995; Dubé and Paré 2003), it is possible to choose and combine data-collection methods (Yin 1984; Benbasat, Goldstein et al. 1987; Dubé and Paré 2003), and to take single or multiple (Yin 1984; Eisenhardt 1989), longitudinal or cross-sectional cases, for example. Even if the theorists referred to above, namely Eisenhardt (1989), Yin (1984&2003), Lee (1989) and Benbasat et al. (1987) comply with the positivist research tradition, the definitions and purposes of use outlined have also been adopted in various IS studies with different philosophical bases (see e.g., the seminal works by Orlikowski 1993 and; Walsham 1993).

The focus in this dissertation is on developing a context-based process-oriented description and explanation of the phenomenon that acknowledges individuals as actors[2]. In conjunction with the "how" type of research question, this fits in with the epistemological and ontological orientations of the research. This articulation of the philosophical basis of this thesis was guided by *the principle of dialogical reasoning* (Klein and Myers 1999), which requires the researcher to acknowledge and confront her preconceptions and original lenses that guided her initial research design. However, as in each of the seminal interpretive research articles reviewed by Klein and Myers (1999), the philosophical basis of this research is articulated but the dialogical aspect was not accounted for in the early phases of the process, which constitutes a potential limitation of the study.

It is assumed in this research that, first, facts and values are intertwined and hard to disentangle (Walsham 1995a, Cf. Stake 1995): the study concerns not only more or less concrete events and actions such as implementation dates, it is also about the actors' subjective opinions and evaluations, such as being frustrated, having expectations, and so forth. Secondly, it is assumed that reality-for-us is a shared inter-subjective construction (Walsham 1995a, Cf. Stake 1995; Deetz 1996): the aim is to reach a shared understanding of the reality-for-us between the researcher and the case companies, since the study deals with an organisational process that includes groups of people. In general, it falls mainly within the realm of interpretive discourse as identified by (Deetz 1996) in that it continues the prevailing discourse (consensus) and is more local and emergent. However, the iterative use of theory, as described later in this section, also brings an a priori flavour to it.

3.1.2   Advantages of case studies

Each method has its own advantages and disadvantages (Yin 1984 p.15, cf. Benbasat, Goldstein et al. 1987; McGrath et al 1982 in Leonard-Barton 1995). The advantages are described in the following, and the disadvantages in section 3.4.1. The case study was chosen first of all because it enables the researcher to capture the nature and complexity of the phenomena in question

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[2] This approach was chosen, first, in order to complement the earlier key contributions to post-M&A IS integration that use variance models and thus do not adequately capture human intentions and actions or the contextual and process issues that are fundamental to examining this kind of complex organisational change (cf. Section 2.3). Secondly, my preliminary understanding of the case was that causal models based on deterministic assumptions would not alone explain the process and outcome of post-M&A IS integration, which also supported the choice to conceptualise the phenomenon as a change process.

(Yin 1984; Benbasat, Goldstein et al. 1987; Stake 1995), and provides a holistic, in-depth understanding and appreciation of dynamics within single settings (Yin 1984; Benbasat, Goldstein et al. 1987; Eisenhardt 1989; Stake 1995; Dubé and Paré 2003). Case studies also allow for studying phenomena in their real-life settings (Yin 1984; Benbasat, Goldstein et al. 1987; Lee 1989; cf. Klein and Myers 1999) and when the boundaries between the phenomenon and its context are blurred (Yin 1984; Benbasat, Goldstein et al. 1987; Stake 1995). Hence, it is suitable for studying a multi-faceted and multidisciplinary phenomenon such as post-M&A IS integration, which is inherently embedded in the M&A context.

In addition, case studies are appropriate in areas in which the existing research is scarce (Benbasat, Goldstein et al. 1987). As explained in Section 2.3, this is the case with post-M&A IS integration. An in-depth case study allows the nuances of the chosen perspectives to be examined at the desired level of detail. Finally, the case study is a dynamic, flexible approach that allows the researcher to adapt the research process in order to take advantage of unexpected opportunities (Yin 1984; Dubé and Paré 2003). This opportunity was exploited to some extent, as described in the subsequent sections.

3.2   Collecting the empirical data

3.2.1   Selecting the sites

The empirical data for this dissertation comes from three cases. I collected the data and carried out the analysis in the two main cases, PrintComp and Telecom. The third case, Trelleborg, was provided by a co-author for the purpose of comparing and contrasting the empirical data from Telecom (as reported in Paper 1).

The two main cases, PrintComp and Telecom, are interesting in this context in that both chose to pursue deep IS integration in order to exploit operational synergies. Both of them opted for full IS consolidation after an acquisition in order to reap the benefits of synergies in production. In addition, they both chose a tailored IS that covered the whole production process (and in one of the cases the new IS also covered the administrative processes). Furthermore, in both cases the business environment was changing at the same time as the post-acquisition IS integration processes were evolving. The cases are also similar in the sense that they are relatively large companies, among the largest

players in their geographical area. Finally, in both the primary acquisition-related capability transfer came about through resource sharing, and the need for strategic interdependence was high (Haspeslagh and Jemison 1991).

The selection of sites was guided, first, by the idea of *data-source triangulation* as presented by Stake (1995). Data-source triangulation refers to how changes in circumstances affect the meanings constructed. The two cases for this study were selected for their similarities as well as their differences (cf. Yin 1984; Orlikowski 1993). Paper 1 of this dissertation concerns two cases that comply with this idea. In order to ensure relevance, the substantive area addressed (IS integration after an acquisition) was kept similar. Both organisations had opted for full post-acquisition IS consolidation in order to obtain synergies in production and sales. Furthermore, in both cases, the business environment was in a state of dramatic shift as the post-M&A IS-integration processes evolved. Differences were sought in other organisational and acquisition-related dimensions, such as the industry, the integration speed, the structure and the culture, in order to generate a more transferable theory. These differences should allow useful contrasts to be made during the data analysis, thereby challenging and elaborating the emerging framework. This, in turn, should result in a credible and transferable account.

The second criterion in selecting the cases was the availability of access to these companies (Yin 1984). Thirdly, the role of universities in regional and local development (Uusi Yliopistolaki 1.8.2005, Commission Of The European Communities[3]) also influenced the case selection, which in practice translated into giving preference to local companies.

The first case study was carried out in PrintComp Ltd (pseudonym), a manufacturing company that assumed its current form in 1999 when it acquired a plant (Plant P1) from a competitor. The acquisition was of the "absorption" type (Haspeslagh and Jemison 1991). This means that the need for strategic interdependence was high given the desire to share production capacity, and the need for organisational autonomy was low. Both organisations changed to form a new, integrated entity.

The case study follows the evolution of the post-acquisition IS-integration process over a period of three years (cf. Van de Ven 1987). The company was fruitful as far as this study was concerned because, first, it sought deep IS integration to enable better coordination of the production capacity between the plants and better financial reporting, and secondly because the implementation process had been somewhat complicated, and different

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[3]   COMMISSION OF THE EUROPEAN COMMUNITIES; COMMUNICATION FROM THE COMMISSION: The role of the universities in the Europe of knowledge

problems had been reported in different plants. In 1998, the turnover of PrintComp was EUR 52 million, and the number of employees was approximately 300. At the same time, about 230 people were employed in the acquired Plant P1. In 1999, following the integration of the acquired plant into PrintComp Ltd, the turnover was EUR 109 million.

Before the acquisition both Plant P1 and PrintComp were using proprietary information systems for controlling the production process, tailored by different domestic software vendors. However, neither of these systems was thought to have the properties necessary to support the new company, and there were no new versions available of either software. The production function asked for integration of the information systems as soon as the acquisition deal was closed. At first PrintComp decided to develop a tailored information system for running the acquired Plant P1 only because it could not continue using its previous owner's systems. Once the requirements for this project had been defined, it was decided that the scope of the system should be extended to the rest of the company as well: the managers of PrintComp felt that a tailored integrated system would bring strategic competitive advantage. The management expected that deep information systems integration would allow better coordination of the production capacity between the plants, and facilitate better financial reporting.

The second case study was carried out at Regional Telecom Ltd (pseudonym), which was acquired by International Telecom Ltd (pseudonym) in 2003. This case was chosen because no detailed data on strategic decision-making in post-M&A IS integration was available from PrintComp for the purposes of this research. The fact that the data came from different cases is also a potential limitation of the study. However, in order to ensure relevance, the substantive area addressed – deep IS integration to support synergies after an acquisition – was kept similar.

This Telecom data was combined with the data collected covering Trelleborg AB's acquisition of CMP/Kléber Industrie from the French Michelin group[4], and yielded Paper 1.

As a result of the acquisition, which took place in 2003, Regional Telecom became a 100% subsidiary company of International Telecom Ltd, which had about 27,000 employees in more than 10 countries. It was decided that Regional Telecom would start selling International Telecom's products in order to reap the benefits of operative synergies. The acquisition was of the "symbiosis" type (Haspeslagh and Jemison 1991), as a high need for strategic

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[4] The data from the Trelleborg case was collected by Stefan Henningsson, with whom Paper 1 was written.

interdependence was manifested in the sharing of resources, and the high need for organisational autonomy resulted in the fact that Regional Telecom was kept as a subsidiary company instead of being fully absorbed.

It was decided that the acquired Regional Telecom would start using the acquirer's new generation of IS a few years later. Meanwhile, Regional Telecom was to decide on the transition path quite independently, but in close cooperation with the acquirer. It was felt necessary for Regional Telecom to adopt the processes as well as the information systems and infrastructure of International Telecom as soon as possible, i.e. to start by using the current systems and then to move to the next generation of IS together with the parent company. The implementation was phased and divided into several sub-projects as International Telecom had different software applications for different functions. These applications were mainly developed in-house. This study concentrates on the process of making these decisions. The new information systems were implemented during 2004–2005. When this study was conducted, towards the end of 2005, the integration had reached a stable level.

3.2.2   Collecting the data

3.2.2.1 The data-collection techniques: triangulating the interviewees' accounts by means of an end-user questionnaire

In order to enhance the richness of the case data and to facilitate triangulation, two main sources of evidence were used within each company (e.g. Yin 1984; Eisenhardt 1989; Stake 1995). This was in line with *the principle of multiple interpretations,* which assumes sensitivity to possible differences in interpretation among participants (Klein and Myers 1999). Along the same lines, Stake (1995) refers to using multiple data sources as methodological triangulation. The use of the term "triangulation" is not straightforward in the context of interpretive research as it is frequently used in positivist research to validate the "fixed truth". However, referring to interpretive research, Stake (1995) claims that *"…additional observations give us grounds for revising our interpretation."* (p. 110). Additional observations also facilitate richer description and interpretation. The data for this study was collected through semi-structured interviews, and a short end-user survey and documents

completed the triangulation process. This allowed the search for alternative interpretations, which helped to improve the authenticity of the research.

The different data had different roles. Walsham (1995) sees interviews as the primary data source for interpretive case studies, which was also the case in this research. The interviews were the primary data source as they provided the best access to the participants' interpretations of the actions and events (Walsham 1995a). The end-user survey was efficient in terms of collecting the end-users' perceptions. It allowed the researcher to "*show empathy to all sides*" (Stake 1995) and to gain a broader view of the post-M&A IS-integration processes that took place at the case sites. In other words, there was no causal model to be tested. Furthermore, there was no intention to validate different data sets against each other in the positivist sense: the researcher held more subjective ontological beliefs and sought no "fixed truth". The end-user surveys also guaranteed access to the case sites. Furthermore, internal company documents such as printouts from the intranet and employees' magazines provided complementary data, especially in the Telecom Case; this included details of the integration process, such as the time line and other similar issues.

The different approaches were piloted and fine-tuned during the first round of data collection in the PrintComp case study carried out in 2003.

Table 6.   Data collection

	Time of data collection	Interviews	End-user survey/ responses
PRINTCOMP CASE *Project milestone*			
Jan 1, 2003 Pilot implementation: Plant P1	April 2003	*11 interviewees:* Implementation Project Manager, CFO, Information Systems Designer, Customer Service Manager, 2 Plant Managers, 2 Controllers, 2 Customer Service Clerks, Project Manager of the software vendor	33 (50%)
Jan 1, 2004 Implementation: Plants P2 – P4	May 2004	*6 interviewees:* Implementation Project Manager, CFO, Information Systems Designer, Controller, Customer Service Manager, IS designer, system support	168 (51%)
Jan 1, 2005 Implementation: Plant P5	May-June 2005	*6 interviewees:* Implementation Project Manager, CFO, Controller, Chief Production Officer, Project Manager of the software vendor, Programmer of the software vendor	220 (58%)
TELECOM CASE			
	Oct-Nov 2005	*10 interviewees* Regional Telecom: Managing Director, Director (IT Administration), Vice President (Sales and Marketing), Director (Personnel and Financial Administration), Director (Products), Development Manager (Sales and Marketing) , Managing Director (Telecom Networks Ltd) International Telecom: Director (Customer Service and Systems), Solution Marketing Manager, Head of Department (Carrier Networks Ltd)	187 (43%)

In PrintComp, the new IS was implemented in three phases in three subsequent years, and the data collection was repeated after each phase. The

Telecom data was collected in one round after the implementation of the new IS. Table 6 summarizes the data-collection process.

3.2.2.2 Theme interviews

The primary data-collection method used in this study was the theme interview. In both cases, the interviewees adequately covered various representatives of the acquirer, the acquired, the software vendor (in PrintComp), and the managers responsible for software development (Telecom) on different organisational levels and in various functional areas.

The interviewees were selected in cooperation with the Project Manager (PrintComp Ltd) and the Chief Information Officer (Telecom). The selection of the key informants followed the 'principle of suspicion' (Klein and Myers 1999), which refers to possible bias shown by these two managers in suggesting the interviewees, and the principle of multiple interpretations (ibid.), which allows sensitivity to possible differences in interpretation among participants: again, the purpose was to 'show empathy to all sides' (Stake 1995). Consequently, it was checked that the informants adequately covered different functional areas of each case company. Secondly, the Project Manager's suggestion to interview a certain person as "he might hold deviating opinions" was followed and this person was interviewed. Finally, the study was carried out in an environment in which the national culture fosters openness and democracy, which meant that it was reasonable to assume that the responsible managers would allow the researcher to talk to all relevant stakeholders. However, in the PrintComp case, the researcher only gained access to a few representatives of the vendor and two representatives of top management, which is a potential limitation of the study. The interviews are summarised in Table 6.

Several interviews were carried out with some key interviewees, such as PrintComp's Implementation Project Manager and Telecom's Chief Information Officer (CIO). Initially, these two interviewees provided the "hard data" on the post-acquisition IS integration, such as dates and software modules. They were also asked to "tell the story of the implementation process". Thereafter, they were interviewed again, when the themes were used. The interviews carried out with vendor's representatives in the PrintComp case remained shallow however, possibly due to the tense relationship between PrintComp and the vendor at that time. This is also a potential limitation of the study. All the interviews lasted between one and 1.5 hours.

Both structured and semi-structured interviews were tried out in the pilot phase (PrintComp / 2003). The end-user questionnaire was used for the structured interviews and its themes were used for the semi-structured interviews. The semi-structured interviews were found to serve the purposes of this research better as they gave more space for the interviewees to describe the nuances of their interpretations. Therefore, semi-structured interviews were used in the latter phases. In the third round (PrintComp / 2005), the interviewees were first asked to say what had happened after the previous interview. The interview themes also covered the phases of post-acquisition IS integration, from strategic planning to implementation[5] (cf. Alaranta and Parvinen 2005), and each phase covered the problems and strengths as well as success and failure issues. The fifth theme of the interviews was the overall success of the IS integration. If the interviewee felt that he or she was not able to comment on one of the issues, the particular question was omitted. Since the focus of this study is on organisational transformation the interviews only touched on the technicalities of IS integration. The experience from the longitudinal case study highlighted the fact that the time dimension also had to be accounted for in a cross-sectional case study, and the same interview guide was used. The interview guide is to be found in Appendix A.

While the evolutionary approach to the interviews allowed experimentation in terms of finding the most suitable interview method, it also entailed a potential limitation. However, each time the interviewees were allowed to talk freely about and around the themes in order to ensure that all relevant data would be captured.

Notes were taken during the interviews conducted in 2003 and 2004. By 2005 enough trust had been established, and it was possible to tape-record the sessions. These interview tapes were transcribed. The interviewees were guaranteed confidentiality, and the tape-recording did not seem to inhibit them.

The researcher's learning during the process of carrying out this research was reflected in her increasing understanding of the dynamics of the interview situation, for example. Walsham (1995) states that there are two important issues with regard to interviewing: the interviewing style and the reporting media. A balance between over-direction and passivity needs to be achieved. Reflection upon the first round of data collection gave rise to the fear of over-

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[5] Originally, the phases included: designing the strategic IS integration plan, and designing the execution plan for IS integration and its execution. After having been tested in pilot interviews (at another case site; not reported in this dissertation) the list of themes was shortened so that the two themes concerning strategy and planning were combined. This made the questions more comprehensible to the interviewees.

direction, and a more passive stance was thus taken. This proved problematic with some interviewees, however – perhaps because they had the impression that the researcher did not have sufficient understanding of what was said. In many cases it was possible to correct this during the interview by making an analytical comment beyond what the interviewee had said. After hearing the comment, the interviewees seemed to be more willing to tell their stories. This experience led to the search for a better balance between direction and passivity. The idea was to allow the interviewees to express themselves freely, and at the same time to ensure that the researcher showed interest in the interviewees' opinions (cf. Walsham 1995). However, this process of balance seeking was also a potential limitation.

The above description of the evolution of the data-collection techniques illustrates how *the principle of interaction between the researcher(s) and the subjects* (Klein and Myers 1999) was applied in this study. This principle accounts for how the research materials are socially constructed through the interaction between the researcher and the participants. Informal contacts, interviews, requests for specific documents, and conversations affect the way the informants view the situation and how they present it to the researcher, and this in turn affects the kind of data the researcher obtains.

The importance of this principle was reflected in the material that was available to the researcher. First, as explained above, only the later interviews were tape-recorded after enough trust had been gained. Furthermore, the amount of trust was also partly reflected in the amount of written material provided for the researcher. In the Telecom case, the organisation offered an extensive collection of written material such as internal reports and magazines, and postings on the company intranet, some of which were confidential. On the other hand, in the PrintComp case the researcher was provided with very few written documents such as the company's annual report, all of which are publicly available. This was a further potential limitation of the study.

3.2.2.3 The questionnaire

The role of the questionnaire in this study was to provide an efficient way of collecting the end users' perceptions and opinions in order to triangulate and complement the interview data. There was no causal model to be tested. Yearly internal reports were composed based on the questionnaire. These reports provided the managers with descriptive statistics, including median, mode and bar diagrams for each question as well as their interpretations in textual form. These reports were then used for the data analysis reported in this dissertation.

The themes of the questionnaire included use process, software quality, and change management. The questionnaire is to be found in APPENDIX B.

The end-user questionnaire was originally loosely based on Motwani et al.'s (2002) framework for change management in ERP implementation, and Saarinen's (1996) instrument for evaluating information-system success: suitable constructs from each were chosen and modified. In addition, four questions concerning the suitability of the software to the respondent's own and other units were formulated in conjunction with the implementation manager of Print Comp Ltd, and these were added to the questionnaire in 2005.

The questionnaire was tested on PrintComp's project manager and two users in 2003, after which some questions were rephrased in order to make them more understandable. In the case of Regional Telecom, the questionnaire was tested first on the CIO and again, some questions were rephrased to make them more understandable. It was then tested on one end-user, which did not lead to any further changes.

All end-users using the new IS were asked to fill in the questionnaire. The same one was used each time. A potential limitation is that, during the second round of data collection (2004) at PrintComp Ltd, some questions regarding the initial training and skills were removed from the questionnaires sent to the respondents at Plant P1 who had replied the year before. This was done because it was thought that a shorter questionnaire might improve the response rate. Since this did not seem to happen, the questions were reinstated when the form was administrated for the third time in 2005.

The questionnaire was delivered on paper in PrintComp, while a web-based version was used in Telecom. In addition, some questions were added according to the specific needs of the organisations, but they are not reported in this study for reasons of confidentiality and also because of the unnecessarily fine-grained level of detail. Examples of this kind of data include the specific, detailed problems the users of the new IS had encountered. Although not intended as such, this research affected the case company in that the project manager of PrintComp used the results of the user survey in negotiations with the vendor.

The use of multiple data sources allowed a broader range of historical, attitudinal and behavioural issues to be addressed. In particular, the end-user survey and the documents were helpful in corroborating and augmenting evidence from the theme interviews, and interviewing representatives of multiple stakeholders served the same purpose. For example, the reports based on the user-survey data were systematically compared with the interview data to check for deviations and congruencies in the views on the organisation's willingness to adapt to the changes. This made it less likely that the analysis

would be misled by single sources, and allowed a critical approach in interpreting the contents of each source of evidence.

3.3   Analysing the data

In this dissertation, the understanding of post-M&A IS integration comes through an iterative process of the interpretation, comparison and intertwining of prior research and empirical data (cf. Orlikowski 1993; Klein and Myers 1999). The study is both informed by theory in order to focus and direct the initial phases of the data analysis, and designed to generate explanation and understanding of the case.

The data analysis was an iterative process (cf. Klein and Myers 1999). As reported in Paper 1, the theory-guided data collection and initial analysis, and the rich data led to insights beyond the scope of the framework. The understanding and insights gained in writing Paper 2 (see also: Alaranta 2005) provided a solid empirical grounding for re-reading the theoretical contributions of other authors and crafting the theoretical frameworks for the (chronologically) subsequent Papers 1, 3 and 4. These frameworks, in turn, were systematically used to guide the data analysis with a view to identifying behaviours and mechanisms that were relevant to the concepts of each of them. The data from the case studies was organised according to the theoretical concepts, which could then be challenged and elaborated. This was done for Paper 3 with the help of NVivo software, and for Papers 1, 2 and 4 with coloured pencils.

The following examples illustrate how interviewees' statements and the internal yearly reports were analysed. They are given in order to explain how they helped in interpreting the events that occurred and the actions taken during the post-acquisition IS integration at the case company. These particular examples were produced during the writing of Paper 3.

Example 1: The vendor's project manager commented, "… *they [the end-users] ... are not satisfied with the software.*" On the other hand, Appendix C presents a table showing that the end-users' perceptions of the use and quality of the new IS, as well as of the management's actions, became more positive during the implementation process both on the company level and in the acquired Plant P1. These data were compared with the statements of the interviewees. Examining the interviewee's statement against the survey data facilitated richer interpretation in that it could be assumed that even if the end-users did not agree that the new IS was of good quality, they still felt that it could be used.

Example 2: The vendor's project manager commented as follows: "*… the responsibility shifted to the end users… … So it must be the project team that bears the responsibility. This has been the problem here.*" Appendix C introduces a figure illustrating the invisibility of management commitment to the end-users in all of the plants. The information obtained via the interviews was compared with these data. In this example, the survey data shows that top-management support was not visible to the end-users, and it thus served to corroborate the vendor's project manager's statement. The interpretation was that the project manager did not always have enough power.

The reason for presenting these examples is to illustrate how the empirical data were analysed, and hence to improve the transparency of the research process. This description of the data analysis and of how the iterative process between the data and the theory evolved over time (cf. Walsham 1995) illustrates the application of *the principle of the hermeneutic circle* (Klein and Myers 1999) in this study. According to this principle, understanding of the phenomenon and of the case in question is achieved by iterating the interdependent meanings of the parts and the whole they form. The hermeneutic circle was iterated in several ways in this research.

First of all, the parts are the different events and actions that went on during the post-acquisition IS-integration process, and in this case, the whole is the longitudinal view. Secondly, the parts are the different texts from the different data sources – both theoretical and empirical – from different times that yielded different interpretations. In this research, this links the principle of the hermeneutic circle to that of multiple interpretations, explained below. Moving back and forth between the interpretations of the parts and the interpretation of the whole produced a situation in which (at least many of) the 'pieces of the puzzle' fitted together. In this research, the interpretations were corroborated through cross-participant examination of the concepts and searching out and checking for contrasts and negative evidence. For example, analysis of the raw data from the Print Comp case revealed that the top management claimed high commitment to the project. However, the end-user survey indicated that this commitment was largely invisible to the respondents, and the project manager's statements claimed that the top management did not show much interest in his work. This type of searching aims at producing accurate and reliable frameworks that closely fit the data.

This example of the data analysis illustrates how *the principle of multiple interpretations* (Klein and Myers 1999) was followed in this study through an attempt to be sensitive to possible differences in interpretation among the participants (cf. Stake 1995). It also gives an example of the application of *the principle of suspicion* (Klein and Myers 1999), which advocates searching for possible "biases" and systematic "distortions" in the narratives collected from

the participants. In this case, the constant cross-checking between the different data sources prevented the researcher from taking the informants' views at face value. However, Klein and Myers (1999) refer to the discussion on the extent to which social research can or should be critical, and therefore some interpretive researchers may choose not to follow this principle. Consequently, the surface meaning of what had been said was questioned only when deviations or conflicts in the different informants' statements were observed.

3.4   Limitations

The limitations of this study stem from two major sources: the inherent limitations of the case-study approach, and the limitations emerging from the way in which the two particular case studies were carried out.

3.4.1   The disadvantages of case studies

Historically, case studies have been criticised for lacking rigor and objectivity, as well as for being equivocal and biased (Yin 1984). Their very nature does not allow the researcher to make controlled observations the same way as laboratory or statistical experiments do (Lee 1989). This is why case studies are preferred when the researcher does *not* have control over the phenomenon in question (Yin 1984) – which applies to the study of post-M&A IS integration – or when there are more variables than data points and statistical analysis is therefore not possible. In such cases the researcher must be sensitive to these biases (Klein and Myers 1999). Furthermore, bias may also enter the picture when other methods, such as experiments and surveys, are used (Yin 1984). Several methodologists have worked during the past two decades to craft solid guidelines for carrying out rigorous case studies in order to overcome the problems of bias and lack of rigor (for positivist case studies see e.g., Yin (1984), Benbasat, Goldstein et al. (1987), Eisenhardt (1989), Lee 1989, Yin (1994), Dubé and Paré (2003), and for interpretive case studies see e.g., Stake (1995), Walsham (1995), Klein and Myers (1999). This study followed the methodologists' guidance with regard to its design and execution, as well as in the analysis of the empirical evidence as described in this section.

   Another frequently mentioned weakness of case studies is the problem of generalising from one or a few cases (Yin 1984; Smith 1990; Walsham 1995). Yin (1984) claims that case studies "...*are generalizable to theoretical propositions and not to populations or universes*" (p.21) (cf. Eisenhardt 1989; Lee 1989; Klein and Myers 1999). Walsham (1995) extends this to four types

of generalisation open to interpretive case studies: the development of concepts, the generation of theory, the drawing of specific implications, and the contribution of a rich insight. These four categories are not mutually exclusive (Walsham 1995). The aim of this study is twofold: to contribute to generating a theory of post-M&A IS integration by applying the frameworks and further developing them through empirical research, and providing a rich insight into the phenomenon in question. In so doing it follows *the principle of abstraction and generalisation,* which advocates relating the idiographic details of the case to general theoretical concepts (Klein and Myers 1999).

Case studies have also been criticised for being time-consuming (Yin 1984; Stake 1995) and resulting in massive, unreadable documents (Yin 1984). This applies especially to longitudinal case studies in which the data collection alone can extend over several years. On the other hand, a doctoral dissertation seems to be a suitable forum for this kind of study since the doctoral student has a few years for carrying out the research and is allowed the necessary number of pages for the dissertation. Furthermore, Yin (1984) and Stake (1995) provide guidelines for writing a good-quality, readable report, which were followed and adapted in this study.

3.4.2   On the quality and limitations of this case study

The limitations of this particular case study stem from the choices made during the research process, involving the foci, the sites, as well as the data-collection and analysis techniques. The empirical part of the study discusses the integration of production-control information systems after a larger unit has acquired a smaller one, when operational synergies are sought. Full consolidation of information systems is desired, and therefore cases in which they are only partially integrated or left non-integrated fall beyond its scope. Cases related to mergers among equals, i.e. when there is no power differential between the acquirer and the acquired organisation, are also beyond the scope of the empirical part of the study. Furthermore, the work does not encompass the technical aspects of IS/IT integration, or the integration of hardware and databases, and of computer-assisted communication technologies such as e-mail, for example, which remain important and interesting topics for further research. Finally, the case sites are located in Northern Europe[6], and hence, the results of the study should be interpreted in the light of the North-European social and cultural context.

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[6]   More detailed information on the case-site locations is withheld in order to protect anonymity.

The principles proposed by early case-study methodologists (e.g., Yin 1984; Benbasat, Goldstein et al. 1987; Eisenhardt 1989; Lee 1989) have become the de facto standard against which most IS case studies are evaluated (Klein and Myers 1999).[7] However, according to Klein and Myers (ibid.), while these criteria are relevant for evaluating case-study research following the natural-science model, the positivist criteria suggested are not appropriate for interpretive research. They also note: "*…interpretive research does not subscribe to the idea that a pre-determined set of criteria can be applied in a mechanistic way…*". (p.68) However, this does not imply that there are no standards by which interpretive research can be judged.

Walsham (1995) describes the nature and method of interpretive case studies in IS research, covering the philosophical basis, the use of theory, the empirical work, and generalising from interpretive research (cf. Klein and Myers 1999). This research follows these guidelines as reported throughout Section 2.8. The philosophical basis, the use of theory and the aspirations to generalise from the empirical findings are in accordance with the interpretive tradition as described in Section 3.1.

Klein and Myers (1999) suggest seven principles for conducting and evaluating interpretive field studies in the IS field, namely the principles of the hermeneutic circle, contextualisation, interaction between researchers and subjects, abstraction and generalisation, dialogical reasoning, multiple interpretations, and suspicion. To a certain extent, these overlap with the writings of Stake (1995), Walsham (1995) and Creswell (1998). With regard to conducting the empirical work, Walsham (1995) discusses the role of the researcher in terms of collecting the evidence from the interviews, and the reporting methods. On the other hand, Stake (1995) (cf. Creswell 1998) suggests answering the question "*Do we have it right?*" in interpretive case studies by paying attention to triangulation and member checking, and by providing a checklist for the case-study report.

As Klein and Myers (1999) note, "*…it is incumbent upon authors, reviewers, and editors to exercise their judgment and discretion in deciding whether, how, and which of the principles should be applied and appropriated in any given research project*" (p.71). The application (or lack thereof) of the seven principles they suggest, together with the guidelines proposed by Stake (1995), Walsham (1995) and Creswell (1998), are explained in Sections 3.1 – 3.4.1. In sum, the limitations stemming from the data collection and analysis include the sometimes limited access to written material (PrintComp), the

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[7]   For example, Dubé and Paré 2003 evaluate positivist case studies in the IS field based on criteria derived from the works of Benbasat et al. (1987), Yin (1994), Eisenhardt (1989) and Lee (1989).

limited access to interviewees (only a few representatives of the vendor and only two of top management in PrintComp), evolving interviewing procedures, and not having confronted the preconceptions and lenses that guided the original research design.

The following paragraphs elaborate on these by describing the application of the principle of contextualisation, and adding a few final notes to the descriptions of how the principles of interaction between the researcher(s) and the subjects and of multiple interpretations were applied (see Section 3.2.2).

The principle of contextualization (Klein and Myers 1999) advocates explicating the social and historical background of the research setting so that the reader can see how the situation under investigation emerged. This principle seems particularly suitable for this dissertation since post-M&A IS integration is a case-specific and context-bound phenomenon. Therefore, for example, the acquisition context is explained both in Section 2.8 of this summary as well as in all four papers. However, the four papers vary in the degree to which they present the subject matter in its historical, political and economic contexts: they are touched on in them all, but Paper 3 is perhaps the only one in which this is done in a more thorough manner.

The principle of interaction between the researcher(s) and the subjects (Klein and Myers 1999) was followed as described in Section 3.2.2, and also in terms of asking the key informants to read the reports and published papers related to the study. This was done from the beginning of the dissertation project, following Stake's (1995) suggestion to take up member checking as "*actors play a major role directing as well as acting in case study.*" (p. 115) The Implementation Project Manager of PrintComp Ltd and the CIO of Regional Telecom were asked to review the reports for accuracy, and, a presentation of the key results was given to a group of managers in Regional Telecom. The comments received led to the correction of some misunderstandings and the development of some new ideas for interpretation, which helped to create a more credible and trustworthy theory.

Section 3.2.2 describes the application of *the principle of multiple interpretations* (Klein and Myers 1999) in terms of methodological triangulation (multiple data sources) and data-source triangulation (more than one case site) (Stake 1995). Apart from these two, Stake (1995) also introduces investigator triangulation and theory triangulation. Investigator triangulation was applied in this study especially in the writing of Paper 1 and Paper 3, which was done in cooperation with other researchers. In addition, presenting the work at various conferences, workshops and doctoral consortia, and discussing it with the supervisor and other experienced researchers, is likely to have provided more and better insights, directly or indirectly. These discussions, together with earlier attempts to tackle post-acquisition IS

integration from different theoretical approaches (see: Alaranta 2004; Alaranta and Viljanen 2004; Alaranta 2005; Alaranta and Parvinen 2005) promoted theory triangulation. Furthermore, the structuralist, individualist and interactive process perspectives adopted in Paper 3 of this study provide a form of theory triangulation. All four types of triangulation offered grounds for multiple interpretations.

Finally, Walsham (1995) and Wolcott (1990), among others, argue that reporting field work is particularly critical in interpretive case studies, and offers guidance on reporting the data collection and analysis. This guidance is in accordance with the 20-item critique list for a case-study report presented by Stake (1995); cf. Creswell (1998). Criteria concerning structure and presentation, such as "*Is this report easy to read*?" (p. 131), guided this researcher in creating a more dependable account. Criteria to do with the logic and content of the report, such as "*Are its issues developed in a serious and scholarly way?*", "*Were data sources well chosen and in sufficient number?*" and "*Is empathy shown for all sides?*" (p. 131), helped in building a more credible and trustworthy account.

A systematic approach to the specification of the research questions and the conceptual frameworks, the case selection, and the data collection and analysis made it possible to develop rigorous, qualitative analyses of the process of and factors affecting post-acquisition IS integration in the two main cases studied (cf. Miles and Huberman 1984; Yin 1984).

4 A SUMMARY OF THE RESULTS

"...tätä projektia vois kyllä luonnehtia niin ku yhdellä sanalla, et tää on kyllä ollut aikamoinen kaaos." (Project Manager, PrintComp)

This section summarises the results and sets them in the context of prior literature. The empirical results are presented in more detail in the four thesis papers.

4.1 The organisational context of post-acquisition IS integration

This sub-section outlines the empirical results that address the first sub-question of the study:

SQ1. How does the organisational context affect the post-M&A IS-integration process?

The findings confirm that post-acquisition IS integration is affected by the peculiarities of the M&A process, i.e. the context in which the integration takes place. Table 7 summarises the empirical findings related to the organisational context.

Table 7.   A summary of the empirical contributions: the organisational context

	Previous results	This study: the PrintComp case	This study: the Telecom case
SQ1. How does the organisational context affect the post-M&A IS integration process?	- the choice of IS integration strategy is affected by structural factors such as merger or acquisition motives, related organisational integration, previous computer architecture (Huysman, Leonard et al. 2002; Granlund 2003) - post-M&A IS integration is contextual by nature (I/S-Analyzer 1989; Weber and Pliskin 1996; Granlund 2003; Chin, Brown et al. 2004) - Cultural differences affect post-M&A IS integration (Robbins and Stylianou 1999)	- acquisition purpose and synergy-seeking acquisition affected the decisions on what to integrate at PrintComp (Thesis Papers 2&3) - acquisition purpose and synergy-seeking acquisition affected the decisions on how to choose the new IS at PrintComp (Thesis Paper 3) - the acquisition situation forced PrintComp to change their ISs (Thesis Papers 2&3) - the acquisition situation provided PrintComp with an opportunity to improve its IS capacity (Thesis Papers 2&3), which was used as a "mantra" in marketing the IS integration to the employees - structural characteristics of the old and new IS affected the post-M&A IS integration process by e.g., resulting in "us and them" feelings at PrintComp (Thesis Papers 2&3) - structural characteristics of the old and new IS affected the integration strategy (Thesis Paper 3) - the structural characteristics of the IS integration team affected the post-M&A IS integration process at PrintComp (Thesis Papers 2&3) - Cultural differences caused "us and them" attitudes and frustrations and hence complicated the post-M&A IS integration at PrintComp (Thesis Papers 2&3) - simultaneous change in the external business environment affected PrintComp's post-M&A IS integration process (Thesis Paper 3)	- acquisition purpose and synergy-seeking acquisition affected the decisions on what to integrate at Telecom (Thesis Paper 1) - the acquisition situation forced Telecom to change their ISs (Thesis Paper 1) - synergy-seeking acquisition situation favours control focus, top-down decision-making flow and formal strategic decision-making (Telecom) (Thesis Paper 1) - strategic post-M&A IS integration planning process was dynamic and evolved over time at Telecom (Thesis Paper 1)

The thesis papers provide several tools for understanding the context. These include the structuralist perspective as well as the concepts of social context and social process from the interactive process perspective of Paper 3, together with the change environment, M&A issues, and Software & Vendor issues in Paper 2. Applying these to the PrintComp case provides valuable insights into the case-study setting, the process under study, and the choice and implementation of the new information system.

The application of these perspectives led to a deep appreciation of the PrintComp case. The structural characteristics of the acquisition situation helped to explain the strategic choices (whether to integrate, what to integrate, choosing the new IS). This result is in line with earlier work by Giacomazzi et al. (1997), who explain the choice of IS integration strategy (from no integration to full integration) in terms of structural factors, including the *motivation for the merger or acquisition* and the *related organisational integration*, as well as the work by Applegate (1994) suggesting that contextual issues shape the strategy, as explained in Section 2.2. However, this dissertation complements the static pictures provided by Applegate (1994), the thesis framework, and Giacomazzi, Panella et al. (1997) in terms of understanding the dynamics of how the contextual aspects affect post-acquisition IS integration.

In the case of PrintComp, the acquisition context influenced the IS integration in several ways. First, the *acquisition purpose* was to prevent over-capacity in the market through the acquisition of a plant from the competitor, and thereafter seeking synergies in production. This led to the need for the deep integration of the production processes as well as for a fully integrated IS. The perspectives applied also address the decisions concerning what to integrate and choosing the new IS. The *acquisition situation* obligated PrintComp to change its information systems because the previous owner of the acquired plant did not allow it to continue using its previous systems. Furthermore, the acquisition situation also pushed PrintComp to develop its information systems as the acquisition brought along new ways of operating, including the need to coordinate production and production capacity between several plants. On the other hand, the acquisition context provided the company with an *opportunity to improve its IS capacity* as best practices in previous information systems were sought. This shows that the structural characteristics of the acquisition situation clearly have an effect on the subsequent post-acquisition integration.

Furthermore, the perspectives applied also show that the static *characteristics of the old and new information systems* as well as the *IS integration team* affect post-acquisition integration, as described in Paper 2 and Paper 3. Giacomazzi, Panella et al. (1997) recognise that previous

computer architecture affects the strategic IS-integration decision. This dissertation adds to this understanding by providing a more fine-grained view of the relevant IS characteristics, and explaining how they affect the strategy. None of the prior contributions in the core IS journals took into account the IS integration team responsible for the post-M&A IS integration.

The different plants had been using different information systems and different ways of operating prior to the acquisition. The new IS was first developed for the acquired plant and then extended to the whole company. The style of software was adopted from the acquirer's previous IS, and it imposed more control and coordination. The operations mode was adopted from the acquired plant. As a result, all users felt that they had to use "the others' IS" that would not support their work, i.e. *"us and them"* feelings were frequently encountered in M&A situations. On top of this, the new IS was bug-ridden, which led to frustrations and verbal *resistance* among the users.

Furthermore, the static *characteristics of the IS integration team* also affected the post-acquisition IS-integration processes in PrintComp. The small size of the team and the disappearance of the steering committee led to inefficient managerial actions, and the dissolution of the functional groups led to insufficient representation of their needs in the definition of requirements.

Finally, it is also shown in Paper 1 that strategic post-acquisition IS planning is affected by the peculiarities of the M&A process. The *strategic-planning process is dynamic and tends to evolve* as a consequence of two organisations with originally different planning profiles having to relate to each other (in case 1 the subsidiary company adopted the characteristics of the planning profile of the parent company and in case 2 the existing profiles merged). On top of this, some strategic IS changes need to be planned dynamically due to the nature of the goals of the planning process, as well as the internal and external contexts of the change. These dynamics were not accounted for in the seminal papers by Applegate (1994) and Giacomazzi, Panella et al. (1997), nor have they been covered in the literature on strategic IS planning.

The *acquisition context* was also found to affect overall post-acquisition IS integration. This is not mentioned in prior writings published in core IS journals. However, it is a result that is in line with the earlier work of (Huysman, Leonard et al. 2002; Granlund 2003), which acknowledges the contextual nature of post-M&A IS integration, as well as with writing on overall post-M&A integration suggesting that merger or acquisition processes are *case-specific and idiosyncratic* by nature (e.g., Bower 2001). Application of the social-context and social-process aspects of the interactive process perspective followed in Paper 3, together with the M&A and change

environment factors outlined in Paper 2, to the PrintComp case contribute to our understanding of these dynamics.

First, the perspectives applied explain how the *cultural differences* between the acquirer and the acquired plant complicated the post-acquisition IS-integration process at PrintComp, as predicted by I/S-Analyzer (1989), Weber and Pliskin (1996), Granlund (2003), and Chin, Brown et al. (2004). There were *organisational differences,* such as in the operations modes, as well as in the amount of control coordination versus flexibility and freedom in the use of the previous information systems. This caused frustrations and aggravated the *"us and them" attitudes* among the end-users on both sides. These attitudes were further aggravated by the humorous juxtaposition of the cities in which the plants P1 (acquired) and P2 were located. On top of this, other pairs of antagonisms prevailed, namely between the project manager and project team and the users, as well as between PrintComp and the vendor.

Furthermore, the *external context of change* also affected PrintComp's post-acquisition IS integration. This was not predicted in the prior literature on post-M&A IS integration. There were simultaneous changes in the business environment and in the way of doing business in aspects such as the emergence of the mass customisation of print products, which also resulted in changes in requirements for the new IS and instability in the development process during the implementation.

4.2   Change episode

This sub-section outlines the empirical results that address the second and third sub-questions of this study:

SQ2. How do managerial and other human dimensions affect the post-M&A IS-integration process?

4.2.1   The post-acquisition IS-integration-planning process

The strategic-planning process in post-M&A IS integration was chosen as one of the foci of this study. However, prior literature on post-M&A IS integration does not account for this process. Therefore, in Paper 1 the six dimensions of strategic IS planning originally proposed by Segars and Grover (1999) – *Comprehensiveness, Formalization, Focus, Flow, Participation, and Consistency* – were adapted to suit the chosen context . Application of these dimensions to the Telecom and Trelleborg cases enhanced understanding of

the peculiarities of this planning process. There were some apparent differences and some similarities between the two cases.

With regard to both comprehensiveness and formalisation, both cases illustrate the *dynamic changes* in the decision-making profile during post-M&A IS integration. The Telecom case also demonstrates that the *planning profiles between the acquirer and acquired may differ*. Neither of these findings was predicted in the literature on post-M&A IS integration (e.g., Merali and McKiernan 1993; McKiernan and Merali 1995; Giacomazzi, Panella et al. 1997), nor by Segars and Grover (1999). In the case of Telecom, the differences were observed between the acquirer and the acquired company, whereas in Trelleborg the planning profile emerged over time as understanding of the potential synergies increased, and especially when the management changed two years after the acquisition.

In the Telecom case, the acquirer's unrealistic plans for making IS-related savings without budgeting sufficient funds for the integration led to problems during the execution of this strategy. On the other hand, the acquired company carefully evaluated the benefits and costs of each transition path, and was therefore able to ensure that it could be carried out. The planning profile emerged over time in the Trelleborg case. At the time of the acquisition in 1996 there was no concrete vision of the synergies obtainable, and no integration plan was crafted. When understanding of the potential synergies increased, more comprehensive integration plans emerged. Furthermore, in the Telecom case, the acquirer had more formal decision-making processes, and the acquired company was required to comply with these standards, while in Trelleborg the planning shifted from formal to informal when the new management took over. (Paper 1)

Both cases revealed *a strong control focus* in post-M&A IS-integration decision-making. This stemmed from the acquisition objectives – in other words both Telecom and Trelleborg sought operational synergies from their acquisitions, which led to the control focus being the desired choice.

These findings on comprehensiveness, formalisation and focus also corroborate the results presented in the previous section: i.e. the acquisition context affects the process of post-acquisition IS-integration planning.

Yet another effect of the M&A context was found when the concept of flow was applied to the cases studied. In both cases, the *top-down flow* in the planning process was conspicuous. Since M&As are corporate-level strategic initiatives it is natural that the integration process is led by top managers. Furthermore, when synergies are sought, decision makers must have an understanding of all aspects of the business of both organisations involved. Finally, it has been stated that operational personnel and lower-level managers

very seldom have any personal incentives for favouring post-M&A consolidation and integration (Haspeslagh and Jemison 1991).

Both cases show that *broad participation* at least in some phases of the planning facilitates good alignment. Furthermore, in the Telecom case the acquirer and the acquired were different with regard to both comprehensiveness and participation. This shows that different merged units may have different planning profiles, at least in cases in which the acquired unit has been allowed to maintain some of its independence.

Finally, Segars and Grover (1999) argue that appropriate levels of consistency (i.e. speed of decision-making) are dependent on the rate of change in the internal organisational environment and the external competition. The findings from the cases studied suggest that appropriate levels of consistency depend not only on these two factors, but also on the nature of the strategic decision at hand (cf. Andreu and Ciborra 1996; Kalling 2003 in Paper 1). The consistency was affected by the possibility of foreseeing the consequences of the strategic decisions. In the Telecom case the desire was for the swift organisational and IS integration of a smaller acquired unit, and hence the related strategic IS planning was a straightforward one-shot decision. In Trelleborg, on the other hand, the integration task was more complex since there was a desire to integrate several plants, which also included physically moving production units. This required a longer and more flexible planning approach.

4.2.2   Managing post-acquisition IS integration

The findings of this study show that post-acquisition IS integration is affected not only by the M&A context but also by *managerial actions*. Of the prior key contributions, in this field, Robbins and Stylianou (1999) account for managerial actions. They establish that managerial factors have a strong influence on the positive outcomes of post-M&A IS integration.

The individualist perspective of Paper 3 and the ES Integration Management Issues addressed in Paper 2 applied in this study provide deeper insights. Together, they help to understand why the post-acquisition IS integration at PrintComp took the shape it did.

The application of these perspectives led to a deep appreciation of this IS-integration process. The individual *responsible managers' repertoire of prior skills and experience of acquisitions and post-acquisition IS integration,* together with *top-management commitment, communication* preferences (Paper 3) and aspects of *change management* (Paper 2) helped to explain the actions of the various stakeholders during the implementation.

The two *key actors* in the post-acquisition IS integration at PrintComp were the Project Manager and the CFO. This finding is in accordance with Granlund's (2003) conclusion that the role of dominant individuals is evident. The CFO's and the Project Manager's post-acquisition IS-integration experience and skills affected the shape the process took. For example, the CFO's positive attitude to state-of-the-art IS led to his choosing a tailored solution, and his previous experience of a smaller-scale acquisition led to actions to remove the "us and them" attitudes on the company level. The top management was also responsible for the decision to implement the new IS plant by plant instead of module by module – a decision the vendor's project manager considered harmful. The end-users also complained that the magnitude of simultaneous changes was too great.

On the other hand, the Project Manager's lack of experience of prior post-acquisition IS integration or larger-scale IS projects led to inefficient change and project-management policies. The end-users were dissatisfied with the way the implementation and the related organisational change were managed, and the lack of efficient project management caused problems during the implementation. However, the project manager's *learning* resulted in more efficient approaches in the latter phases, including the decision to postpone the implementation in Plant P5 in order to ensure its success.

In addition, the top management's commitment played a role in the post-acquisition IS-integration process at PrintComp Ltd. The lack of visible commitment led to problems such as not devoting enough human resources to the project and the end-users' lack of understanding of the importance of the new IS.

Finally, *overall M&A management* affected the post-acquisition IS integration at PrintComp. For example, the work processes across the company were not successfully harmonised before the new IS was implemented. Instead, the new IS was used as a vehicle of change that finally facilitated the coordination of production capacity between the different units as well as better financial control. On the other hand, the top management actively worked against "us and them" attitudes and no lay-offs were needed, which may have helped to attenuate the organisational-level "us and them" attitudes during the integration process. Table 8 summarises the empirical findings related to planning and managing post-M&A IS integration.

Table 8.   A summary of the empirical contributions: managerial factors

	Previous results	*This study: PrintComp*
SQ2a. How do the managerial dimensions affect the post-M&A IS-integration process?	- managerial factors have a strong influence on positive post-M&A IS-integration outcomes (Granlund 2003) - the role of dominant individuals (Robbins and Stylianou 1999; Harrell and Higgins 2002)	- the Project Manager and the CFO were dominant actors in PrintComp's post-acquisition IS integration (Thesis Paper 3) - the CFO's and the Project Manager's attitudes and repertoires of prior knowledge of acquisitions and post-M&A IS integration shaped the IS integration process (Thesis Papers 2&3) - The Project Manager's lacking skills at the beginning complicated the IS integration process, but his learning resulted in efficient approaches during latter phases (Thesis Papers 2& 3) - the lack of visible top-management commitment complicated PrintComp's IS integration: there were not enough human resources for the project, and the end-users lacked a clear understanding of the vision (Thesis Paper 3) - overall M&A management affected post-M&A IS integration: IS integration was used as a vehicle of change (clashes); active management of "us and them" attitudes on the organisational level (Thesis Paper 3)

4.2.3   Other human dimensions in post-acquisition IS integration

Several different types of human-related factors were observed to affect post-acquisition IS integration. They are summarised in Table 9.

Table 9.　　A summary of the empirical contributions: other human factors

	Previous results	*This study: PrintComp*
SQ2b. How do other human dimensions affect the post-M&A IS-integration process?	- communication with the users is important in post-M&A IS integration (McKiernan and Merali 1995) - communication between stakeholder groups such as planners and implementers is important (Merali and McKiernan 1993; McKiernan and Merali 1995; Granlund 2003; Mehta and Hirschheim 2004)	- ineffective communication between the project manager, the CFO and the end-users meant that top-management support was invisible to the end-users and to frustrated users (Thesis Paper 3)
	- political and power issues affect post-M&A IS integration (I/S-Analyzer 1989; Weber and Pliskin 1996; Granlund 2003; Chin, Brown et al. 2004)	- political and power issues complicated the IS integration. (the project manager's lack of power & support from top management, operational power struggles between merging units, lack of resources for the integration project) (Thesis Papers 2& 3) - due to the recent acquisition (history) the social context was in a state of turmoil, which resulted in "us and them" feelings, criticism of the new IS, tensions and frustrations, as well as a lack of cooperation between different organisational levels (Thesis Paper 3)
	- cultural differences affect post-M&A IS integration (Granlund 2003)	- differences in the amount of control and coordination versus flexibility and freedom in the use of the previous IS and a humorous juxtaposition between the cities in which the factories were located aggravated "us and them" feelings at the beginning. (Thesis Papers 2 & 3)
	- post-acquisition IS integration is a messy process in which structure and action are inseparable (Haspeslagh and Jemison 1991; Chin, Brown et al. 2004). However, several authors take a straightforward process view, e.g., (Henningsson 2007)	- post-acquisition IS integration is a messy process and numerous factors, actors and interactions influence and shape it and its outcome. (Thesis Paper 3)

Communication contributes to explaining how the post-acquisition IS-integration process evolved at PrintComp. The ineffective communication between the CFO, the Project Manager and the end-users led to problems such as invisibility of top-management support to the end-users, and to frustrated users. This finding is in accordance with those reported by Robbins and Stylianou (1999), and Harrell and Higgins (2002) suggesting that communication to users is an important issue in post-M&A IS integration. On the other hand, the communication within the project team was efficient, which facilitated effective team-work. McKiernan and Merali (1995) also note the importance of communication between other stakeholder groups such as planners and implementers.

The concept of social context allows explanation of the roles *history*, the *social infrastructure* and *social relations* played in the post-acquisition IS-integration processes at PrintComp. Due to the recent acquisition, the social context was in a state of turmoil, which resulted in "us and them" attitudes, criticism of the new IS, tensions and frustrations, as well as inefficient cooperation between the different organisational levels. This further emphasises the fact that the acquisition situation has a significant effect on the subsequent IS implementation and integration. Studying the social process reveals how the issues related to politics and culture shape the post-acquisition IS integration process and the resulting new IS.

Several *political and power issues* were observed, which was predicted in the light of previous findings reported by Merali and McKiernan (1993), McKiernan and Merali (1995), Granlund (2003), and Mehta and Hirschheim (2004). In the case of PrintComp, the Project Manager came from the acquired plant and was not always able to control the use and the users of the new IS in the other factories. This led to, for example, a refusal to use the system module in one case, to frequent requirement changes, tensions with the vendor, and limited resources. The manager received very little support from the top management during the implementation phase. When a key user-support person took maternity leave, no-one was taken on to replace her and there were not enough resources for testing the software. The framework applied in this study also gave rise to the observation that negotiating with the vendor was a political issue that was not predicted in the light of previous literature.

There were also operational-level power issues during the design of the new IS, which resulted in disagreements over the design process. Resolving these was time-consuming, but in the end a shared language and agreed work routines were found.

Cultural differences also played a role in the post-acquisition IS integration of PrintComp, as predicted according to I/S-Analyzer (1989), Weber and

Pliskin (1996), Granlund (2003) and Chin, Brown et al. (2004). There were differences in the amount of control coordination versus flexibility and freedom in the use of the previous information systems, and there was also a jocular juxtaposition of the cities in which factories F1 and F2 were located. These differences aggravated the "us and them" attitudes at the beginning.

The interactive-process perspective applied in Paper 3 complements the insights gained from the other perspectives: it was found that the post-acquisition process *evolves over time through interaction between structural influences, the actions of individuals and the content of change*, in other words the post-acquisition IS-integration process and the new, integrated IS. It was thus shown, as Granlund (2003) suggests, that structure and action are inseparable in the process of post-acquisition IS integration.

The application of the structuralist, individualist and interactive process perspectives introduced in Paper 3 to the post-acquisition IS integration of PrintComp shows clearly that, in practice, post-acquisition IS integration is a *messy process* (cf. Granlund 2003) compared with the rather straight-forward process view taken by some authors, such as Haspeslagh and Jemison (1991) and Chin, Brown et al. (2004). There are numerous factors, actors and interactions influencing and shaping the process and the new, integrated IS, which pose challenges in terms of its management.

4.3   Defining success in post-acquisition IS integration

This sub-section outlines the empirical results that address the fourth sub-question of this study:

SQ3. What constitutes success in post-acquisition IS integration?

This dissertation offers new insights into post-M&A IS-integration success by integrating two bodies of literature, post-M&A IS integration and IS evaluation, and by exploring the problems of defining IS-integration success in an empirical case. The findings are summarised in Table 10.

Table 10.   A summary of the empirical contributions: success

	Previous results	*This study: PrintComp*
SQ3. What constitutes success in post-acquisition IS integration?	- Dimensions of post-M&A IS-integration outcome include: improved IS capability, success of integrated systems and the integration process (including IS resource utilisation during the M&A process); the ability to exploit M&A opportunities and to avoid problems; user satisfaction with the integrated systems and the integration process. (2007)	- Dimensions of post-M&A IS-integration success include: * User satisfaction with the integrated software system and information quality as well as its use; * Efficient and effective IS integration management; * Efficient IS staff integration; * IS ability to support the underlying motives of the merger or acquisition (Thesis paper 4) (see Section 4.3 for the more fine-grained concepts) - complex interrelationships between the success issues and categories were observed at PrintComp (Thesis paper 4)

As the findings reported in Paper 4 show, defining success in post-acquisition IS integration is problematic, and so is finding reliable measures for it. This is in line with research on IS success in general (see also: DeLone and McLean 1992; Goodhue 1995; Kortteinen, Nurminen et al. 1995; Saarinen 1996; Brynjolfsson and Hitt 1998).

Much of the literature on post-M&A IS integration does not define its success at all (e.g., Cossey 1991; Weber and Pliskin 1996; Goodwin 1999). Only vague or implicit definitions are provided, for example by mentioning obtainable benefits (I/S-Analyzer 1989; Cossey 1991; Kubilus 1991; Merali and McKiernan 1993), or quoting potential problems (I/S-Analyzer 1989; Cossey 1991; Kubilus 1991; Merali and McKiernan 1993). Exceptions to this include the studies by Stylianou, Jeffries et al. (1996) and Robbins and Stylianou (1999), that provide perhaps the most comprehensive definition. Furthermore, none of this literature manages to exploit the vast body of work on IS evaluation.

Much of the literature on IS evaluation is summed up in the DeLone-McLean models (1992; 2003). Paper 4 compares the success issues mentioned in the literature on post-M&A IS integration with those presented in the DeLone-McLean model (Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999), and proposes the following four categories of success:

- *User satisfaction with the integrated software system, and information quality and use*: not disrupting the work of employees, not inconveniencing customers, corporate-wide information accessibility; accurate, useful and timely information.
- *Efficient and effective IS integration management*: efficient and effective use of resources (time, cost and personnel) during the integration processes, effective management policies with regard to project management, change management, outsourcing, etc.
- *Efficient IS staff integration*: avoiding the loss of key IS people and their expertise; recruiting technically and managerially competent IS staff; avoiding problems such as reduced commitment and disloyalty, reduced productivity, lower motivation, dissatisfaction, frustration, confusion and stress; dysfunctional behaviour and sabotage, people refusing assignments, increased absenteeism, health problems, and power struggles.
- The I*S capacity to support the underlying motives of the merger or acquisition*: for example, cost-cutting and exploiting redundancies in the IS function; supporting synergies in production through the better co-ordination of production capacity; supporting the new, integrated R&D function; supporting vertical integration and visibility with the acquired supplier/client.

These categories offer new insights into understanding the success of post-M&A IS integration compared to earlier core contributions by Stylianou, Jeffries et al. 1996 and Robbins and Stylianou (1999): first, IS-staff integration is added, and secondly, the contents of the categories are more fine-grained.

The IS integration of PrintComp is used to illustrate these categories in Paper 4. Issues pertaining to each of them were observed, and applying the four categories also demonstrates some of the interrelationships with the success issues. For example, an insufficient number of IS personnel combined with somewhat inefficient IS integration management aggravated the system-quality problems as observed by the users. Furthermore, low system quality caused dissatisfaction among the users, although the system functioned well enough to support the new processes and the coordination of production capacity between the different plants – i.e. the underlying merger or acquisition goals.

Finally, prior research has found that the value of IS integration may lie in its support of other resources, for example in enabling and helping the transformation of the organisational structure (Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999). This study confirmed this finding as IS integration was used as a vehicle of change at PrintComp.

4.4   Towards a theory of post-M&A IS integration

The process of post-M&A IS integration, as observed in the case companies, is depicted in Figure 4. The figure summarises the central concepts and how they interact with each other. The underlying theoretical assumption here is that institutional contexts and human action interact over time and shape one another (Orlikowski and Robey 1991; cf. Giddens 1997; Granlund 2003). This process emerged directly from the empirical case study of PrintComp reported in this dissertation, and therefore reflects its idiosyncratic characteristics. For example, the case represents an absorption type of acquisition situation in which the need for resource sharing and consequently also the need for strategic interdependence are high, and the need for organisational autonomy is low. No claim is made here that these results could be generalised to other empirical descriptions. The findings from the Telecom case are described anecdotally in this section when they provide additional insights.

Starting from the left-hand side of Figure 4, this process unfolds as follows.

ORGANISATIONAL CONTEXT

M&A context

STRUCTURAL
* merger/acquisition motives
* related organisational integration
* external context of change

SOCIAL
* cultural differences
* organisational differences
* social context: history, social infrastructure & social relations
* political and power issues

INDIVIDUAL
* "us and them" feelings

IS context

STRUCTURAL
* role of IS in post-M&A integration
* characteristics of old & new information systems
* characteristics of IS integration team

SOCIAL
* differences in IS planning profiles

INDIVIDUAL
* managers' attitudes and prior experience

*Recognise need for post-merger IS integration
* formulate IS integration strategy

Making strategic post-M&A IS integration decisions

* Choose new, integrated IS,
* Implementation
* Change management

Implementing post-M&A IS integration

Outcomes

Reactions to post-M&A IS integration
* Users
* Managers

Consequences of product & process of post-M&A IS integration

PLANNING AND IMPLEMENTING POST-M&A IS INTEGRATION

Arrows
1 Influence of context on managers' actions as condition for deciding to integrate the information systems
2 Change or reinforcement of context as managers' actions are influenced by it
3 Conditions that lead managers to choose the new, integrated IS and the implementation path
4 Influence of context on choosing the new, integrated IS and the implementation path
5 Change or reinforcement of context as post-merger IS integration strategy is implemented
6 The process and product of post-merger IS integration lead to certain experiences
7 Influence of context on key players' reactions to the process and product of post-merger IS integration
8 Change or reinforcement of context as actors are influenced by the context

Figure 4.   Post-M&A IS integration

Initially, there was a motive (or motives) behind the merger or acquisition that then led to certain decisions on the extent to which and how the organisations should be integrated. (These decisions could be the product of a messy process that is also influenced by a number of other factors besides the merger or acquisition motives. This, however, is outside the scope of this dissertation and is hence left for further studies.) These decisions, in turn, lead to recognising the need for post-M&A IS integration and to formulating the IS integration strategy, i.e. what to integrate and how in both case companies

(labelled "Conditions for deciding to integrate the ISs"). The structural characteristics of the old and new information systems also influenced the choice of post-M&A IS integration in the PrintComp case. In Telecom it was observed that a synergy-seeking acquisition situation favoured a control focus, a top-down decision-making flow and a formal approach to the strategic planning of post-M&A IS integration. There were also differences between the planning profiles of the merging units, which complicated the process (Arrow 1). The decision to integrate the information systems also reinforced the existing contexts, such as the enterprise being on its way to becoming a single entity. The integration decision also affected the IS context. In the case of PrintComp, it gave the information systems a role as a vehicle for change (Arrow 2). The strategic-planning process is dynamic and may evolve over time when two organisations with initially different planning profiles relate to each other (iterating the influences depicted by Arrow 1 & Arrow 2).

The managers' actions – analysing the acquisition situation and formulating an integration strategy – led them to choose the new information system(s) and implement it (them). (Arrow 3)

The choice of a new information system and its implementation are influenced not only by the managers' intentions but also by the institutional context in question. The responsible managers' attitudes and repertoires of prior knowledge on post-M&A IS integration were observed to shape the integration process. The overall post-acquisition context also had an affect in that the IS integration was seen as a vehicle of change, and there was active management of "us and them" feelings on the organisational level. Due to the recent acquisition, the social context – consisting of a history of previous commitments to information systems and a vendor, as well as the developing social infrastructure and relations – was in a state of turmoil and affected the choice and implementation of the new IS at PrintComp. Furthermore, political and power issues affected the post-M&A IS integration: it was complicated by invisible top-management support, the project manager's lack of power, operational power struggles between the merging units, and a lack of resources for the integration project (Arrow 4).

Having chosen and implemented the new, integrated information systems, managers may take action (labelled "Implementing post-M&A IS integration") such as changing IS policies, practices, operations, and relations with users. This, in turn, influences the institutional context, changing it to a greater or lesser extent (Arrow 5). For example, at PrintComp the project manager's lacking skills complicated the IS integration project in the earlier phases (Arrow 4), but his learning from the implementation resulted in changes in the IS context (i.e. improved IS skills), and again in a more efficient approach during the latter phases (Arrow 5).

Actions related to selecting the new, integrated information system(s) and implementing it (them), in turn, resulted in various experiences and outcomes (Arrow 6), as the managers and end-users (and vendor's representatives) acted on and reacted to the changes (labelled "Consequences of product & process of post-M&A IS integration"). These outcomes ranged from the quality of the integrated software system and information as well as its use to the efficiency and efficacy of the IS integration management and IS staff integration, and also included the capacity of the new information systems to support the underlying motives of the merger or acquisition. The users and managers, then, react to and act according to how they perceive their experiences related to these dimensions of post-M&A IS-integration success.

These actions and reactions, such as resisting the new information systems, do not occur in a vacuum but are influenced by the institutional contexts in which they occur (Arrow 7). For example, the characteristics of the old information systems (including the amount of control and coordination versus flexibility and freedom in use) and cultural differences resulted in "us and them" feelings that provoked resistance to the new information system at PrintComp. The users in all units felt that they were required to start using a system that was designed for "the others". The social context was in a state of turmoil due to the recent acquisition, which resulted in "us and them" feelings, criticism of the new IS, tensions and frustrations, and a lack of cooperation between different organisational levels. Finally, managers may take action here, which may be manifested in terms of top-management commitment, communication preferences, and aspects of change management. These actions, in turn, affect the institutional context (Arrow 8) by changing or reinforcing it.

Any of these influences (depicted as arrows in the figure) may be iterated several times, and this was also observed in the empirical case study. For example, Paper 1 shows that the strategic planning of post-M&A IS integration may be dynamic and evolve over time (the Telecom case), while Paper 3 reveals that post-acquisition IS integration is a messy process and that numerous factors, actors and interactions influence and shape the process and its outcome (the PrintComp case). Given the messy and iterative nature of the process, the users' and managers' reactions to its outcomes also constantly shape them as it evolves.

The framework depicted in Figure 4 builds on and adds to earlier key contributions published in top IS journals. First, Stylianou, Jeffries et al. (1996), Weber and Pliskin (1996), Giacomazzi, Panella et al. (1997) and Robbins and Stylianou (1999) provide causal models based on deterministic assumptions of either a technological or an organisational imperative (cf. Markus and Robey 1988), and therefore largely overlook the contribution of

human intentions and action in shaping the process and product of post-M&A IS integration. Secondly, they tend to propose variance models (cf. Markus and Robey 1988) and ignore the importance of the context and the process.

This framework is proposed as an initial formulation of the key concepts and interactions that portray post-M&A IS integration as a process of organisational change. No claim is made that these concepts and interactions are exhaustive. Further studies should add to or modify the ideas presented here in order to advance the development of a more comprehensive theory of post-M&A IS integration.

5 SUMMARY

Aut viam inveniam aut faciam.

This dissertation began with a review and analysis of prior research on post-M&A IS integration. The next step was to identify relevant frameworks and concepts from the background theories in order to address the topics chosen for the study: the organisational context, planning, management, human issues, and effectiveness. Two empirical cases were analysed from these perspectives and the results compared with prior contributions in the literature. This concluding section discusses the contributions the study makes to the theory and practice of post-M&A IS integration.

5.1 Theoretical contributions

This dissertation has presented the findings of an analysis of prior literature on post-M&A IS integration, and has reported case studies of three real-life situations. This research has produced new, useful concepts for analysing both the process and the product of post-M&A IS integration. These concepts help, first, to explain the contextual, managerial, human and cultural factors that affect the process, and secondly, they cover various relevant aspects of its success. Various theoretical tools were used and adapted in conceptualising post-M&A IS integration as a process of organisational change.

The frameworks used and adapted for the purposes of this study provide some ways of examining the chosen aspects of post-M&A IS integration. These are: the six dimensions of the strategic post-merger[8] IS planning process, a business-process-change model for post-merger ES integration, a three-dimensional framework for understanding post-acquisition IS

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[8] The use of "post-merger" and "post-acquisition" in naming the frameworks here follows the convention adopted in the thesis papers. This is related to the fact that the conceptualisation of M&A has emerged in its own right as a result of this study. Initially, the term "merger" was used to cover both mergers and acquisitions in the tradition of the M&A literature. Towards the end of this dissertation project, the conceptualisation was clarified and now, when addressing both phenomena, the term "mergers and acquisitions" is used. Acquisition refers to situations in which one of the parties is larger and more powerful.

integration, and a framework for understanding the success of post-merger IS integration.

The frameworks enable account to be taken of the various aspects of the context, the planning process, the management, human issues, and the effectiveness of post-M&A IS integration. This, in turn, allows the nature and locus of the changes associated with it to be anticipated, explained and evaluated. The analyses of prior literature, the empirical findings, and the theoretical tools articulated in this dissertation make several contributions to both the research and practice of post-M&A IS integration, as explained below.

While more empirical work is necessary in order to elaborate and verify the results of this dissertation, a useful starting point appears to have been made. This sub-section explicates the research contributions, and the following one presents the practical contributions.

1. This dissertation conceptualises post-M&A IS integration as a form of organisational change.

It is argued that when integration indicates the blending of organisational components, post-M&A IS integration is a type of organisational change, and much can be gained by researching and managing it accordingly. This entails looking at the components of such a change: the organisational context, the organisational aspects that will change and their interrelationships, the change episode, and the outcomes of such a change. As explained in Section 2.3, the seminal contributions published in top IS journals, including those by Stylianou, Jeffries et al. 1996, Weber and Pliskin 1996, Giacomazzi, Panella et al. 1997 and Robbins and Stylianou 1999, tend to propose variance models and to overlook the importance of contextual and process issues, as well as failing to capture the contribution of human intentions and action.

2. This dissertation takes a process view of post-M&A IS integration.

The dissertation complements the prior literature on post-M&A IS integration in adopting a longitudinal view and attempting to understand the dynamics related to its context, planning, management and emergence.

However, the general literature on mergers and acquisitions frequently describes M&As as phased processes (e.g., Haspeslagh and Jemison 1991). Previous studies on post-M&A IS integration that have adopted a process view include those conducted by Jonston and Yetton (1996) who focused on fit and compatibility, Granlund (2006) who studied the PMI of management-accounting systems, and Wijnhoven et al. (1996) who focused on IT-integration strategy. This study complements the insights they provided in attempting to cover more phases – including planning, implementation, and assessing effectiveness – and different aspects of the post-M&A IS integration process.

3. This dissertation is the first comprehensive analysis of the process and product of post-M&A IS integration.

3a. The dissertation sketches out the problem space

This contribution relates to the analysis in section 2.3 showing that prior literature on post-M&A IS integration has mainly concentrated on selected phases. This study is the first one to sketch out the problem space so as to incorporate all the elements of change: the organisational context, aspects of change, the change episode, and its effectiveness. The only previous attempt found was made by Jonston and Yetton (1993), who focused only on aspects of change.

3b. The dissertation provides an in-depth description and analysis of the change episode, and in doing so it complements earlier writings by providing a longitudinal study.

This dissertation is also the first study to provide a longitudinal and in-depth description and analysis of the process of post-M&A IS integration. Merali and McKiernan (1995) and McKiernan and Merali (1999) take a process view, but they consider the acquisition-integration life cycle as a whole. This study complements and builds on the insights provided by these (and other) studies in focusing on the IS-integration-related change episode and providing additional and more detailed concepts for understanding it.

Furthermore, the success of post-M&A IS integration per se has largely been ignored, or addressed only implicitly. As exceptions, Robbins and Stylianou (1996) and Stylianou, Jeffries et al. (Giacomazzi, Panella et al. 1997) conceptualise success as a part of their studies. This study complements their insights by bringing in additional and more-finely-grained concepts from the vast body of literature on IS success, and by empirically illustrating and verifying them.

The dissertation builds on, integrates and complements earlier studies on post-M&A IS integration, bringing together concepts suggested in them. The frameworks and findings suggest that the scattered and sometimes conflicting implications of prior research probably reflect the case-specific and idiosyncratic nature of the phenomenon. This observation yields several topics for further research, some of which are sketched out in Section 5.3.

4. The dissertation provides additional and more-finely-grained concepts for understanding post-M&A IS integration: theoretical tools were brought in from other background theories, and an empirical study was carried out in order to further develop these concepts.

This contribution has been brought about through the adoption and adaptation of four frameworks from the reference literature. These frameworks were used to analyse the empirical cases, which fostered a deeper appreciation of them and a better understanding of the phenomenon in question, while

allowing the adjusting and fine-tuning of the concepts to better correspond with the observations.

According to the theoretical frameworks adapted to the context of post-M&A IS integration and used for understanding the empirical cases investigated in this study, contextual issues, the key actors' actions and attitudes, as well as cultural, power and political issues critically influence how such integration is shaped. These results imply the need for a different approach to doing research on post-M&A IS integration, suggesting that the time perspective, the context, the actions and the social environment need to be accounted for. Both researchers and practitioners should find the frameworks presented useful in that they examine various aspects of this relevant, but often poorly understood, phenomenon.

The first set of concepts is related to the organisational context in which the post-M&A IS integration takes place. Previous key contributions acknowledge the contribution of contextual factors to the strategy chosen (Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999) and the outcomes (Robbins and Stylianou 1999). This study builds on the insights provided in these contributions by producing additional and more-finely-grained context-related concepts for understanding not only the strategy and the outcomes, but also the strategic process and the shape the post-M&A IS integration takes. (These results are summarised in Table 7.)

It is noted in the literature that post-M&A IS integration is contextual by nature (I/S-Analyzer 1989; Weber and Pliskin 1996; Granlund 2003; Chin, Brown et al. 2004), which was confirmed in this study. For example, the acquisition situation was observed to push the case companies into changing their information systems, and provided one of them with an opportunity to improve its systems.

Understanding the contextual and structural issues surrounding post-acquisition IS integration, such as the acquisition context and the characteristics of the merging units, allows explanation of how the IS-integration process is shaped in particular. According to previous writings, the choice of IS-integration strategy is affected by structural factors such as merger or acquisition motives, related organisational integration, and previous computer architecture (Huysman, Leonard et al. 2002; Granlund 2003). It was observed in this study that the acquisition purpose, related organisational integration and the type of acquisition (synergy-seeking) affected not only the decision on what to integrate, but also the choice of the new IS at the case companies. The key concepts for understanding the strategic post-M&A IS-integration decision are related to contextual and structural issues. These include the acquisition context, the decision makers' characteristics, the IS/business alignment, the chosen IS integration strategy, the organisational

changes, the old and new information systems, and the structural characteristics of the IS-integration team. As for the decision-making process, the synergy-seeking acquisition situation favoured a control focus, top-down decision-making and a formal approach to strategic IS-integration decision-making at Telecom. It was also observed that this strategic-planning process was dynamic and evolved over time, as opposed to the more static examples provided in the literature (e.g.,Giacomazzi, Panella et al. 1997).

The case studies included in this dissertation also showed that structure-related concepts such as the acquisition situation, acquisition purpose and type of acquisition (e.g. synergy-seeking), existing and new information systems and ways of using them, as well as the characteristics of the IS integration team, all contribute to understanding how post-M&A IS integration is shaped. For example, the characteristics of the old and new systems affect the integration process by fostering "us and them" feelings and user resistance to the new one.

The prior literature also notes that cultural differences affect post-M&A IS integration (Robbins and Stylianou 1999). This study confirmed this in that cultural and organisational differences caused "us and them" attitudes and frustrations and hence complicated the process at PrintComp.

The second set of concepts worthy of note in understanding post-M&A IS integration is related to the human dimension: the actions, characteristics and attitudes of the key actors affect how it is shaped. Previous key contributions by Robbins and Stylianou (1996) and Stylianou, Jeffries et al. (1996) refer to the importance of managerial issues, but the broad range of individual actions has not previously been studied in depth. This study builds on the insights gained from previous contributions by providing additional and more-finely-grained concepts for understanding how key actors affect the shape post-M&A IS integration takes. As far as managers are concerned these include overall merger management, responsible managers' prior post-M&A IS-integration experience and skills, management commitment, communication, and aspects of change management. It was also observed that the project manager's learning influenced the integration process at PrintComp. Employee resistance may trouble post-M&A IS integration, as also happened at PrintComp.

The third set of concepts covers dimensions related to social processes such as culture, power and politics. Of the prior key contributions on post-M&A IS integration, only Weber and Pliskin (1999) discuss culture and none of them address power and politics. According to the empirical evidence of this study, "us and them" attitudes may develop not only between organisational units, as predicted in the literature, but also among the IS users in the merging organisations. It was also observed that the social context, conceptualised in

terms of the history, the social infrastructure and the social relations, shaped the post-M&A IS-integration process at PrintComp.

Power and political issues appeared to complicate the IS integration process both in the merging units and also on the different organisational levels. It was further observed that the post-M&A IS integration process evolves over time through interaction between the structural influences, the actions of individuals and the content of the change, the last-mentioned being the post-M&A IS integration process and the new, integrated IS. Hence, in practice, post-M&A IS integration is a messy process (cf. Granlund 2003) and not the rather straight-forward process described by some authors, e.g., Haspeslagh and Jemison (1991) and Chin, Brown et al. (2004). The integration process and the new, integrated IS are influenced and shaped by numerous factors, actors and interactions, which makes it challenging for people studying and managing it.

Finally, this study provides concepts for understanding the success of post-M&A IS integration. Much of the literature does not define success in this context at all, or then only vaguely or by implication (cf. Section 2.8.3). Exceptions to this include the papers by Robbins and Stylianou (1996) and Stylianou, Jeffries et al. (1996), which provide the most comprehensive definition of post-M&A IS-integration success so far. The categories developed in this study complement their work by building on the contributions of the vast body of literature on IS success. These categories are: User satisfaction with the integrated software system and with the information quality and its use; Efficient and effective IS integration management; Efficient IS staff integration; and IS capacity to support the underlying motives of the merger or acquisition.

This study should also be of interest to researchers and practitioners dealing with overall organisational post-M&A integration, for various reasons. First, information systems play a central role in contemporary economic life: as Henningsson (2007) found, the value of IS integration lies in its support of other resources, for example in facilitating the transformation of the organisational structure. Secondly, as explained in Section 2.2, the literature on both post-M&A integration and post-M&A IS integration is scarce, and the latter is dominated by quantitative studies.

The value of this study for those readers is that it describes one aspect of the post-M&A process, and may serve as a starting point for studying and understanding other aspects.

While all methodologies have strengths and weaknesses, the case-study approach was particularly appropriate here since it facilitated the generation of deep insights, as well as taking into account the longitudinal perspective and the context in which the IS integration took place. This allowed the author to

build on the previous, often fragmented and contradictory literature by providing additional and more-finely-grained concepts for understanding post-acquisition IS integration.

Empirical elaboration and validation of these concepts in other settings are clearly needed. The theoretical frameworks adapted were used to analyse only one to two cases at a time, although this was done in depth. Moreover, the empirical material concerned only cases in which the motivation for the acquisition-related change was resource-sharing, and the need for strategic interdependence was high.

More empirical grounding and comparisons will sharpen and enrich the concepts developed here, and yield a wider understanding of post-M&A IS integration. The next sub-section gives some practical implications. Thereafter, potential strategies for further research are proposed.

5.2   Implications for post-M&A IS integration in practice

The theoretical frameworks presented in the thesis papers of this dissertation also have practical applicability. First, they fit the substantive area of the study. The concepts are closely related to the actual post-M&A IS-integration process because they were used to analyse such situations, and fine-tuned as a result of this analysis. Secondly, the analytical frameworks cover not only the IS-integration process, but also the context, the relevant actors and the content of the change, which makes them sufficiently general to be applied to a range of related situations. Thirdly, they could well serve as a basis from which practitioners could plan and execute post-M&A IS integration, given a better understanding of the complexities and dynamics. This may make them less likely to underestimate the problems and hence reduce uncertainty and the risk of failure. These results could be applicable especially in cases in which the need for strategic interdependence is high (Haspeslagh and Jemison 1991). In other words, they provide practitioners with an understanding of the relevant issues related to the context, the stakeholders, and their interaction in a change process that evolves over time, and should therefore offer some useful guidance.

The findings of the present study have several implications for managers facing the challenges of post-M&A IS integration.

The managers should gain a thorough understanding of their organisational context. When starting to plan post-M&A IS integration managers should first acquire a sufficient understanding of the relevant contextual issues. This includes both appropriate IS due diligence and searching for necessary information related to the merger or acquisition and

the merging organisations in general. The responsible managers should seek an overall understanding of the role of the IS integration in relation to the organisational integration. The IS integration may be used as a vehicle of change, or the IS might reactively adapt to the other organisational changes. Managers should therefore analyse the situation in order to understand which role is desired, and should use this knowledge to guide their actions.

The acquisition situation influences the IS integration in several ways. The first of these concerns the choice of integration strategy, i.e. what to integrate and how. This choice is guided by the merger or acquisition motives, together with other characteristics of the acquisition situation, such as the kind of acquired business, the geographical location, the relative size of the companies, the existing information systems, and the work processes supported by the IS. For example, in synergy-seeking M&As, full consolidation of the information systems is often desired.

Managers should be aware that the contextual factors also affect the process of post-M&A IS integration. Differences between the old and the new information systems and work processes may lead to cultural clashes and the "us and them" attitudes often encountered in M&A situations. The management should prepare to actively manage these issues.

They should manage the integration managers and other organisational actors. It is important to be aware of the key actors' attitudes, experience and skills. These key actors include the manager responsible for the IS integration, possibly the CIO, and also the other people who will influence the post-M&A IS integration such as the top-management team, the IS integration team, possible external IT/IS consultants, and the end-users. The results of this study show that the actions of individual key actors shape the post-M&A IS-integration process to a significant extent. Therefore, it is important for the responsible managers to have both appropriate IS skills and sufficient experience and history in (at least) one of the companies to be merged. Moreover, the composition of the integration team has an affect. For example, not having enough user-support personnel may trouble the implementation phase, as was observed in the case of PrintComp. On the other hand, too large a team brings about high coordination costs. It may not be possible to prescribe a one-size-fits-all composition of the integration team, but some guidelines can be provided. The team should include both business and IT representatives, and should represent all merging units. It may also be beneficial to have representatives of different organisational levels and functions. The management should be prepared to budget more human resources during the project if necessary as the complexities of IS integration are often underestimated.

The senior managers need to visibly support the change when new organisational visions, roles and relationships need to be planned, communicated and implemented. This type of change is a radical paradigm shift for the employees, and may take place, for example, when operational integration is sought in order to bring about M&A synergies, and full consolidation of the information systems is required to support it. In these cases, managers need to engage in making significant structural, procedural and cultural changes in their organisations.

Furthermore, sufficient change- and project-management skills and practices are required in taking up the challenges of post-M&A IS integration. These include the ability to carefully design the implementation phases, and to communicate the visions as well as the progress of the process effectively to the users. The responsible managers should also manage the potential IS-vendor relationship effectively, and have sufficient understanding of what can be expected from packaged software and from the tailoring of software to suit the organisation's unique needs. Moreover, operational personnel and lower-level managers very seldom have any personal incentives for favouring post-M&A consolidation and integration. Therefore, resistance is likely and it needs to be managed efficiently.

The managers should pay attention to culture, power and politics. Cultural issues are among the main causes of overall M&A failure. "Us and them" attitudes may develop among the employees of the merging units, but also in relation to the information systems, as the users may feel that they need to start using "the others' IS" with which they are not familiar. They may (often rightfully) fear that the new IS will not support their work and therefore they resist it. Managers should listen to these concerns and address them appropriately.

As simultaneous changes in other organisational aspects such as work processes may also take place, employees face the risk of becoming overwhelmed or even exhausted by the magnitude of the change. Integration managers need to be prepared to carefully manage these attitudes and concerns, and to help the users in this transformation.

It is also typical in M&A situations for different types of power and political issues to emerge. For example, in the case of PrintComp, before the IS integration both merging organisations had had their own systems for naming production lots. During the integration process, a dispute arose over whose system to follow in the new IS. Solving these problems was time consuming, but it also helped the merging units to find a shared language and contributed to establishing common, agreed-upon work routines.

Power and political issues arise not only between organisational units, but also between managerial levels. Problems may emerge among the managers

responsible for the IS integration, and may be aggravated if they come from different organisations and do not have a common history and established social relationships. For example, in the case of PrintComp, the lack of a common history resulted in the project manager being left alone with the implementation team, without visible top-management support.

The managers should define success. Success in post-M&A IS integration is multi-dimensional and difficult to define. It may include elements such as user satisfaction with the quality of both the integrated software system and the information, as well as its use, efficient and effective IS integration management, efficient IS staff integration, and IS support of the underlying motives of the merger or acquisition. Different stakeholders may hold different views on whether and to what extent the integration has been successful. Reflecting on what could constitute success in the task at hand and choosing appropriate measures for it facilitate the monitoring of the progress of the integration project, and the taking of necessary actions to bring it back on track in case of an undesired deviation. A short summary of the research-based recommendations is presented in Table 11.

Table 11.   Ten research-based recommendations for managers facing the
             challenges of post-M&A IS integration

Recommendation	
1. Understand your post-M&A situation.	*Has appropriate IS due diligence been carried out? Has this information been combined with the other information on the merging organisations? How does the IS integration relate to the organisational integration? What are the similarities and differences between the information systems you are going to integrate? How well do they fit in with the new IS and the new work processes? What kinds of problems could potential misfits lead to during the implementation phase?*
2. Choose the right post-M&A IS-integration strategy and choose the IS integration strategy in the right way.	*What needs to be integrated to support the new, integrated organisation? Why? To what extent should the merger or acquisition motives and other situational factors affect these decisions, and how? To what extent should the personal characteristics of the decision makers influence these decisions, and how? How well does the chosen IS-integration strategy support IT/business alignment? What is the best way to implement these changes?*
3. Choose the right post-M&A IS-integration project manager and other decision makers.	*Have you chosen decision makers with sufficient IT/IS skills and experience? Have you chosen decision makers with a sufficient history in at least one of the merging organisations?*
4. Choose the post-M&A IS-integration team in the right way.	*Is the integration team big enough to have sufficient resources but not too big to be difficult to coordinate? Does the team have sufficient skills and experience? How do you ensure capturing the views of all of the merging organisations and other relevant stakeholders?*
5. Devote sufficient resources to the post-M&A IS integration.	*Are there enough resources in terms of time, money and people? If synergies are expected from the IS integration, what is the cost of reaping them?*
6. Get the top management's support.	*Does the top management support the IS integration project? Does it understand its importance and complexities? Has it efficiently communicated the change visions to the employees? Have sufficient power and resources been given to the managers executing the IS integration strategy?*
7. Communicate with the end-users.	*How can you efficiently communicate the visions and changes to the end-users to avoid frustrations and attitude problems? How are you planning to address their concerns and keep them up-dated on the progress of the IS integration?*
8. Be prepared to face and actively manage cultural clashes, including "us and them" attitudes.	*Can you predict what could trigger "us and them" attitudes? What are you going to do to mitigate them?*

| *9.* Be prepared to resolve political and power struggles. | *Can you predict what could trigger power and political struggles? What are you going to do to resolve them in case they arise?* |
| *10.* Track the progress and success of your post-M&A IS-integration project. | *Have you established measures to track the progress of the IS integration? What elements constitute success in your case? How do you know whether you have succeeded or failed, or when you need a change in the course of action? What have you learned? How could this learning support your future acquisitions or other change initiatives?* |

While the results of this study do not prove that accounting for the contextual issues, the key actors as well as for cultural, power and political issues will lead to successful post-M&A IS integration, they do suggest that if insufficient account is taken of these things, the employees facing it and the managers responsible for it may have problems in terms of, for example, disturbances to normal operations, user resistance, frustrations, and delays in implementation schedules.

5.3   Suggestions for future research

In the light of the learning process experienced during this study and the results obtained, several initial strategies for further research can be suggested. It should be understood that this dissertation was only an initial step towards understanding post-M&A IS integration, and as such its scope is limited and the results sometimes fragmented. The frameworks used overlap at some points and leave other areas uncovered. In order to overcome some of these shortcomings, the following suggestions for future research may prove fruitful.

First, as the choice of focus was on the change dimension that links information and technical systems, the three other links related to people, the structure and the management systems are fruitful topics for future research. This should subject the frameworks and concepts put forward this study to further testing, and hence help to further develop and improve them and thereby increase their explanatory power.

Secondly, as shown by Henningsson (cf. Buck-Lew, Wardle et al. 1992), studying the effectiveness of post-M&A IS integration in terms of its relation to other organisational resources is a relevant and up-to-date topic for research. This approach should complement the perspective chosen for Thesis Paper 4 of this study. Yet another relevant issue that is beyond the scope of this dissertation concerns pre-M&A IS due diligence.

Thirdly, it would be useful to investigate different merger and acquisition contexts in which post-M&A IS integration takes place. For example, the existing literature suggests several different or even contradicting antecedents for adopting certain types of post-M&A IS integration strategies. Both this and the findings of this study hint that this may be due to the contingencies and idiosyncrasies involved in the phenomenon in question. Studying the effects of different types of acquisition contexts may be a key to understanding some of these complexities, and may contribute to achieving a better understanding of how overall post-M&A IS-integration processes are shaped. More organisations need to be examined in order to establish whether the proposed frameworks and concepts are relevant in other situations, and how they can be adjusted and elaborated to better resemble the patterns observable in other organisations.

Fourthly, in order to facilitate the control and coordination of future post-M&A IS-integration efforts, it would be beneficial to continue the work started in Paper 4 by developing and empirically validating measurement scales for addressing its success.

On parempi ku ymmärtää ies vähän ku että jäes paljo ymmärtämätä.
(Positiivarit)

ABSTRACT

Whilst the number of mergers and acquisitions (M&As) is ever increasing, merging firms continue to struggle with post-M&A integration processes, of which integrating information systems has been said to be the most difficult. However, the literature on both organisational post-M&A integration and post-M&A IS integration is conspicuously scarce. This dissertation seeks to answer the question, *"What influences the post-M&A integration of information systems and how is it shaped?"*

Post-M&A IS integration is conceptualised as a form of organisational change, and the dissertation sketches out the problem space. In taking a process view it provides an empirical longitudinal account and produces the first comprehensive analysis of the process and the product aspects. Additional and more-finely-grained concepts are introduced in order to enhance understanding of the phenomenon. Theoretical tools from other background theories are brought in, and an empirical case study is conducted in order to further develop these concepts.

The concepts in question describe the influence of context as well as managerial and other human dimensions on the process of post-M&A IS integration. The conclusion is that it is a messy process in that numerous factors, actors and interactions influence and shape it and its outcomes. The dissertation also provides a conceptualisation of post-M&A IS-integration success. These results are integrated into a framework that is put forward as a first step towards a theory of post-M&A IS integration.

KEYWORDS

M&As, post-M&A integration, post-M&A IS integration, mergers, post-merger integration, post-merger IS integration, acquisition, post-acquisition integration, post-acquisition IS integration

APPENDIX I – EXAMPLES OF THE INTERVIEW QUESTIONS

Semi-structured theme interviews were conducted. The interviews were conducted in the mother tongue of the interviewees (i.e. not English). Among others, the interview themes included:

- Integration strategy
    - What integration strategy was chosen? (Full consolidation vs. partial integration vs. no integration; details) Why?
    - How were these decisions made? (Who, when, etc.)
- Executing the integration strategy
    - How was it executed? (When was it integrated, who managed the integration, all at once vs. phased, how were the users taken into account etc.) Why?
    - How were these decisions made? (Who made them, who participated, when, what changes occurred, etc?)
    - What has been difficult? What problems have been experienced? (How did you get over / cope with these problems, why, etc.?)
    - What opportunities arose? (How were they exploited? Why? etc.)
- Success
    - How would you define success in this IS integration? Why?
    - To what extent were these success objectives reached? Why?
    - How is this related to the overall integration success at the level of the whole organisation? (goals & reaching them?)

APPENDIX II – END-USER SURVEY

BACKGROUND INFORMATION

Factory:
   F1   F2   F3   F4   F5

Position and Context of IS use:
   Sales
   Customer Service Clerk
   Supervisor/line manager/production
   Accounting/finance
   End-user (I use the IS mainly for printing out work orders and reporting work/machine time)

	Totally Agree	Agree	Neutral	Disagree	Totally Disagree	Don't know
I received enough training for using the new IS						
I need more training						
My skills were sufficient when the new IS was installed						
I participated sufficiently in defining the requirements						

The attitude of user support is good							
The relationship with user support is good							
The communication with user support is good							
The quality of user support is good							
The attitude of the vendor's personnel is good							
The relationship with the vendor's personnel is good							
The communication with the vendor's personnel is good							
The IS is used successfully.							

In the future, I get changes in or increments to the IS flexibly							
In the future, I get completely new functions for the IS flexibly							
The data in the IS are accurate (not e.g. round-ups or estimations)							
The data in the IS are error-free							
The data in the IS are reliable							
The IS has all the data I need							
I find the information relevant to and necessary for my work in the IS							
Irrelevant data disturbs the use of the IS							
The data in the IS are available at the right time							
The data in the IS are up-to-date							
The format of the data is good							
The user interface is clear and logical							
The information is clear and understandable							
The IS functions and its quality is good							

The IS is well-suited to performing the tasks of my unit							
The IS is better suited to performing the tasks of other units							
The way of using the IS and its logic are well-suited to my unit							
The way of using the IS and its logic are better suited to units other than mine							

The communication related to the implementation of the IS has been open							
I have received information on the implementation effectively.							

I received information related to the implementation by e-mail to a significant extent.						
I received information related to the implementation from an Intranet, a database or other electronic source (documents etc.) to a significant extent.						
During the implementation, I received information or help from other departments using the IS (excluding the IT department, trainers and user support) to a significant extent.						
During the implementation, I gave information to be used in other departments or advised the employees of other departments to a significant extent.						
During the implementation, I collected information in a database (or other similar repository) to be used in other departments or other factories to a significant extent.						
The top management (of the whole company) is committed to the change.						
The top management (of each individual factory) is committed to the change.						
The line management (/supervisor) is committed to the change.						
The employees are committed to the change.						
When the new IS was implemented, I understood why it was important to [the case company].						
I know what the new IS aims at.						
The problems and issues I raised were reacted to well.						
In the management of the implementation, the particular needs of my unit were taken into account well (e.g., in the quantity and quality of communication, training, etc.)						
The implementation of the new IS and the related changes were well managed.						

What are the two most important issues that you would like to change in the IS or its use?

1._____

_____

2._____

_____

Other issues related to the IS, its use, implementation, etc.? (*You may continue on the other side of the paper*)

_____

_____

THANK YOU FOR YOUR REPLY!

APPENDIX III – EXAMPLES OF THE END-USER SURVEY RESPONSES

Table C1.   Examples of the end-user survey responses

		The use of the IS succeeds well			**The IS functions and its quality is good**			**The implementation of the new IS and the related change were well managed.**		
		2003	2004	2005	2003	2004	2005	2003	2004	2005
All Plants	Median	4	3	3	4	4	3	4	3	3
	Mode	4	4	2	4	4	3	4	4	2
Acquired Plant P1	Median	4	4	2	4	4	3	4	3	3
	Mode	4	4	2	4	4	4	4	3	2

1= Totally agree, 2= Agree, 3= Neutral 4= Disagree 5= Totally disagree, 0= Don't know
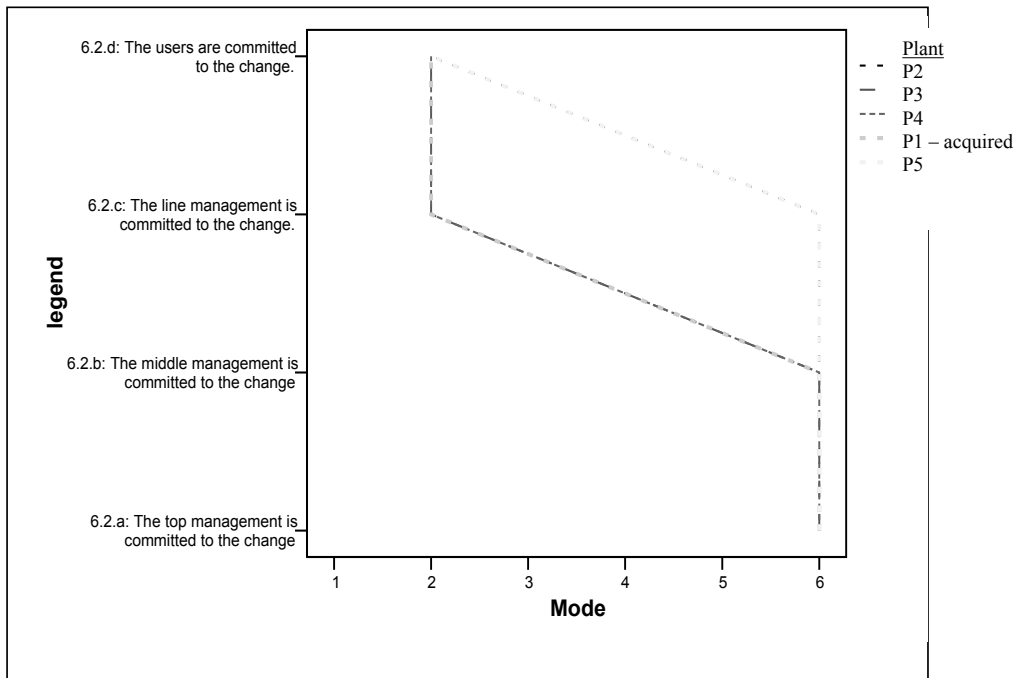
Figure C1.   Examples of the end-user survey responses

REFERENCES

Alaranta, M. (2004). *Integrating the Information Systems after A Merger*. The 11th European Conference on IT Evaluation, Amsterdam, The Netherlands, November 11 - 12.

Alaranta, M. (2005). *Integrating the Enterprise Systems after a Merger: Managing the Change in a Manufacturing Company*. The 13th European Conference on Information Systems, Regensburg, Germany.

Alaranta, M. and P. Parvinen (2005). "Contribution of Governance Theories of the Firm to the Analysis of Post-Merger IS Integration." *The ICFAI Journal of Mergers & Acquisitions* 2(1): 24 - 38.

Alaranta, M. and M. Viljanen (2004). *Integrating The IS Personnel After A Merger - Managing Challenges And Opportunities*. 12th European Conference on Information Systems, Turku, Finland, June 14.-16.

Andreu, R. and C. Ciborra (1996). "Organisational learning and core capabilities development: the role of IT." *The Journal of Strategic Information Systems,* 5(11): 111 - 127.

Applegate, L. M. (1994). Managing in an Information Age: Transforming the Organization for the 1990s. *Transforming Organizations with Information Technology*. R. Baskerville, S. Smithson, O. Ngwenyama and J. I. DeGross. Amsterdam, Elsevier Science B.V.

Ashkenas, R. N. and S. C. Francis (2000). "Integration managers: Special leaders for special times." *Harvard Business Review* 78(6-Nov/Dec): 108.

Bekier, M. M., A. J. Bogardus, et al. (2001). *Mastering Revenue Growth in M&A*. McKinsey on Finance. Summer.

Benbasat, I., D. K. Goldstein, et al. (1987). "The Case Research Strategy in Studies of Information Systems." *MIS Quarterly*(Sept): 369 - 386.

Bentley, R. (2002). "IT key to integration success." *Computer weekly* 1(31): 32.

Birkinshaw, J., H. Bresman, et al. (2000). "Managing the post-acquisition integration process: how the human integration and task integration processes interact to foster value creation." *Journal of Management Studies* 37(3): 395 - 425.

Bower, J. L. (2001). "Not All M&As Are Alike - and That Matters." *Harvard Business Review* 79(3-March): 93 - 101.

Bresman, H., J. Birkinshaw, et al. (1999). "Knowledge transfer in international acquisitions." *Journal of International Business Studies* 30(3-Third Quarter): 439 (24 pages).

Brynjolfsson, E. and L. M. Hitt (1998). "Beyond the Productivity Paradox." *Communications of ACM* 41(8): 49 - 55.

Buck-Lew, M., C. E. Wardle, et al. (1992). "Accounting for information technology in corporate acquisitions." *Information & Management* 22: 363 - 369.

Calabrese, R. D. (1991). "How to Stop Computer Snafus from Wrecking a Merger." *Mergers and Acquisitions* 26(2-Sep/Oct): 25 (6 pages).

Cartwright, S. and C. L. Cooper (1995). "Organizational marriage: "hard" versus "soft" issues?" *Personnel Review* 24(3): 32 - 42.

Chin, P. O., G. A. Brown, et al. (2004). "The Impact of Merger & Acquisitions on IT Governance Structures: A Case Study." *Journal of Global Information Management* 12(4): 50 - 74.

Cossey, B. (1991). "Systems assessment in acquired subsidiaries." *Accountancy International* 107(1169): 98 - 99.

Creswell, J. W. (1998). *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. Thousand Oaks, CA, USA, SAGE Publications Inc.

Datta, D. K. (1991). "Organisational Fit and Acquisition performance: Effects of post-acquisition integration." *Strategic Management Journal* 12: 281 - 297.

Deetz, S. (1996). "Describing Differences in Approaches to Organization Science: Rethinking Burrell and Morgan and Their Legacy." *Organization Science* 7(Mar/Apr - 2): 191 - 207.

DeLone, W. H. and E. R. McLean (1992). "In Information Systems Success: The Quest for the Dependent Variable." *Information Systems Research* 3(1): 60 - 95.

DeLone, W. H. and E. R. McLean (2003). "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update." *Journal of Management Information Systems* 19(4): 9 - 30.

Dubé, L. and G. Paré (2003). "Rigor in Information Systems Positivist Case Research: Current Practices, Trends, and Recommendations." *MIS Quarterly* 27(4, Dec): 597 - 635.

Earl, M. J. (1993). "Experiences in strategic information systems planning." *MIS Quarterly* 17(1): 1- 24.

Eisenhardt, K. M. (1989). "Building Theories from Case Study Research." *Academy of Management Review* 14(4): 532 - 550.

Elsass, P. M. and J. F. Veiga (1994). "Acculturation in acquired organizations: A force-field perspective." *Human Relations* 47(4-Apr): 431 (23 pages).

Empson, L. (2001). "Fear of exploitation and fear of contamination: Impediments to knowledge transfer in mergers between professional service firms." *Human Relations* 54(7-Jul): 839.

Epstein, M. J. (2004). "The Drivers of Succcess in Post-Merger Integration." *Organizational Dynamics* 33(2-May): 174.

Giacomazzi, F., C. Panella, et al. (1997). "Information Systems Integration in Mergers and Acquisitions: A normative model." *Information & Management* 32: 289 - 302.

Giddens, A. (1997). *Sociology (Third Edition)*. Cambridge, UK, POLITY PRESS.

Goodhue, D. L. (1995). "Understanding User Evaluations of Information Systems." *Management Science* 41(12): 1827 - 1844.

Goodwin, C. (1999). "Merging IT." *Accountancy International* 124(1271): 37 - 38.

Granlund, M. (2003). "Management Accounting System Integration in Corporate Mergers - A Case Study." *Accounting, Auditing & Accountability Journal* 16(2): 208 - 243.

Habeck, M. M., F. Kröger, et al. (2000). *After the merger - seven rules for successful post-merger integration*. Edinburgh Gate, GB, PEARSON EDUCATION LIMITED.

Harrell, H. W. and L. Higgins (2002). "IS integration: Your Most Critical M&A Challenge?" *The Journal of Corporate Accounting & Finance* 13(2 Jan/Feb): 23 - 31.

Haspeslagh, P. C. and D. B. Jemison (1991). *Managing Acquisitions - Creating Value Through Corporate Renewal*. New York, USA, THE FREE PRESS.

Henningsson, S. (2007). *Strategic Value of IS Integration in M&A - the Relation Between IS Integration and M&A as a Tool for Corporate Strategy*. the 40th Hawaii International Conference on System Sciences (HICSS'07), Big Island, Hawaii, USA.

Henningsson, S., C. Svensson, et al. (2007). *Mastering the integration chaos following frequent M&As: IS Integration with SOA Technology*. 40th Hawaiian International Conference on System Sciences (HICSS'07), Big Island, Hawaii, USA.

Honore, R. A. and M. W. Maheia (2003). "The Secret to a Successful RIM Merger or Acquisition." *Information Management Journal* 37(5 Sep/Oct): 57 - 63.

Huysman, M., D. Leonard, et al. (2002). *Towards a Learning Perspective on Knowledge/Technology Transfer through Corporate Acquisitions*. 35th Hawaii International Conference on System Sciences (HICSS), Hawaii, USA.

I/S-Analyzer (1989). "Dealing with mergers and acquisitions." *I/S Analyzer* 27(3): 1 - 12.

Jelassi, T. and S. Dutta (1993). "Case study - Integrating global commercial operations with information technology at BP Chemicals." *Journal of Strategic Information Systems* 2(1 March): 77 - 95.

Jemison, D. B. and S. B. Sitkin (1986). "Corporate acquisitions: A process perspective." *Academy of Management Review* 11(1): 145 - 163.

Johnston, K. D. and P. W. Yetton (1996). "Integrating information technology divisions in a bank merger Fit, compatibility and models of change." *The Journal of Strategic Information Systems* 5(3, Sept): 189 - 211.

Kalling, T. (2003). "ERP systems and the strategic management processes that lead to competitive advantage." *Information Resources Management Journal* 16(4): 46 - 67.

Kautz, K. (2004). *The Enactment of Methodology: The Case of Developing a Multimedia Information System*. International Conference of IS 2004, Washington DC, USA.

Kautz, K. and P. A. Nielsen (2004). "Understanding the Implementation of Software Process Improvement Innovations in Software Organisations." *Information Systems Journal* 14(1): 3 - 22.

Kelly, J. (2006). *How Acquirers are Facing the Challenge of Enhancing Deal Value*. Bank of America - http://corp.bankofamerica.com/ public/public.portal?_pd_page_label=products/abf/capeyes/archiv e_index&dcCapEyes=indCE&id=308.

Klein, H. K. and M. D. Myers (1999). "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems." *MIS Quarterly* 23(1): 67 - 94.

Kortteinen, B., M. I. Nurminen, et al. (1995). *Improving IS Deployment through Evaluation: Application of the ONION Model*. 3rd European Conference on the Evaluation of IT, Bath University.

Krug, J. A. and W. H. Hegarty (1997). "Postacquisition turnover among U.S. top management teams: An analysis of the effects of foreign vs. domestic acquisitions of U.S. targets." *Strategic Management Journal* 18(8-Sep): 667.

Krug, J. A. and W. H. Hegarty (2001). "Predicting who stays and leaves after an acquisition: A study of top managers in multinational firms." *Strategic Management Journal* 22(2-Feb): 185.

Kubilus, N. J. (1991). "Acquired and Abandoned." *Journal of Information Strategy: The Executive's Journal* 7(2): 33 - 40.

Larsson, R. and M. Lubatkin (2001). "Achieving acculturation in mergers and acquisitions: an international case survey." *Human Relations* 54(12-Dec): 1573.

Lee, A. S. (1989). " A Scientific Methodology for MIS Case Studies." *MIS Quarterly* 13(1, March): 33 - 50.

Leonard-Barton, D. (1995). A Dual Methodology for Case Studies: Synergistic Use of a Longitudinal Single Site With Replicated Multiple Sites. *Longitudinal Field Research Methods - Studying Processes of Organizational Change*. G. P. Huber and A. H. Van de Ven. Thousand Oaks, California, USA, SAGE PUBLICATIONS INC.**:** 38 - 64.

Madsen, S., K. Kautz, et al. (2006). "A framework for understanding how the unique and local IS development method emerges in practice." *European Journal of Information Systems* 15(2 April): 225 - 238.

Main, T. J. and J. E. Short (1989). "Managing the Merger: Building Partnership Through IT Planning at the New Baxter." *MIS Quarterly* 13(4): 469 - 484.

Manwani, S. and R. M. O'Keefe (2003). "The IT contribution in developing a transnational capability at Electrolux." *Journal of Strategic Information Systems* 12: 111 - 128.

Marks, M. L. and P. H. Mirvis (1992). "Rebuilding After the Merger: Dealing with 'Survivor Sickness." *Organizational Dynamics* 21(2-Autumn): 18 (15 pages).

Marks, M. L. and P. H. Mirvis (2000). "Managing mergers, acquisitions, and alliances: Creating an effective transition structure." *Organizational Dynamics* 28(Winter-3): 35 (13 pages).

Markus, M. L. and D. Robey (1988). "Information Technology and Organizational Change: Causal Structure in Theory and Research." *Management Science* 34(5-May): 583 - 598.

McKiernan, P. and Y. Merali (1995). "Integrating Information Systems After a Merger." *Long Range Planning* 28(4): 54 - 62.

Mehta, M. and R. Hirschheim (2004). *A Framework for Assessing IT Integration Decision-Making in Mergers and Acquisitions*. Proceedings of the 37th Hawaii International Conference on System Sciences - 2004.

Merali, Y. and P. McKiernan (1993). "The strategic positioning of information systems in post-acquisition management." *Journal of Strategic Information Systems* 2(2): 105 - 124.

Meyer, C. B. (2001). "Allocation processes in mergers and acquisitions: An organizational justice perspective." *British Journal of Management* 12(1-Mar): 47.

Miles, M. B. and A. M. Huberman (1984). *Qualitative data analysis : a sourcebook of new methods*. CA, USA, SAGE.

Mirvis, P. H. and M. L. Marks (1992). "The human side of merger planning: Assessing and analyzing." *Human Resource Planning* 15(3): 69 (24 pages).

Montana, J. C. (2000). "Rentention of Merger and Acquisition Records and Information." *Information Management Journal* 34(2 Apr): 54.

Motwani, J., D. Mirchandani, et al. (2002). "Successful implementation of ERP projects: Evidence from two case studies." *International Journal of Production Economics* 75: 83 - 96.

Mylonopoulos, N. A. and V. Theoharakis (2001). "Global perceptions of IS journals." *Communications of the ACM* 44(9 Sep): 29.

Orlikowski, W. and D. Robey (1991). "Information Technology and the Structuring of Organizations." *Information Systems Research* 2(Jun - 2): 143 - 169.

Orlikowski, W. J. (1993). "CASE Tools as Organizational Change: Investigating Incremental and Radical Changes in Systems Development." *MIS Quarterly* 17(No. 3, September).

Pablo, A. L. (1994). "Determinants of acquisition integration level: A decision-making perspective." *Academy of Management Journal* 37(4 Aug): 803 - 836.

Pan, A. and Á. Viña (2004). "An Alternative Architecture for Financial Data Integration." *Communications of the ACM* 47(5-May): 37 - 40.

Parvinen, P. M. T. (2003). *Towards a governance perspective to mergers and acquisitions*, Doctoral dissertations of Helsinki University of Technology, Helsinki: 2003/3.

Pettigrew, A. and R. Whipp (1991). *Managing Change for Competitive Success*, Blackwell Publishers Ltd, Oxford, UK.

Post-gazette.com (March 05, 2007). *Glitch with kiosks forces US Airways passengers to wait*. Post-gazette.com.

Pyburn, P. J. (1983). "Linking the MIS plan with corporate strategy: an exploratory study." *MIS Quarterly* 7(2): 1 - 14.

Robbins, S. S. and A. C. Stylianou (1999). "Post-Merger systems integration: the impact on IS capabilities." *Information & Management* 36: 205 - 212.

Saarinen, T. (1996). "An expanded instrument for evaluating information system success." *Information & Management* 31: 103 - 118.

Sambamurthy, V., R. W. Zmud, et al. (1994). "The comprehensiveness of IT planning processes: a contingency approach." *Journal of Information Technology Management* 5(1): 1 - 10.

Sandelands, L. (1991). "Book Reviews -- The Ethics of Organizational Transformation: Mergers, Takeovers, and Corporate Restructuring edited by W. Michael Hoffman, Robert Frederick and Edward S. Petry." *Administrative Science Quarterly* 36(Mar-1): 140 (3 pages).

Schweiger, D. M. and A. S. Denisi (1991). "Communication with Employees Following a Merger: A Longitudinal Field Experiment." *Academy of Management Journal* 34(Mar-1): 110 (26 pages).

Segars, A. H. and V. Grover (1999). "Profiles of Strategic Information Systems Planning." *Information Systems Research* 10(3): 199 - 233.

Shrivastava, P. (1986). "Postmerger integration." *The Journal of Business Strategy* 7(1): 65 - 76.

Singh, H. and M. Zollo (1998). *Creating Value in Post-Acquisition Integration Process*. The Wharton Financial Institutions Center: Working Papers. University of Pennsylvania, Philadelphia.

Smith, N. C. (1990). "The case study: a useful research method for information management." *Journal of Information Technology* 5: 123 - 133.

Stake, R. E. (1995). *The Art of Case Study Research*. CA, USA, SAGE PUBLICATIONS.

Stylianou, A. C., C. J. Jeffries, et al. (1996). "Corporate mergers and the problems of IS integration." *Information & Management* 31: 203 - 213.

Tetenbaum, T. J. (1999). "Beating the odds of merger & acquisition failure: Seven key practices that improve the chance for expected integration and synergies." *Organizational Dynamics* 28(2-Autumn): 22 (15 pages).

Turner, F. (2000). *Reasons why mergers and acquisitions can fail*. Jacksonville Business Journal - http://jacksonville.bizjournals.com/jacksonville/stories/2000/08/2 8/smallb2.html.

Vaara, E. (1996). *Reflections on Research Approaches and Success in Mergers and Acquisitions*. Theory Building in the Business Sciences: Papers from the Second EDAMBA Summer School, Handelshøjskolens Forlag. Copenhagen.

Walsham, G. (1993). *Interpreting Information Systems in Organizations*. Chichester, UK, John Wiley & Sons.

Walsham, G. (1995). "Interpretive case studies in IS research: nature and method." *European Journal of Information Systems*.

Walsham, G. (1995a). "The Emergence of Interpretivism in IS Research." *Information systems research* 6(4): 376 - 394.

Van de Ven, A. H. (1987). Review Essay: Four Requirements for Processual Analysis. *The Management of Strategic Change*. A. Pettigrew. Oxford, UK, Basil Blackwell.

Weber, R. A. and C. F. Camerer (2003). "Cultural conflict and merger failure: An experimental approach." *Management Science* 49(4-Apr): 400.

Weber, Y. and N. Pliskin (1996). "The effects of information systems integration and organizational culture on a firm's effectiveness." *Information & Management* 30: 81 - 90.

Weber, Y., O. Shenkar, et al. (1996). "National and corporate cultural fit in mergers/acquisitions: An exploratory study." *Management Science* 42(8-Aug): 1215 (13 pages).

Veiga, J., M. Lubatkin, et al. (2000). "Measuring organizational culture clashes: A two-nation post-hoc analysis of a cultural compatibility index." *Human Relations* 53(4-Apr): 539 (19 pages).

Vessey, I., V. Ramesh, et al. (2002). "Research in information systems: An empirical study of diversity in the discipline and its journal." *Journal of Management Information Systems* 19(2 Fall): 129.

White-Dollmann, M. M. (2004). "ISO 15489: A Tool For Records Management Mergers." *Information Management Journal* 38(Sep/Oct 5): 39 - 44.

Wijnhoven, F., T. Spil, et al. (2006). "Post-merger IT integration strategies: An IT alignment perspective." *The Journal of Strategic Information Systems* 15(1 March): 5 - 28.

Villinger, R. (1996). "Post-acquisition managerial learning in central east Europe." *Organization Studies* 17(2): 181 (26 pages).

Wolcott, H. F. (1990). *Writing Up Qualitative Research*. Newbury Park, CA, USA, SAGE.

Yin, R. K. (1984). *Case Study Research - Design and Methods*. CA, USA, SAGE PUBLICATIONS.

PAPER 1: SHAPING THE POST-MERGER INFORMATION SYSTEMS INTEGRATION STRATEGY

Hawaii International Conference On System Sciences HICSS-40 January 3-6, 2007, Big Island, Hawaii, USA. (in cooperation with Stefan Henningsson)

Shaping the Post-Merger Information Systems Integration Strategy

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Abstract

Many researchers and business professionals have emphasized the importance and difficulties of successful information systems (IS) integration in the context of mergers and acquisitions (M&A). However, existing research remains sparse, failing to explain how firms design their IS integration strategy and its relation to successful IS integration. In order to overcome this shortcoming, we adapt six dimensions of strategic IS planning to the post-merger integration situation, namely comprehensiveness, formalization, focus, flow, participation, and consistency in the post-merger IS integration context. We then use two in-depth cases studies to shed light on these constructs. We find evidence that contradicts the typical view presented in the M&A literature, and argue that there are several different approaches to post-merger IS integration planning. In the analysis, we point out specific differences between the cases that eventually lead up to these fundamentally different approaches to IS integration design.

1. Introduction

The number of mergers and acquisitions[1] (M&As) today exceeds even the records set by the merger wave of the 1980s. Consequently, more and more firms are facing the challenges of the post-merger integration of their operations, personnel, cultures, information systems, etc. The importance of the post-merger integration phase derives from the fact that value creation can only begin once the organizations start to work towards the purpose behind the acquisition. At the same time, faulty integration is a significant cause of merger failures [10, 12, 26], and M&As frequently miscarry [e.g. 26, 29].

Since information systems (IS) are of the utmost importance in the operation of (large) business, a

merger may not succeed if IS planning is inappropriate [8, 16, 22, 28] and not well aligned with the overall integration strategy. In addition, potential counter-synergies can be concealed in IS [1, 6]. In reality, however, the IS/IT and potential integration is often not considered in the pre-merger phase but IS integration is only planned after the merger, within a relatively short period of time [1, 16, 19]. All this makes post-merger IS integration both a challenging task and an interesting topic for academic studies. Nevertheless, Parvinen [20] concludes that "*post-integration management ... enjoy[s] conspicuously little attention.*" Similarly, Merali & McKiernan [19], Stylianou et al. [28], Mehta & Hirschheim [18] and McKiernan & Merali [16] note that the literature on post-merger IS issues is sparse.

There is a large body of literature on M&A phenomena and similarly on strategic IS planning. However, as illustrated above, research remains sparse on the specific intersection of strategic planning of IS in mergers and acquisitions. An exception is the work by Giacomazzi et al. [8] that studies in which post-merger situations the information systems should be integrated, i.e. the context of post-merger IS integration planning. This paper focuses on *how* the decision is made; i.e. the process of post-merger IS integration planning.

In addition, the existing M&A process theory assumes that the shaping of IS integration strategy is a matter of straightforward, rational decision making conducted during fairly isolated phases of the M&A process [e.g. 8, 16], whereas the vast body of IS planning literature suggests that also evolutionary processes prevail. Our preliminary understanding of the case studies supports this view, as one of the cases seemed to illustrate a dynamic process while the other appeared to feature a planning process that was more straightforward and fairly isolated in time. Hence, we decided to conduct a more profound study, taking potential differences in strategic IS planning processes into account, and compare the implications of this with regard to IS planning effectiveness.

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[1] This study uses the term 'mergers and acquisitions' (M&As) in order to cover both activities.

Having laid out the background for our study of the shaping of IS integration strategy in M&As, in the next section we address the methodological decisions behind the study. Thereafter, we discuss the six dimensions of strategic IS planning; namely comprehensiveness, formalization, focus, flow, participation, and consistency [25], and the implications for applying these to the M&A context. Next, we present the empirical findings from our case studies and finally discuss the findings in the light of the theoretical base, in order to draw conclusions regarding the relation between the strategic post-merger IS planning process and its effectiveness.

2. Post-merger IS integration planning and planning effectiveness

2.1 Dimensions of strategic post-merger IS integration planning

Strategic IS has been studied academically since the 1970s, and there is a large body of literature in the area. The seminal works from the past two decades cover various aspects of the phenomenon [e.g. 4, 17, 21, 24, 25]. For example, Earl [4] identifies five approaches to strategic IS planning based on different underpinning assumptions, emphases of approach, major influences of outcomes and "slogans". Segars & Grover [25] provide one of the most recent and most rigorous summaries of the literature; tying their ideas also to the seminal work by Minzberg. They summarize this literature into a six-dimensional framework, consisting of Comprehensiveness, Formalization, Focus, Flow, Participation, and Consistency. This framework builds upon a rigorous theoretical and empirical basis and also emphasizes the difference between continuous and one-shot planning processes.

Comprehensiveness in strategic IS planning includes being exhaustive and inclusive in gathering information relevant to IS planning, evaluating the possibilities carefully, and determining the optimal course of action from the alternatives identified [7, 23, 25]. Information systems tend to be ignored or only accounted for implicitly when planning a merger or an acquisition [3, 28]. However, the pre-merger assessment of IT fit sheds light on what can be expected from the acquired firm's IS, the effect (if any) IT/IS should have on the acquisition price, and what can be expected from post-merger IS integration. Moreover, the information systems personnel are expected to reconcile the systems quickly [28], which may not leave enough time for thorough planning

efforts. Consequently, the merger situation may foster non-comprehensive strategic post-merger IS integration planning.

Formalization refers to the presence of structures, techniques, written procedures, and policies, which guide the planning process. Greater formalization facilitates efficiency gains for both the receipt and processing of information, but these advantages should be balanced against greater inflexibility [25]. When planning post-merger IS integration, a formalized planning process may enable a more efficient identification of a wide variety of opportunities, as the participants of the planning process are still at the phase of learning to co-operate. On the other hand, an informal approach to the planning process facilitates the rapid adaptation of plans to the changing competitive and technological environment. [c.f. 25]

The integrative approach[2] to strategic IS planning focuses on the control and integration of corporate activity, and tends to seek opportunities within the resources and processes of the organization. The approach is concerned with issues such as resource allocation, cost performance measures, and the controlled diffusion of assets within the organization [25]. This approach seems to coincide especially with the mergers and acquisitions where synergies are sought. In these cases, control and coordination of the production capacity of the new company is frequently needed. The integrative approach is manifested in the situations where the alternatives are limited to either discarding the acquired or acquiring company's IT or building middleware. Some acquirers have a fixed integration policy, and they for example always wish to convert the acquired firm's IS into their own [c.f. 3, 9]. Adopting a totally new system for the integrated enterprise may indicate that the innovative approach had been applied, since it is essentially about searching out opportunities and threats in the competitive environment.

The roles of different management levels in the planning process can be described as "top-down" or "bottom-up". A "top-down" planning flow is characterized by the dominance of top management in the initiation of the planning process, and the functional business unit managers implement the strategy. In "bottom-up" planning, functional management is deeply involved in the initiation of the planning, while the role of top management is to endorse IS plans [4, 25]. The "top-down" flow may be more likely in post-merger IS integration planning,

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[2] "the integrative approach" to planning should not be confused with "post-merger IS integration planning".

since the merger is initiated and its goals are set by the highest level of management.

Planning may be based on formal representation from many different organizational groups or an informal network of a few key individuals [23], and the amount of lateral communication may vary [25]. In post-merger IS integration planning, the breadth of participation involves two separate decisions: the abovementioned representation of different functional areas and managerial levels, and whether representatives of both (or all) companies participate. A balance must be sought between the desired participation and coordination cost of a (too) large planning group.

The frequency of planning activities may vary from crafting long-term plans on a year-to-year basis, to continuous planning processes. In the latter, plans are frequently evaluated and adjusted to adapt them to changing conditions. The (sparse) post-merger IS integration literature addresses post-merger IS integration planning as a straightforward process with one-shot decision making (examples include: [8, 16]). Such a planning strategy could be justified when development in the internal organizational environment and external competitive environment are relatively stable or predictable. However, when the strategic issues surrounding IS are relatively numerous, Segars and Grover [25] suggest that an IS strategy that becomes an emerging and evolving plan is more appropriate [c.f. 2].

2.2 Effectiveness in post-merger IS integration planning

IS planning effectiveness can be summarized e.g. into alignment, analysis, cooperation and improvement in capabilities for assessing post-merger IS integration planning quality [25] (See also e.g. Earl [4]). First, alignment refers to the strategic priorities stemming from the merger being understood, the IS strategy being well aligned with the overall integration plan, and the IS goals and objectives being adapted as the overall integration goals change [25, 28]. Second, effective analysis in post-merger IS integration provides a clear understanding of both the information needs within both (all) merging organizations and those of the new, integrated company; as well as of the related changes in organizational processes. Furthermore, it reveals critical development areas and potential clashes [25].

The third dimension, cooperation, refers to the level of general agreement with regard to boundaries, risks and trade-offs among system projects. In post-merger

IS integration, the challenge lies in maintaining open lines of communication not only between departments and functions but also between the merging units, as well as coordinating the development efforts between different units [25]. Fourth, effective post-merger IS planning should also result in learning, in order that the capabilities for achieving alignment between IS and business strategies are improved [25]. This facilitates the post-merger IS integration processes in hand as well as future development needs and future integration efforts related to the same or a possible subsequent merger(s). The importance of this dimension is illustrated also in the post-merger IS integration literature, as previous merger experience has been recognized to contribute positively to post-merger integration success [11].
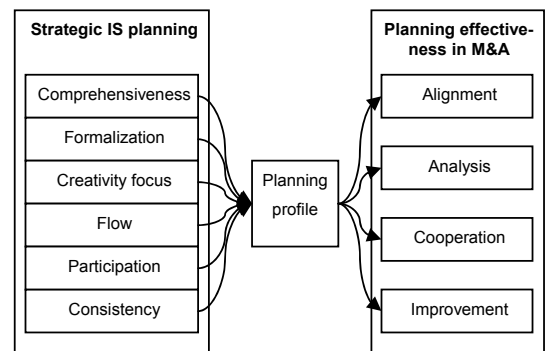
Figure 1. Theoretical framework.

Figure 1 present the theoretical framework applied in this study. The dimensions of strategic IS planning jointly evoke a planning profile, which in turn is decisive for the planning effectiveness. We use the framework to guide collection of empirical data and to analyze the effectiveness in the M&A context.

3. Methodological choices

The empirical evidence for this paper is drawn from two case studies. Case study research was adopted as the method here, since it permits in-depth understanding and appreciation of the dynamics present within a single setting [5], and is especially suitable for meagerly explored phenomena such as post-acquisition IS integration and "how?" type research questions [c.f. 5, 31]. Furthermore, case study is a suitable method for examining context-bound phenomena in situations where the boundaries between the phenomenon and the context are blurred, just as in the natural, real-world setting [5, 14, 31]. Post-merger integration is inherently embedded in the overall

merger context and thus the case study approach is suitable for studying it. The case study approach permits a flexible and iterative approach where the researcher interacts with a problem domain and along the way gets a more profound understanding. In our quest of extending existing theories and exploring their match and suitability for the post-merger context this flexibility is vital.

The cases in the study were selected for their similarities as well as their differences [5, 31]. To ensure relevance, the substantive area issued (IS integration after an acquisition) was kept similar. Both organizations have opted for full IS consolidation post-acquisition to obtain synergies in production and sales. Furthermore, in both cases, the business environment was in a state of dramatic shift simultaneous to the post-merger IS integration processes. Differences were sought in other organizational and acquisition-related dimensions, such as industry, integration speed, structure, and culture, in order to generate a more transferable theory. These differences should allow for useful contrasts to be made during data analysis, which should challenge and elaborate the emerging framework. Case 1 describes how international Telecom X Ltd acquires regional Telecom Y Ltd, and Case 2 presents Trelleborg AB's acquisition of CMP/Kléber Industrie.

The empirical evidence was collected by interviewing key actors in both organizations, and was complemented by documentation and (in Case 2 only) on-the-spot observation. 10 and 12 interviews were held in Cases 1 and 2, respectively. The interviewees adequately [27] cover the various actors and management levels that were involved in the IS integration processes studied, which included the integration project manager as well as representatives of top management, user support, users of different levels and the software vendor. Several interviews were held with some key interviewees. Documents gathered comprised internal announcements posted to the companies' intranet, and project documentation in the form of project plans, the investigation reports, cost calculations and decision support reports.

The gathering and organizing of empirical data was guided by the theory [25]. The raw data from the interview transcripts, field notes and internal company reports were first collected into a case study database consisting of an organized folder structure. Thereafter the data were reorganized, analyzed and classified according to classes suggested by the theory. Finally, the observations were compared with the pattern predicted by the theory [c.f. 31].

Case 1: International Telecom X Ltd Acquires Regional Telecom Y Ltd

Case A describes the acquisition of a regional telecoms company, Telecom Y, by an international telecoms company, Telecom X. The international company Telecom X has about 27,000 employees in more than 10 countries. In 2003, regional Telecom Y became a 100% daughter company of Telecom X, and it was decided that Telecom Y would start selling Telecom X's products in order to reap operative synergies. It was also decided that the acquired Telecom Y would start using the acquirer's new generation of IS a few years later. Meanwhile, Telecom Y was to decide on the transition path quite independently but in close cooperation with the acquirer. It was felt necessary for Telecom Y to migrate to the processes as well as information systems and infrastructure of Telecom X as soon as possible; i.e. to start using the current systems and later move to the next generation of IS together with the parent company. The implementation was phased and divided into several sub-projects as Telecom X had different software applications for different functions. These applications are mainly developed in house. This study concentrates on the process of making these decisions. The new information systems were implemented during 2004–2005. At the time of conducting this study towards the end of 2005, the integration had reached a stable level.

Case 2: Trelleborg acquires CMP/Kléber Industrie

The second case in this article is Trelleborg AB's acquisition of CMP/Kléber Industrie from the French Michelin group. Trelleborg AB is a global industry group with some 22,000 employees in about 30 countries and annual sales of approximately $3 billion. The head office is still located in the small Swedish city of Trelleborg. The corporation is focused towards processed polymer materials. [30, p. 3]. During the latter part of the 1990s, the corporation was restructured and a new corporate strategy called "Concentration and Expansion" was developed. The divestment of operations considered non-core created a strong financial position. "Expansion" meant that the group would utilize substantial amounts of its financial resources for external growth. As one constituent part of the new strategy, Trelleborg AB purchased CMP/Kléber Industrie from the French Michelin group in 1996. The French industrial unit was merged with the corresponding unit from the Trelleborg group and the two were joined in the new business unit Trelleborg Industrial Hose (TIH). Trelleborg is a
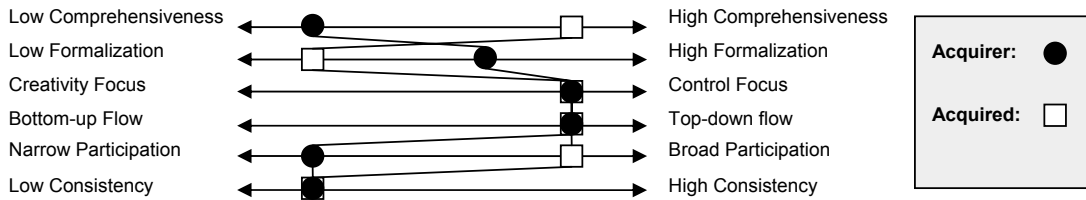
Figure 2. Planning profile – Case 1

decentralized organization and TIH has had significant independence from the group in shaping integration strategy and implementing integration. The study covers the acquisition and integration work during a ten year period from a management perspective on IS, beginning with the initiation and closure of the deal in 1996 until 2005, when integration had reached a stable level.

4. Empirical findings

In this section, we present the empirical findings[3] related to the six dimensions of strategic IS planning from cases 1 and 2.

4.1 Findings on International Telecom X Ltd's Acquisition of Regional Telecom Y Ltd

Our empirical findings from Case 1 show different planning profiles in the acquiring and acquired companies. These are summarized in Figure . Telecom X (acquirer) had unrealistic plans for reaping IS related savings without budgeting sufficient funds for the transformation project, which later caused trouble in the integration process. Telecom Y (acquired), on the other hand, carefully evaluated the benefits and costs of each of the different transition paths, that is, how to proceed before switching to the future systems the parent company is planning to start using two years from now. Similarly, with regard to comprehensiveness, there was also a difference between the levels of formalization of the planning process between the acquirer and the acquired unit. As Telecom Y used to be a relatively small organization, it did not have formal IS planning processes. After the merger, Telecom Y had to adopt some of Telecom X's more formal planning procedures but, being a wholly owned subsidiary, Telecom Y was allowed to maintain some of its independence after the merger, too. It was claimed that the planning process was somewhat

structured, and the planning process and its results are documented to some extent.

The synergy-seeking merger facilitated greater consistency between the acquirer and the acquired company with regard to focus, flow and consistency of decision-making, however. The post-merger IS integration planning was closely tied to both the overall post-merger integration plan and the budgetary system, since savings were expected from the IS integration. The advancement of the IS integration was closely monitored and the interviewees were concerned about the financial outcome of IS integration. Furthermore, the initial goals for IS integration, that is, cost savings from IS and synergies through integrated operations and products, were set by the top management of the acquirer. However, the acquirer was also planning to change its systems a few years later, and only desired that Telecom Y would start using the future systems. Telecom Y was free to craft its transition strategy for the few years prior to this implementation. This decision (whether it would start using the acquirer's current system or adopt another system for the transition period) was made together with the management team as well as representatives of the acquirer. A formal plan was crafted as per need. Once the post-merger IS integration was planned, only minor changes were made during the implementation itself.

Finally, the participation profiles differ between the acquirer and the acquired unit. As described above, the initial goals were set by the top management of the acquirer, and it was decided that the acquired Telecom Y should start using the future systems. Telecom Y was nevertheless free to craft its transition strategy before migrating to the future system, and the decision to take up the parent company's systems also for the transition period was a collaborative effort. Representatives of different business areas and support functions together with experts from both Telecom X and Telecom Y planned the integration and made the decisions together. The IS integration project had a management team containing representatives of different stakeholders, and any outcomes had always to

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[3] Due to limitations on space, we are unable to include direct quotes from the interviewees in this paper.

be accepted by the executive group and board of Telecom Y, as well as the executive group of Telecom X.

With regard to post-merger IS planning effectiveness, Case 1 demonstrates well aligned IS planning as the IS integration was seen as an important enabler for reaping the merger-related synergies, that is, both to support the integration of products and obtain savings from the IS. Furthermore, IS integration was administrated as a sub-project of the overall integration. Telecom succeeded also in cooperation since, first, IS integration was divided into 5 large sub-projects that had well defined boundaries and structures and, second, the interviewees frequently emphasized the good cooperation between the representatives of the two companies. However, there were some problems in cooperating with different functional areas as, sometimes, insufficient resources were devoted to the IS integration project.

On the other hand, Telecom's success in analysis was only slightly positive. There was a relatively good understanding of the information needs in the daughter company, but the information needs related to some products were not well understood and unexpected changes were needed in the software. Initially, the parent company had not budgeted resources for these changes. There were also some problems related to converting the data from one system to another, since the differences in the data structures were not fully understood. As a result, some implementations had to be postponed and after the project was pronounced finished, notable efforts were still required to improve data quality. Finally, as the integration project had only just ended at the time of writing this paper, it is not possible to present sound evidence for results in terms of capabilities for improvement. However, anecdotal evidence shows that the parent company could employ the daughter company's expertise both in taking up the parent company's systems and for project management in similar IS planning tasks at some future time.

4.2 Findings on Trelleborg's acquisition of CMP/Kléber Industrie

TIH was formed when Trelleborg acquired CMP/Kléber Industrie in 1996. The first management team, in place until 1998, had a radically different IS planning profile to that of the team that followed it. These differences are illustrated in Figure 3.

The two managerial eras shared control focus and a top-down flow of decision making. From the very beginning, the acquisition was driven by Group level top management. The group managers designed the integration plans to leverage the anticipated synergies, and group representatives were for some years deeply involved in the integration project. Two years after the acquisition, group level involvement began to diminish gradually to a state where integration projects were driven internally within the new, merged unit (TIH). However, projects were still initiated and driven by TIH top managers and the integration was seen as a means to enable business processes. IS integration goals conformed to the underlying goals and synergetic potential defined for the acquisition. However, the integration objectives were altered during the 10 year process and new organizational processes were designed, and, consequently, the IS integration objectives also evolved.

Initial strategic integration plans were hastily developed shortly after the acquisition as there was a perceived need for immediate action. The management quickly decided on the integration architecture of the middleware [c.f. 15], as national managers expressed the necessity of keeping the existing national ERP implementations intact. After two years of careful planning and evaluation, the ERP vendor's consultants and group level representatives concluded that an integration using middleware would be extremely costly and potential benefits would far from cover expenses. Thereafter, management was forced to redesign the integration strategy. As the vendor's consultants led the planning, it followed the vendor's rigorous and heavily formalized development process. Also, the relatively broad planning team involving managers, national managers, internal IT personnel and external experts was the result of the formal approach.

In 1998, the new management team was appointed, and TIH itself took over the planning procedure. Simultaneously, planning became highly informal, and speed and adaptation to the business case was
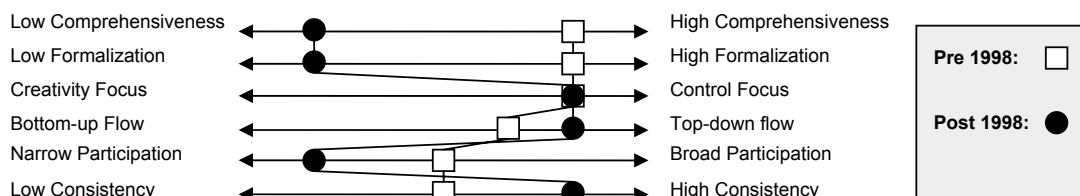

Figure 3. Planning profile - Case 2

preferred over comprehensiveness and participation. An enterprise-wide ERP solution with very few modifications from the vendor's standard functionality was chosen and it turned out to be both cost effective and able to support the integrated business of the merged TIH unit. However, the final integration design was decided on only in 2004 and finally implemented during 2005.

5. Discussion

5.1 Case 1 – International Telecom X Ltd Acquires Regional Telecom Y Ltd

As demonstrated in Section 4, our empirical findings from Case 1 show two different planning profiles in acquiring and acquired companies. In the following, we discuss how these features influenced IS planning effectiveness in Case 1. Good alignment was obtained in Case 1, first because the IS integration goals were derived directly from the merger goals, which is reflected in the top-down planning approach. Related to this, the control focus enabled the efficient communication of strategic objectives. Furthermore, broad participation in the acquired company ensured that the decisions made had a sound business justification.

Telecom was not quite so successful in analysis as in alignment, so both issues facilitating and inhibiting analysis must be discussed. First, again, broad participation at the regional level improved analysis in the latter phases and, furthermore, control focus and possibly also the formal approach had a positive effect. However, narrow participation at the beginning (and at the acquisition level) impeded the achievement of fully effective analysis, and non-comprehensive initial planning is also likely to have affected the quality of analysis.

Telecom achieved its sound cooperation structure first through the top-down flow of decision making that enabled the structuring of a clear project organization that brought top management support with it. Second, one-shot decision making helped to coordinate the large and complex project organization,

as the goal did not change along the way. Also, broad participation, top-down decision making and a formal approach to planning facilitated cooperation by impeding the development of parallel, overlapping development intents. Furthermore, even though participation was broad in terms of functional units, the number of actual participants was relatively small in the acquired company due to the more generic capabilities of key staff. This facilitated communication and coordination.

As described in Section 4.1, the capabilities for improvement can only be addressed anecdotally. First, broad participation enabled the whole management team of the acquired company to be closely involved in the post-merger IS decision making, which is likely to improve their future capacity to make similar decisions. Second, the adoption of the parent company's more formal decision making approach, as well as the need to learn to work as a part of a large enterprise, has forced the IS department of the acquired company to learn new skills and capabilities. Third, the acquired company's expertise in project management, as well as installing the parent company's systems on such a large scale, provides possibilities of further learning for the parent company.

5.2 Case 2: Trelleborg acquires CMP/Kléber Industrie

As opposed to Case 1, the planning process in the TIH case was a typical continuous process. At the time of the acquisition in 1996, only a vague idea of which synergies could be realized existed, and consequently no precise integration plans had been developed at either the organizational or IS level. Along with the further understanding of how business should be developed and integrated, IS integration plans emerged. As shown in Section 4.2, there is a clear distinction between planning profiles before and after the new management team was installed in 1998, two years after the acquisition. The differences in these profiles are illustrated in Table 1.

Good alignment was initially received with a high degree of participation, just as suggested by Segars &

Table 1.   **Post-merger IS planning profiles of Case 1 and Case 2**

	Case 1	Case 2
Comprehensiveness	Non-comprehensive initial planning, comprehensive planning for the migration path	Comprehensive
Formalization	Somewhat formal	First formal, then informal
Focus	Control focus	Control focus
Flow	Top-down	Top-down
Participation	Narrow for initiation, broad for planning the migration path	Initially broad, later narrow
Consistency	One-shot decision	Continuous process

Grover [25]. However, after 1998, participation was limited to just a few persons. Good alignment was still achieved as the managers responsible for the IS related changes included these changes in the organizational restructuring program, of which they were also in charge.

Analysis of IS requirements was successful in the sense that the costs and benefits of the alternatives were thoroughly evaluated. However, the initial analysis that led to evaluating the use of middleware proved only later to be insufficient. Broad participation is a potential explanation for this, since individuals lacking either a general view or specific knowledge of the unit's business were permitted to affect the planning process. Later, as the internal environment evolved radically during the integration process, a continuous planning process executed by a narrow team restricted by only a few formal requirements was needed to respond to the changes, just as argued by Segars & Grover [25]. On the other hand, the existence of only a few persons possessing strategic knowledge also carries its own risks. Furthermore, greater participation might have led to a better spread of understanding of the projects and their implications.

Finally, a more formalized approach would have provided wider documentation that could possibly have been used for evaluation. No formal evaluations of the projects and their effects have been carried out, suggesting that improvements in capabilities remain within the specific project members.

5.3 Post-merger IS Integration Planning

The findings from Cases 1 and 2 are summarized in Table 1. There are some apparent differences and some similarities between the two cases. Our initial understanding of one case representing a continuous planning process and the other characterized by the shaping of integration plans being more of a one-shot decision was confirmed by further studies.

Segars & Grover [25] argue that appropriate levels of consistency are dependent on the rate of changes in the internal organizational environment and external competition. We would like to add that appropriate levels of consistency do not depend only on the rate of changes in the internal organizational environment and external competition, but also on the nature of the strategic decision at hand [c.f. 2, 13]. Our cases propose a relation between consistency and possibility such as to foresee the consequences of the strategic decisions. In case Telecom, swift organizational and IS integration was desired, and, hence, the related strategic IS planning was a straightforward one-shot decision. Trelleborg, on the other hand, desired to integrate a number of factories so that production

facilities could be used more efficiently, which also included moving production units that required a longer and more flexible planning approach.

The most outstanding similarity between the cases is the significant top-down flow in the planning process. In both the cases, initiation was closely related to the alignment of business and IS strategy and hence integration plans were developed to support the leverage of potential synergies. Comparing the cases, it was TIH that underwent most organizational changes in the swells following the acquisition. While Telecom Y was left quite undisturbed in its internal operations and only had to consider the integration interface with its new parent company, TIH's internal structure was radically transformed. Fast and radical transformation suggests, according to Segars and Grover [25], a planning process with a high degree of formalization and where broad participation is appropriate. This suggestion was reaffirmed in the TIH case and manifested in the need for a new approach to IS planning.

In the M&A context, it is natural that the integration process is driven by top managers, since mergers are corporate level strategic initiatives. Furthermore, in mergers where synergies are sought, the decision makers must have an insight into the business processes of both (all) the organizations involved. In addition, research on M&A and organizational integration has stated that operational personnel and lower level managers very seldom have any personal incentives for favoring consolidation and integration [12].

Yet another similarity between the two cases is the strong control focus in post-merger IS integration decision making. This stemmed from the merger objectives; that is, both Telecom and Trelleborg sought operational synergies from their mergers, which directly affected the planning process. Also, a focus on control rather than creativity can be related to the nature of an M&A act as specific operational synergies are sought.

With regard to formalization, the two cases show different but interesting features. In case Telecom, the acquired company had to formalize its decision making process in order to comply with the requirements of the acquirer, but, it was allowed to maintain some of its independence. Trelleborg, on the other hand, experienced a dramatic shift from formal to informal when new management took over, and, simultaneously, its approaches to all other dimensions but focus changed. Both cases illustrate the dynamic changes in the decision making profile during the post-merger IS integration processes that was not predicted in the post-merger IS integration literature [8, 16, 19]
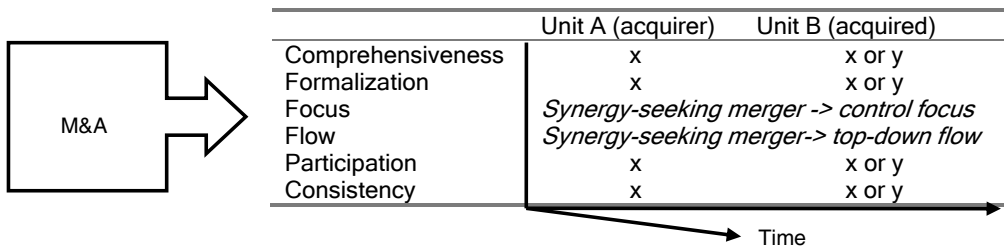
	Unit A (acquirer)	Unit B (acquired)
Comprehensiveness	x	x or y
Formalization	x	x or y
Focus	*Synergy-seeking merger -> control focus*	
Flow	*Synergy-seeking merger-> top-down flow*	
Participation	x	x or y
Consistency	x	x or y

M&A →

Time →

Figure 4. Framework for post-merger IS integration planning

nor by Segars and Grover [25]. Furthermore, in case Telecom, the acquirer and acquired were also different with regard to comprehensiveness and participation. This shows that different merged units may have different planning profiles at least in cases where the acquired unit has been allowed to maintain some of its independence.

Both cases show that broad participation at least in some phase of the planning facilitates good alignment. Also, the top-down decision-making flow that stems from the merger, as well as the control focus that is related to synergy-seeking mergers, seem to contribute to effective post-merger IS integration planning. On the other hand, non-comprehensive planning seemed to result in lower quality analysis. The degree of formality should be adjusted to the planning task in question, and the case studies clearly indicate that both low and high consistency in the decision making process can yield positive results, depending on the external and internal environment as well as the planning task.

In sum, we propose a framework for post-merger IS integration planning (Figure 4). The framework illustrates the effect of the merger context, time and differences between the merging units on the six planning dimensions. The analytical framework is informed both by the theory and practice of strategic post-merger IS integration planning. As the post-merger IS integration planning literature is sparse and concentrates rather on the content than the process of the planning, this framework draws also from the vast body of literature on strategic IS planning; modifying the concepts derived to suit the post-merger situation and discussing them against the empirical evidence.

The framework developed will also have practical applicability as it is expected to serve as a basis for practitioners, from which they can better recognize and understand the complexities and dynamics of the post-merger IS integration planning process, and therefore plan and control it more efficiently.

6. Conclusions

In this article, we have focused on the task of shaping the IS integration strategy in corporate mergers and acquisitions (M&As). Although many researchers and business professionals have emphasized the importance of successful IS integration and stressed the difficulties associated with IS integration in the context of M&A, existing research in the domain still remains sparse. In the introductory part of the article we argued the limitations of existing research contributions and the possibility of extending the general strategic IS planning framework suggested by Segars and Grover [25] into an M&A context. Thus, in Section 3, we discussed the framework and the implications of applying it to post-merger IS integration, and thereafter used it to present our empirical findings. In Section 5, we discussed our empirical findings based on the theoretical framework and the findings in relation to planning effectiveness, as defined by Segars and Grover [25]. We also addressed similarities and differences in the two reported cases and thereby enlightened specific characteristics of post-merger IS integration planning.

Applying Segars and Grover's [25] six-dimensional framework to the M&A context, we are able to draw conclusions regarding the characteristics of the shaping of IS integration strategy. We find that the method of executing strategic IS planning is affected by the peculiarities of the M&A process. First, we find that the strategic process is dynamic and tends to evolve as a consequence of two organizations with formerly different planning modes having to relate to each other (in case 1, the daughter company adapted the planning profile of the parent company, and in case 2, existing profiles merged). Second, we find that the merged units may have different planning profiles also within the same organization, as observed in Case 1.Third, we also find that the M&A context induces some characteristics of the post-merger IS planning process. We found theoretical and empirical support for a top-

down approach being routine, and control focus being a desirable choice in mergers where operational synergies are sought. As these features of the planning process are more or less dictated by the merger situation, the framework proposed by Segars and Grover [25] predicts some restrictions for the other planning dimensions when effectiveness is sought. Our findings support this prediction only in part, and we feel this is an interesting topic for future research.

Finally, we sought reductive explanations as to why Case 2 ended up as a continuous planning process, which is not in harmony with how existing research regards IS integration planning. In addition, we noticed that some strategic changes in IS need to be planned dynamically due to the nature of the goals of the planning process, as well as to the internal and external context of the change [c.f. 2]. For further research we recommend a comparative study of strategic IS planning in a merger and non-merger case, in order to understand how the merger affects the effectiveness of the planning process. We also see a clear need to address the relation of expected synergetic effects and organizational transformation related to suitable IS integration planning processes. [6, 10, 27, 29]

7. References

[1] Analyzer', I.S., "Dealing with mergers and acquisitions", *I/S Analyzer*, 1989, 27(3): p. 1-12.

[2] Andreu, R. and Ciborra, C., "Organisational learning and core capabilities development: the role of IT", *The Journal of Strategic Information Systems*, 1996, 5(11): p. 111-127.

[3] Buck-Lew, M., Wardle, C.E., and Pliskin, N., "Accounting for Information Technology in Corporate Acquisitions", *Information & Management*, 1992, 22(6): p. 363-370.

[4] Earl, M.J., "Experiences in strategic information systems planning", *MIS Quarterly*, 1993, 17(1): p. 1- 24.

[5] Eisenhardt, "Building Theories from Case study Research", *Academy of Management Review*, 1989.

[6] Franck, G., "Mergers and Acquisitions: Competitive Advantage and Cultural Fit", *EMJ*, 1990, 8(1): p. 40-43.

[7] Fredrickson, J.W., "The comprehensiveness of strategic decision process: Extension, observations, and future directions", *Academy of Management Journal*, 1984, 27: p. 445-466.

[8] Giacomazzi, F., et al., "Information systems integration in mergers and acquisitions: A normative model", *Information & Management*, 1997, 32: p. 289-302.

[9] Goodwin, C., "Merging IT", *Accountancy International*, 1999, 124(1271): p. 37-38.

[10] Habeck, M.M., Kröger, F., and Träm, M.R., *After the merger seven rules for successful post-merger integration.* PEARSON EDUCATION LIMITED, Edinburgh Gate. 2000.

[11] Haleblian, J. and Finkelstein, S., "The influence of organizational acquisition experience on acquisition performance: A behavioral perspective", *Administrative Science Quarterly*, 1999, 44: p. 29-56.

[12] Haspeslagh, C. and Jemison, B., *Managing acquisitions. Creating value through corporate renewal.* The Free Press, New York, Ny. 1991.

[13] Kalling, T., "ERP systems and the strategic management processes that lead to competitive advantage", *Information Resources Management Journal*, 2003, 16(4): p. 46-67.

[14] Lee, A.S., "A Scientific Methodology for MIS Case Studies", *MIS Quarterly*, 1989, 13(1): p. 33-50.

[15] Markus, M.L., "Paradigm Shifts - E-Business and Business/Systems Integration", *Communication of the AIS*, 2000, 4(10): p. 1-45.

[16] McKiernan, P. and Merali, Y., "Integrating information systems after a merger", *Long Range Planning*, 1995, 28(4): p. 54-62.

[17] McLean, E.R. and Soden, J.V., *Strategic Planning for MIS.* John Wiley and Sons. 1977.

[18] Mehta, M. and Hirschheim, R. *A Framework for Assessing IT Integration Decision-Making in Mergers and Acquisitions.* in *37th Hawaii International Conference on System Sciences.* 2004.

[19] Merali, Y. and McKiernan, P., "The strategic positioning of information systems in post-acquisition management", *Journal of Strategic Information Systems*, 1993, 2(2): p. 105 – 124.

[20] Parvinen, P.M.T., *Towards a governance perspective to mergers and acquisition*, in *Helsinki University of Technology.* 2003, Helsinki University: Helsinki.

[21] Pyburn, P.J., "Linking the MIS plan with corporate strategy: an exploratory study", *MIS Quarterly*, 1983, 7(2): p. 1-14.

[22] Robbins, S.S. and Stylianou, A.C., "Post-merger systems integration: the impact on IS capabilities", *Information & Management*, 1999, 36: p. 205-212.

[23] Salmela, H., Lederer, A.L., and Reponen, T., "Information Systems planning in a turbulent environment", *European Journal of Information Systems*, 2000(9): p. 3-15.

[24] Sambamurthy, V., Zmud, R.W., and Byrd, T.A., "The comprehensiveness of IT planning processes: a contingency approach", *Journal of Information Technology Management*, 1994, 5(1): p. 1-10.

[25] Segars, A.H. and Grover, V., "Profiles of Strategic Information Systems Planning." *Information Systems Research*, 1999, 10(3): p. 199-233.

[26] Shrivastava, P., "Post-merger integration", *Journal of Business Strategy*, 1986, 7(1): p. 65-76.

[27] Stake, R.E., *The Art of Case Study Research.* SAGE PUBLICATIONS, CA. 1995.

[28] Stylianou, A.C., Jeffries, C.J., and Robbins, S.S., "Corporate mergers and the problem of IS integration", *Information & Management*, 1996, 31: p. 203-213.

[29] Thach, L. and Nyman, M., "Leading in Limbo Land: the role of a leader during merger and acquisition transition", *Leadership & Organization Development Journal*, 2001, 22(4): p. 146 – 150.

[30] Trelleborg, *Annual report.* 2003, Trelleborg AB: Trelleborg.

[31] Yin, R.K., *Case Study Research.* Sage Publications, Thousand Oaks. 1994.

PAPER 2: MANAGING THE CHANGE PROCESS OF THE POST-MERGER ENTERPRISE SYSTEMS INTEGRATION: A CASE STUDY

Managing the change process of the post-merger enterprise systems integration: a case study

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Abstract: Both post-merger integration and the implementation of an enterprise system (ES) are sources of radical change in a company's life cycle. This paper builds on a business process change model for enterprise resource planning implementation and integrates into it M&A issues, issues related to company expertise and resources, and factors related to software and vendor. The case study reveals that elements of each item in the model play a role in the post-merger ES integration processes and emphasises good-quality ES integration management.

1 Introduction

A merger or an acquisition or – more precisely – the possible post-merger integration (PMI) of a business is always about change. The PMI is a gradual and interactive process in which the individuals from two or more organisations learn to cooperate in the transfer of strategic capabilities. The importance of the PMI is derived from the fact that the value creation can only begin when the organisations begin to work towards the purpose of the acquisition. In other words, the integration is the source of value creation. Besides this, faulty integration is a significant cause for merger failures (Habeck et al., 2000; Haspeslagh and Jemison, 1991; Shrivastava, 1986). Furthermore, since the information systems (IS) are of utmost importance in the operation of (large) business, a merger or an acquisition may not succeed if the IS planning is inappropriate. Besides this, potential counter-synergies can be concealed in IS (Franck, 1990; I/S Analyzer, 1989).

Post-merger enterprise systems integration

Another source for radical change is implementing an enterprise system (ES) that typically brings along a significant change in the business processes (see, for example, Clemmons and Simon, 2001; Davenport, 1993; Motwani et al., 2002). In this study, the term ES refers to an integrated, modular information system that covers several key functions of the company and is essential for running the business. Generations of ESs include material requirements planning (MRP), MRP II, enterprise resource planning (ERP), ERP II, etc. The integration of the ESs in a post-merger situation faces contradictory pressures. For example, the IS personnel are expected to reconcile the systems quickly but, on the other hand, incremental, strategy leads and cautious ES implementation projects are more likely to be successful (Motwani et al., 2002; Stylianou et al., 1996). Also, different procedures and processes should be harmonised, and cultural clashes – for example, power struggles over whose system will be chosen – may arise.

On top of all the previously mentioned, both mergers and acquisitions and ESs implementation miscarry frequently (see, for example, Davenport, 1998; Motwani et al., 2002; Shrivastava, 1986; Thach and Nyman, 2001), etc. All of them makes PMI of the ESs both a challenging task and an interesting topic for academic studies. Consequently, several authors recognise the importance of IT in the PMI (see, for example, Franck, 1990; I/S Analyzer, 1989). Nevertheless, after reviewing the 567 mergers and acquisitions (M&A) related articles published in 65 core journals in 1990s, Parvinen concludes that "… post-integration management enjoy[s] conspicuously little attention" (Parvinen, 2003). Consequently, the literature covering PMI of the IS is also scarce. We examined the titles of 567 articles on M&A reviewed by Parvinen (2003), and found 18 titles that had any reference to the PMI phase. Out of these, 16 abstracts were found, and only one of them (i.e. McKiernan and Merali, 1995) contained the words 'IS' or equivalent.

Our aim is to study what factors are relevant in PMI of the ESs. In order to reach this aim, we present relevant literature and conduct a case study. Expected results of this study include in-depth understanding of the factors behind the success or failure of PMI of the IS.

2 Managing the IS integration change processes

The explanations for IS integration success vary. Political and power structure issues as well as organisational and especially management IS maturity have been suggested as the determinants of IS integration success. On the other hand, technical integration difficulties have been blamed for the failure in less IS-dependent sectors. Besides these, in highly IS intensive firms, issues such as cultural fit and integration management may determine the success of the IS integration and ultimately the merger itself. Also, problems such as high IS employee turnover or collapse of morale of the IS personnel have been quoted (Kubilus, 1991; McKiernan and Merali, 1995; Merali and McKiernan, 1993; Weber and Pliskin, 1996).

Stylianou et al. (1996) provide a more comprehensive explanation for IS integration success, that is developed further by Robbins et al. (1999). Robbins et al. (1999) found out that the factors critical for achieving a positive outcome in PMI of the IS are managerial in nature, and moreover, largely controllable. They conclude that in order to integrate the IS successfully, a high-quality merger as well as IS integration planning,

positive support by executive management, high-quality communication to the end-users, and a high level of end-user involvement in strategic IS decision making during the process are required. In addition to these, they recognised the emphasis on IS standardisation as a positive factor (see also Stylianou et al., 1996).

On the other hand, as for strategies for successful ES implementation, Aladwani (2001) describes the past research in this field as factors research, referring to identifying the factors or variables that are critical for implementing an ES successfully (Aladwani, 2001). Examples of this branch of literature include, for example Ang et al. (1995) and Yen et al. (2002). Nah et al. (2001) review this branch of literature, and identify 11 critical factors for successful implementation of ESs: ERP [ES] teamwork and composition, change management program and culture, top management support, business plan and vision, BPR and minimum customisation, effective communication, project management, software development, testing and troubleshooting, monitoring and evaluation of performance, project champion and appropriate business and information technology (IT) legacy systems.

Aladwani (2001) identifies three different strategies for ESs implementation: organisational strategies, technical strategies and people-related strategies. Other authors advocating a more holistic view include, for example, Koch (2001) who views the ES as a political program for organisational change and Motwani et al. (2002) who study the implementation of the ES in a business process change context; see also, for example, Chan and Land (1999), Clemmons and Simon (2001), Davenport (1993), Koch (2001) and Taylor (1998).

ES implementation typically involves changing business processes, Motwani et al. (2002) proposed Business Process Change (BPC) theory for studying ERP implementation. When studying BPC outcomes, both the environmental conditions for change and the ability of the organisation to manage change should be considered (Motwani et al., 2002). In the framework, the change environment consists of:

1   strategic initiatives

2   learning capacity

3   cultural readiness

4   IT leveragability and knowledge-sharing capacity

5   network relationships.

All of them affect the outcome through ES implementation management that consists of (a) change management and (b) process management (Motwani et al., 2002); see also Guha et al. (1997).

Motwani et al. study reveals that "… an incremental, bureaucratic, strategy lead cautious implementation process backed with cultural readiness, inter-organisational linkages (with the vendor) and careful change management are factors that contribute to successful ERP implementations" (Motwani et al., 2002).

The factors presented in the framework by Motwani et al. (2002) and those presented in the factor studies on ES implementation success overlap to a vast extent. This is especially true for the factors that are managerial by nature. However, also there are several factors that do not coincide with those presented in the model by Motwani et al. (2002).

Post-merger enterprise systems integration

Besides this, when it comes to integrating the ES after a merger, the previously mentioned IS integration success factors must be considered. Also some of these coincide with the previously mentioned factors. We classify the remaining factors into:

1   factors related to software and vendor (including issues such as suitability of the software, quality of the software and vendor and ES complexity)

2   factors related to company expertise and resources (including issues such as organisational and management IS maturity, IT and ES expertise and resources and project management)

3   M&A issues (including political and power structure issues, cultural fit and overall merger management).

Consequently, we propose the framework presented in Figure 1 for post-merger IS integration management.

Figure 1   A framework for post-merger integration of the ES
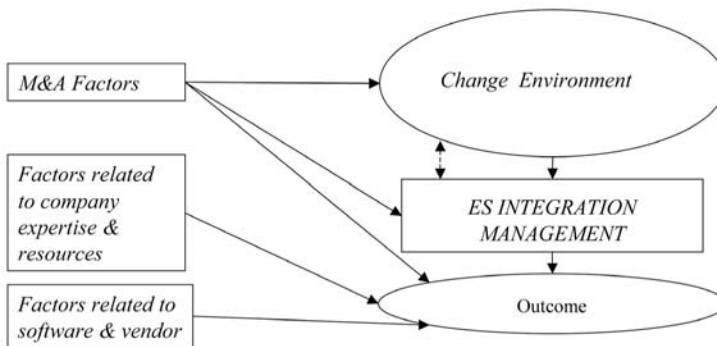
The framework presented in Figure 1 builds on the Motwani et al. (2002) framework for ERP implementation, by adding the constructs relevant to post-merger ES integration, that is, M&A factors, factors related to company expertise and resources and factors related to software and vendor.

Emphasising the importance of good quality ES integration management, and including the M&A factors, the framework suggested is in accordance with the earlier work by, for example, Robbins and Stylianou (1999) and Stylianou et al. (1996). Main differences include: providing a more detailed view to ES integration management (based on the Motwani et al. (2002) framework), and noting the importance of company expertise and resources, as well as the qualities of the software and the vendor.

In the following sections, we use this framework to explore factors affecting the post-merger ES integration success.

3   Conducting the study

The empirical evidence for this paper was collected as a longitudinal case study on the ES integration in PrintComp Ltd., a European print house that gained its current form through a joint venture of Group A and Corporate B in 1999. A longitudinal case study was chosen to enable in-depth understanding of this sometimes troublesome integration process. The selected case is interesting in this context as PrintComp Ltd. chose to pursue

deep IS integration in order to better coordinate the production capacity between the factories, and to enable better financial reporting, and, on the other hand, the implementation process has been somewhat complicated, and different problems have been reported in different factories. A more detailed case description is provided in Section 4.

The data for the study come mainly from interviews, and it was complemented with a small questionnaire, an observation and documents. The data were collected both during the pilot phase (Factory A) and during the actual implementation (the system was implemented to three more factories). The pilot implementation was started in 1 January, 2003, and semi-structured interviews conducted with 11 interviewees in April 2003. The new ES was implemented to three more factories in 1 January, 2004, and six interviewees gave their opinions in May 2004. The interviewees adequately cover various actors and management levels who were involved in the ES integration processes studied; since they included the integration project manager as well as representatives of top management, user support, users of different levels and the software vendor. With some key interviewees such as the implementation project manager, several interviews were carried out.

The interviews followed the themes presented in Section 2, that is, change management, M&A factors, factors related to company expertise and resources and factors related to the software and vendor. The themes were selected according to the respondent, for example, if the interviewee had not had any contact with the vendor, the questions regarding the vendor were omitted. The interviewees were encouraged to talk freely about the themes presented to them to gain a rich set of data.

A small questionnaire directed to the end-users was carried out in April 2003 and May 2004. Thirty-three and 168 responses were received in 2003 and 2004, respectively (see the Appendix). The questionnaire was based on Motwani et al. (2002) framework, and Saarinen (1996) instrument for evaluating information system success, choosing and modifying suitable constructs of each of them. In the end of the questionnaire, the users were asked to mention two issues with regard to the system or its use that should be changed or corrected.

The data were completed by observation and internal company reports. The raw data from the interview transcripts, responses to the questionnaire, field notes and internal company reports were first collected into a case study database consisting of an organised folder structure, and thereafter the data were reorganised, analysed and classified into a spreadsheet, under classes suggested by the theory. After this, the observations were compared with the pattern predicted by the theory (see Tables 1–6 for summary of this; see Yin (1984, 1993)).

4 Research environment: case PrintComp Ltd.

The empirical evidence for this paper was collected from the ES integration in PrintComp Ltd. a European print house that gained its current form in 1999 through a joint venture of Group A and Corporate B, in which one of Corporate B's factories became part of PrintComp Ltd. Group A whose companies operate in the areas, for example, newspapers, local radio, local television, news photography, printing, etc. owns 60% of PrintComp Ltd. In 2004, Group A's turnover was EUR 272 M, and it employed 2057 persons. The remaining 40% of PrintComp Ltd. belongs to Corporate B that

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operates in the markets for women's and family magazines, technical magazines, business publications and youth publishing, and had net sales of EUR 175 M in 2004. Corporate B belongs to Group B that operates in markets of magazines, newspapers, books, educational publishing, television, movies, printing, etc. Its turnover in 2004 was EUR 2.493 M and it had 16,207 employees.

Table 1   Summarising approaches of PrintComp Ltd. – change environment

Change environment issues	Findings at PrintComp Ltd. (2003–2004)	Evaluation
Strategic initiatives		
Stimuli	Reactive	OK*
Formulation scope	Somewhat revolutionary in each factory More incremental in terms of the whole enterprise	Features both more and less beneficial approaches
Decision-making	Bureaucratic (Adapting the system) Autocratic and Bureaucratic (Go-live)	Features both more and less beneficial approaches
Strategy led	From onset	Beneficial approach*
Learning capacity		
Adaptation	Response to organisational change	OK*
Improved efficiency	Learning by doing	Inefficient/harmful*
Declarative knowledge	Developed knowledge base for communication with the vendor	Features both more and less beneficial approaches*
External information use	Relied on own and vendors knowledge	OK*
Learning type	Double loop learning	Could have been more efficient*
Cultural readiness		
Change agents and leadership	Change agents Senior management's role has become more and more invisible as the implementation proceeded	Features both more and less beneficial approaches*
Risk aversion	Slightly aggressive, biggest risks were avoided by postponing the implementation in the fifth factory	Features both more and less beneficial approaches*
Open communications	High (but not totally effective), users felt they do not get information on how the project proceeds	Features both more and less beneficial approaches*
Cross-training	Little/some	Inefficient/harmful*
IT leveragability and knowledge-sharing		
IT role	Enabling	Beneficial approach*
Use of communication technology	High	Beneficial approach*
Network relationships		
Inter-organisational linkages	Mostly high (with vendor, customers and paper suppliers)	Beneficial approach*
Cross-functional cooperation	Low (ES implementation)	Inefficient/harmful*

*The evaluations of the constructs related to change management [marked with (*)] were obtained by comparing the case findings with those presented in the cases of successful and unsuccessful ERP implementation presented by Motwani et al. (2002).

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Table 2   Summarising approaches of PrintComp Ltd. – ES integration management

ES integration management Issues	Findings at PrintComp Ltd. (2003–2004)	Evaluation
Change management		
Pattern of change	Semiformal process	Inefficient/harmful*
Management readiness to change	Committed but top management commitment is not visible to the end users	Features both more and less beneficial approaches*
Scope of change	Leap/step depending on which system the factory used before	Features both more and less beneficial approaches*
Management of change	Somewhat adequate	Somewhat inefficient *

*The evaluations of the constructs related to change management [marked with (*)] were obtained by comparing the case findings with those presented in the cases of successful and unsuccessful ERP implementation presented by Motwani et al. (2002).

Table 3   Summarising approaches of PrintComp Ltd. – M&A issues

M&A issues	Findings at PrintComp Ltd. (2003–2004)	Evaluation
Political and power structure issues	IS integration used to enforce the implementation of the harmonised work processes across the company	Critical issue; under control in the case company
	Some resistance to both the new work processes and the new software	
Cultural fit	Processes were adapted from one of the factories, and the type of the software from the other ones -> users in different sites had different kinds of difficulties in adapting to the changes	More attention should be paid in order to facilitate the change
Overall merger management	Harmonising the work processes across the company did not succeed before the implementation of the new ES.	Beneficial; shares features of less beneficial approaches also
	The new ES helps PrintComp Ltd. to coordinate production between the different units, etc.	
	Typical major merger issues such as high employee resistance were not met since no lay-offs or other major changes were needed.	

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Table 4 Summarising approaches of PrintComp Ltd. – issues related to company expertise and resources

Company expertise and resource issues	*Findings at PrintComp Ltd. (2003–2004)*	*Evaluation*
Organisational and management IS maturity	All factories have been using an ES before	Managerial IS experience somewhat insufficient
	Top management team does not include an IS specialist	
	Implementation project manager gained his expertise on corporate level IS issues with this project	
IT and ES expertise and resources	Installing the hardware and software were carried out successfully	Mainly OK, except for the resources needed for ensuring the quality of the software
	PrintComp Ltd. has already been using an ES, and it's IT expertise seems to be sufficient for the implementation. However, its view on its expertise in IT is negative; especially problems with regard to defining the specifications for the new software were reported. On the other hand, the vendor feels that PrintComp Ltd's expertise is sufficient. On top of this, the IT department of Group A has a supporting role	
	The system support is highly appreciated by the users. The vendor fixes bugs more or less effectively	
	Neither vendor nor PrintComp Ltd. had enough resources to test the software, and testing was supposed to take place simultaneously with training	
	It was possible to revise the budget when it was found necessary	
	The IS personnel have been sufficient but also quite occupied	
	Originally, PrintComp Ltd. was able to continue using the services of the persons responsible for the previous enterprise systems. The main IS staff issue observed was that a few new people had to be hired	
Project management	PrintComp Ltd. did not use formal project management methods/tools, and besides this, the project management team has been so occupied with the operational problems that not enough time for strategic planning was left	Insufficient project management policies
	The only formal and extensive evaluations of the project made so far emerged as side projects of this study	
	The implementation project manager and the implementation team assumed the role of project champion.	

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Table 5   Summarising approaches of PrintComp Ltd. – issues related to software and vendor

Software and vendor issues	Findings at PrintComp Ltd. (2003–2004)	Evaluation
Suitability of the software	PrintComp Ltd. chose to purchase a tailored system to match its specific needs	Beneficial approach
Quality of the software and vendor	The implementation was troubled with software bugs. Hence, the implementation in one of the factories had to be delayed	Remarkable problems
	Vendor fixes bugs very slowly	
	Users claimed problems with data integrity	
	The vendor has a long history of software development but it did not participate in the implementation	
ES complexity	The budget stated in the deal closed has been kept	Mainly under control
	The implementation did not stay within the original schedules	
	The system implemented has a limited number of modules	
	The only major problem reported with regard to installation and hardware was the problems with telecommunications: the software performs remarkably slowly in one of the factories that is situated far away from the others	

Table 6   Summarising approaches of PrintComp Ltd. – ES integration outcome

ES Integration outcome issues – findings at PrintComp Ltd. (2003–2004)	Evaluation
Unsatisfied end-users, the software is troubled with bugs, implementation in the 5th factory was delayed, budget has been exceeded by 10–15%	Undesirable outcomes, requires more managerial effort and better vendor performance
System supports the operations, no delivery has been missed because of the system	OK
Better control and coordination of resources between the factories has been obtained	Desirable outcome but the system's full potential is not reached

One of the most important motivations for the joint venture was the fact that the machinery was getting old in the factories of both Group A and Corporate B, and heavy investments were required. And this in turn would have created remarkable overcapacity in the market. The company has grown substantially after forming the joint venture, and profitability has been satisfactory.

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PrintComp Ltd. chose to pursue deep ES integration in order to better coordinate the production capacity between the factories, and to enable better financial reporting. The production function asked for integration of IS as soon as the decision of the merger was made. Before the merger, both factories were using proprietary ESs, tailored by different domestic software vendors. However, neither of these systems was thought to have the properties necessary to support the new company, and there were no new versions available of either software. Consequently, PrintComp Ltd. chose to develop a tailored integrated system in order to gain strategic competitive advantage. Due to the time required for programming new software from scratch, PrintComp Ltd. could start implementing the new system only in 1 January 2003, that is, three years after the merger took place.

The new information system consists of sales applications, manufacturing applications, inventory and supply applications, cost accounting and financial reporting. However, accounting functions such as accounts receivable and payable, asset accounting, book-keeping, etc. as well as human resource management applications are not run in the new, integrated system because Group A administrates them centrally.

When PrintComp Ltd. was formed, the management of the company concluded that Factory A – that used to belong to Group B – had more efficient processes. Hence, they decided to implement these processes to the other factories also. However, before starting to implement the new software, there was practically no success in these attempts.

According to the deal, the vendor was supposed to deliver the software three years after PrintComp Ltd. was formed. At this phase, it was first implemented to Factory A only. The other factories were supposed to implement the software the following year. However, the implementation at the pilot site was nothing but easy as the software was troubled with bugs. Officially, the test period ended four months after the implementation. However, the project manager claimed that, due to the quality of the system, the test period could not be pronounced to be ended. About four months after implementing the new ES, the operative functions were using the system, but the use was troubled.

The next year, the software was implemented in three more factories. However, the implementation in the fifth factory had to be delayed because there are some critical software modules that will be used in that factory only, and the quality of these modules was not though to be sufficient. In the other four factories, the system supports the operations, and clear benefits such as better control and coordination of resources between the factories have been realised. However, software bugs still bother the end-users.

5   Research findings

One year after the first installation and five months after the installation in the other factories, the implementation seemed to be somewhat troubled. The system was up and running and as one interviewee put it: "Despite of all the trouble there has not been any order that we wouldn't have been able to deliver". However, the end-users are highly dissatisfied with the system and its usage. One of the interviewees commented: "We have reached a satisfactory level of know-how in using the system. However, the system has not fulfilled the hopes and expectations we had [with regard to quality]". The results of the end-user survey support this view: 61% of the respondents felt that the system is

slow, and only 11% almost or totally agreed that the system is fast ($N = 168$), and furthermore, only 26% of the respondents totally or almost agreed on that the system is used successfully whereas 47% held the opposite opinion ($N = 167$). Moreover, the budget has been exceeded by 10–15%. And, the implementation in one factory was postponed because of its critical nature and PrintComp Ltd. thought it is too risky to implement buggy software there.

5.1 Change environment

The empirical evidence shows several more or less problematic areas with regard to the change environment and the ES integration management. Central issues included communications, commitment to change, management of change and the role of IS in the change processes. In the following paragraphs, the findings related to the change environment in PrintComp Ltd. will be presented.

5.1.1 Strategic initiatives

As described in Section 4, PrintComp Ltd. chose to change its systems as a reaction to the development trends in the market. The formulation scope of the ES integration related change was somewhat revolutionary in the factories since the go-live dates were fixed, and all modules of the system were implemented at the same time. Criticism voiced by the interviewees included: "The go-live date was set to stone. … if it would have been postponed by six months, the start would probably have been smoother as the software would have been readier".

On the other hand, a pilot implementation was carried out in only one factory, and new ES was implemented to the three more factories only one year after that.

5.1.2 Learning capacity

PrintComp Ltd.'s principal learning mechanism was learning by doing. Problems were solved as they appeared, and the only declarative body of knowledge that was collected was a database for communicating with the vendor. That is, besides some rare individual efforts in, for example, the cost accounting department, PrintComp Ltd. did not record data on the pilot implementation to be used in the subsequent implementations. Furthermore, PrintComp Ltd. chose to rely on its own and the vendors expertise as it was felt that "consultants are too expensive and won't be of any use anyway".

5.1.3 Cultural readiness

The new ES's Implementation Manager was clearly perceived as the single most important change agent in PrintComp Ltd., and also the Implementation Team's role was recognised. The Senior Management had made the decisions on adopting the system, but as the implementation was started, its role became more and more invisible. For example, the Steering Committee of the implementation project just slowly disappeared to exist only in paper. As for communication, the project management did not purposefully withhold informing the stakeholders but it did not actively pursue it, either. For example, the disappearance of the Steering Committee slowed the communication with the top management, and on the other hand, the implementation project manager felt that he has not always had as much time for informing the users as he would have wanted to.

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In the user survey, 50% of the respondents totally or almost agreed that communication with regard to the implementation has been open whereas 21% almost or totally disagreed (N = 151). Furthermore, 52% of the respondents felt that they had received enough information on the implementation, and 24% almost or totally disagreed (N = 151). In the section where the respondents were asked to write down issues to which they wanted improvement, several respondents asked for more information especially on the corrections to the bugs and other problems they had reported. The interviewees' responses supported this. As one interviewee put it: "I'd like to know what's going on with regard to fixing the modules my department uses. They [the implementation team] tell me if I ask, but I would prefer to receive updates without asking. Maybe not weekly, but sometimes".

5.1.4 IT leveragability and knowledge-sharing capacity

PrintComp Ltd. had tried to harmonise the work processes within the company already soon after the merger deal was closed, but it succeeded in implementing these changes only with the help of the new integrated ES. The change processes were facilitated by extensive use of communication technology. Especially e-mail was used extensively within the implementation team and it was used for end-user communication as well. And, a database for communicating the software bugs and other related issues with the vendor was established.

5.1.5 Network relationships

As PrintComp Ltd. opted for tailored software, a close relationship with the vendor was required. Basically, the relationship is open and communication takes place. But, the cooperation has not been totally seamless in practice. For example, the communication on the requirements for the software has been troubled. As one respondent commented: "We wanted to build a next generation solution but I feel we got a pre-historical one. In my opinion, what the vendor is doing does not correspond to the promises nor to the pricing".

With regard to the normal operations, PrintComp Ltd. works in very close cooperation with numerous different customers. This takes place to the extent that sometimes PrintComp Ltd's and the customer's processes have been unified. Also, the cooperation with the paper suppliers is close. PrintComp Ltd. has cross-functional cooperation in, for example, the form of cross-functional key account management teams; however, cross-functional cooperation with regard to ES implementation and integration is practically non-existent both within the individual factories and with corresponding functions in different factories.

5.2 ES integration management

PrintComp Ltd's ESs integration shows very little formality in the process of change as only major steps such as go-live dates are formally tracked.

The user survey revealed several interesting issues with regard to commitment to change. Forty per cent of the users felt that all levels of management are committed to the change, 5% felt the opposite but a remarkable 41% of the respondents said they did not know (14% were indifferent, N = 166).

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The top management representative interviewed for this study stated that the top management is committed to the change and emphasised that the decision to adopt the system was made on strategic basis, by the top management. However, to the users, the commitment of the top and middle/factory management seemed to be the most invisible. The lack of top management presence was observed also in the interviews, for example:

> "Our top management could have been a bit more interested in this. Sometimes they ask us what's up. ... In the beginning, the project had a steering committee but it hasn't had any meeting for two years! The project management team has been managing this separated from the rest of the organisation, in a way. It would have hoped that we would at least have had the possibility to inform the top management of the current state of the project. Now, there are some misunderstandings. The top management hears the negative user opinions, but, as important as they are, they don't always reflect the current situation any more".

Another critical comment was aimed at the management of one of the factories that went live in 1 January 2004: "The management of our factory has not been 100% committed. And, as a result, some problems have resulted. It has not been possible to decide on certain things, and e.g. we only received the computers for reporting now [in April], and everyone else has been using the system since January!"

With regard to the user commitment, in the three factories that went live in 1 January 2004, 51% of the respondents believed that the users were committed to the change and 17% felt the opposite ($N = 118$). However, in the piloting Factory A only 30% totally or almost agreed with this statement and 19% totally or almost disagreed ($N = 47$). The interviewees emphasised the relationship between poor quality of the software and the user frustration frequently. Comments such as:

> "If we don't get these [bugs] fixed soon … the users will get bored. … The worst thing is, fixing the bugs takes such a long time that the user's attitude towards the software is that they don't want to work with it"

> or

> "A basic problem is, with regard to usability, response times, etc. the system is not what we agreed it to be, and hence, it does not support [the work] well enough. … The threat of fragmentation of systems and emergence of parallel systems [may be] increasing".

The scope of change with regard to ES use process varies from factory to factory. In the pilot factory, the change was more dramatic since their previous system had been very flexible and user-friendly whereas the other factories had already been using a similar type of more rigid system.

With regard to managing the change, 49% of the respondents totally or almost disagreed with the statement that the implementation and the change related to it were well-managed, whereas 20% totally or almost disagreed, and 25% were indifferent (6% did not know, $N = 166$). Also related to this, the interviewees frequently reported that the user involvement in the requirement of engineering phase was not sufficient. On the other hand, the interviewees emphasised the efforts made with user training and the users were pleased with the quality of the user support as will be described in Section 5.4. Moreover, the changes required in different factories have been different. These issues are discussed in Section 5.3.

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5.3   M&A issues

The evidence also points out several issues that are IS integration specific. In this case, the IS integration was a response to organisational change (the merger), and consequently, different units may be in different levels with regard to, for example, communications culture, previous systems (use and system type) and scope of change, all which affect the integration process. Furthermore, a M&A situation may change inter-organisational linkages as, for example, new units start switch for using the acquirer's supply or distribution channels, etc. Moreover, a merger may turn former inter-organisational linkages into inter-organisational linkages; especially in the case of a vertical merger. On top of these, the evidence points out that some constructions may show different result when using different units of analysis – that is, for example, whereas formulation scope may be revolutionary in each factory, it may be more incremental in terms of the whole enterprise.

In PrintComp Ltd., the IS integration was used to enforce the implementation of the harmonised work processes across the company, and there was some resistance to both the new work processes and the new software. Respondents' comments showed frustration with the implementation, and comments of the following type were frequent in Factory A: "We are very frustrated as we were forced to start using Corporate Y's system. It is very rigid and bothers more than helps!"

In the other factories, the concerns voiced were the opposite: "It is easy to learn to use the system but it is hard for us to go through major organisational changes at the same time with ES implementation! We shouldn't change the system and the work processes at the same time!" On the other hand, also the positive side of the change in work processes was noted: "We had to improve the know-how of the customer service staff. The [implementation of the new] system helped us to do this". However, in the same factory, in some cases, the changes were thought to be less dramatic: "There was no improvement compared to the old system, possibly we have gone backwards".

Moreover, according to one of the interviewees, the new system improved the work processes in the factory she works at as responsibilities had to be clarified, and all items had to be saved to the system. On the other hand, she explained that not all employees agree with the new processes, and quoted complaints such as: "The items in the production process have always found their way even though they haven't been saved on any computer at all!" But, on the other hand, the interviewee felt that the new system has helped not to loose items as sometimes used to happen, and she continued: "Many people come to tell me that now the finally know how the work should be done!"

With regard to these differences in each factory, the implementation project manager makes a rather diplomatic statement: "So far, it has been possible for each factory to preserve their own identities as much as possible. But, the overall trend as been all the time that we are harmonising all the functions of the company".

The management was more pleased with the changes since harmonising the work processes across the company did not succeed before the implementation of the new ES. Now, the new ES helps Company X to coordinate production between the different units, etc.

5.4   Factors related to company expertise and resources

Besides the M&A issues, also factors related to company expertise and resources may have a significant effect on the post-merger IS integration success. The problematic areas of PrintComp Ltd. include: the top management team which does not include an IS specialist, and also the implementation project manager who gained his expertise on corporate level IS issues with this project, PrintComp Ltd. did not use formal project management methods or tools, and besides this, the project management team has been so occupied with the operational problems that no enough time for strategic planning was left; and the only formal and extensive evaluations of the project made so far emerged as side projects of this study. Furthermore, all units had been using an ES before but, however, the systems had been very different with regard to flexibility, functions, etc.

On the other hand, installing the hardware and software were carried out successfully, and the system support is highly appreciated by the users since 75% of the respondents almost or totally agreed that the user support was good, and only 4% held the opposite opinion (5% indifferent, 15% did not know, $N = 165$). Respondents' comments included: "Anna [a key member of the user support team in Factory A] has been a true life-saver, without them we wouldn't have been able to survive!"

PrintComp Ltd. redefined the project by postponing the implementation in one of the factories by one year. Also, the project is already subdivided into parts, that is, one factory went live first, and the other factories followed one year later. Testing the system with just one product was not thought to be meaningful due to the tight schedule and large amount of extra work related to running two systems. On the other hand, PrintComp Ltd. would be likely to benefit from more strategic and formal approaches the project management.

What has shown to be especially challenging in this case is resolving specific problems. In this case, these have been issues related to the software quality and the vendor performance, and the company should continue to seek ways to overcome these troubles; Motwani et al. (2002).

5.5   Factors related to software and vendor

Also factors related to software and vendor may have a significant effect on the post-merger IS integration success. PrintComp Ltd. opted for tailored software that would match its processes perfectly. However, the implementation was troubled by software bugs, and problems related to defining the requirements as well as problems with project management were cited. With regard to the quality of the software and the vendor, the respondents commented were almost violent: "There are so many software bugs that it's almost impossible to use the system!" and "The one thing I want to tell you is: Never pay for a delivery, pay only when you are sure that you have a bug-free software!" Also, a major dissatisfaction with the vendor's speed of correcting the bugs was observed.

As the implementation went on, more problems started to emerge. This is because, each time a new factory went live, there were some specific features that had not been used so far. And, either these features were not sufficiently planned or the modules were buggy.

6   Discussion of factors explaining success

In their study, Motwani et al. (2002) compared two ES implementations: a successful one (Company B) and another one (Company A) that had such substantial problems that eventually; a physical inventory had to be carried out in order to correct the errors of the ES implementation (Motwani et al., 2002). Companies A and B are separate entities, and there is no industry restructuring involved in neither of the cases.

Tables 1–6 summarise the research findings at PrintComp Ltd., and evaluate the approaches.

With regard to the constructs related to change management, the evidence from PrintComp Ltd. shows features similar to both the successful and the unsuccessful case in Motwani et al. (2002); as Motwani et al. study reveals that

> "… an incremental, bureaucratic, strategy lead cautious implementation process backed with cultural readiness, inter-organizational linkages (with the vendor) and careful change management are factors that contribute to successful ERP implementations. On the other hand a revolutionary project scope that is mandated autocratically by top management without cultural (organizational) readiness and proper change management is likely to lead to troubled and unsuccessful ERP projects" (Motwani et al., 2002, p.94).

Problematic areas include the revolutionary change in each factory, autocratic features in decision making, suboptimal learning strategies, risky implementation, communications problems, inadequate change management and radical scope of change in some factories. On the other hand, features that facilitate success include: subdivision of implementation in corporate level, bureaucratic decision on adopting the system, the change being strategy lead, implementation project team as change agents, use of communication technology, tight cooperation with vendor and moderate scope of change in some factories. The evidence presented in Tables 1 and 2 points to ineffective strategies in implementation management as an explanation for the troubles encountered, but as shown in Section 5, also other factors trouble the implementation.

Firstly, different factories faced different challenges. In Factory A, what changed most was the type of the system, and the users frequently felt that the main change the new system brought along was just the fact that they had to start using a new, buggy and more rigid system that was harder to use. On the other hand, in other factories the system was much more like the previous system, but the work processes had to be changed. Some felt that it was too hard to change the work processes and the system at the same time, and some complained that as the system was planned at Factory A, it forced them to adapt the work processes of Factory A, too. Apparently, it remained invisible to the users that it was in fact the management's intention to use the system to implement a desired change. All in all, more attention should be paid in these differences in the change processes in order to facilitate the change.

With regard to organisational and management IS maturity, the fact that managerial IS experience was somewhat insufficient caused some clear problems such as inefficient policies in purchasing a tailored software, and sometimes insufficient implementation management policies. Moreover, also project management policies seemed to be somewhat insufficient in the case of PrintComp Ltd. which caused problems especially with regard to communication and strategic planning. On top of this,

availability of resources was found to be an important factor affecting the implementation processes as PrintComp Ltd.'s implementation team was not able to test all modules in time.

The issues related to the quality of the software and that of the vendor played an important role in the post-merger ES integration processes of PrintComp Ltd. as the implementation was troubled with software bugs. The implementation in one of the factories had to be delayed, and a major frustration emerged because of both the bugs and the slow rate of fixing them.

To sum up, PrintComp Ltd. seemed to have a lot more expertise in implementing a new ES than purchasing a tailored software or managing the ES integration after a merger. This is because, some components such as user training and support were successfully managed whereas others such as managing the vendor or coordinating the different change processes in different factories seemed to be more difficult for PrintComp Ltd.

7 Summary and conclusions

The literature review presented in this study concludes that the success factors suggested for post-merger IS integration as well as those for ES implementation coincide to a vast extent. Since PMI is a change process by nature, we decided to build on Motwani et al. (2002) framework ERP implementation that is based on a business process change model. Even though the framework presented in Motwani et al. (2002) offers valuable insights to the implementation of an ES, it does not cover all the relevant aspects in post-merger ES integration. This is because M&A issues affect the change environment, and factors related to company expertise and resources, and factors related to software as well as the vendor also play an important role. Hence, we suggested a framework that integrates these elements to the framework presented by Motwani et al. (2002) (see Figure 1).

Emphasising the importance of good quality ES integration management, and including the M&A factors, the framework suggested is in accordance with the earlier work, for example, (Robins and Stylianou, 1999; Stylianou et al., 1996). Main differences include: providing a more detailed view to ES integration management (based on the Motwani et al. (2002) framework), and noting the importance of company expertise and resources, as well as the qualities of the software and the vendor.

As shown in Sections 5 and 6, the case of PrintComp Ltd. shows that elements of each item in the model play an important role in the post-merger ES integration processes. PrintComp Ltd. opted for a tailored software that would match its processes perfectly, and, for example, good quality user training and especially user support facilitated the post-merger ES integration processes. However, the implementation was troubled by software bugs, and problems related to defining the requirements as well as problems related to project management were cited. Furthermore, as different factories were on different levels with regard to facility to adapt either the new software or new work processes, factory-specific managerial policies are required.

The limitations of this study stem from the fact that PMI as a phenomenon is a multifaceted set of highly complex processes, and on top of this, contextual by nature. Hence, it would be interesting to extend this study to cover different industries with remarkably different characteristics, for example, banking and financing, public sector or

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NGOs; as well as repeating the study with SMEs, or with companies adopting a packaged, bug-free software. Furthermore, in case access to several cases sharing essentially similar characteristics would be granted, a multiple case study would be recommended.

The practical value of this study lies in drawing attention to the various aspects essential to successful post-merger IS integration, including the change environment, the M&A factors, the factors related to company expertise and resources and those related to software and vendor. Need for good quality ES integration management is emphasised, including the need for formal implementation of project management. An important notion is that different units may require different approaches or amount of resources because of the possible differences in their readiness to change.

References

Aladwani, A.M. (2001) 'Change management strategies for successful ERP implementation', *Business Process Management Journal*, Vol. 7, No. 3, pp.266–275.

Ang, J.S.K., Sum, C-C. and Chung, W.F. (1995) 'Critical success factors in implementing MRP and government assistance: a Singapore context', *Information and Management*, Vol. 29, pp.63–70.

Chan, P.S. and Land, C. (1999) 'Implementing reengineering using information technology', *Business Process Management Journal*, Vol. 5, No. 4, pp.311–324.

Clemmons, S. and Simon, S.J. (2001) 'Control and coordination in global ERP configuration', *Business Process Management Journal*, Vol. 7, No. 3, pp.205–215.

Davenport, T.H. (1993) *Process Innovation – Reengineering Work Through Information Technology*, Boston, MA, USA: Harvard Business School Press.

Davenport, T.H. (1998) 'Putting the enterprise into the enterprise system', *Harvard Business Review*, July–August, pp.121–131.

Franck, G. (1990) 'Mergers and acquisitions: competitive advantage and cultural fit', *EMJ*, Vol. 8, No. 1, pp.40–43.

Guha, S., Groven, V., Kettinger, W.J. and Teng, J.T.C. (1997) 'Business process change and organizational performance: exploring an antecedent model', *Journal of Management Information Systems*, Vol. 14, No. 1, pp.119–154.

Haspeslagh, P.C. and Jemison, D.B. (1991) *Managing Acquisitions – Creating Value Through Corporate Renewal*, New York, USA: The Free Press.

Habeck, M.M. Kröger, F. and Träm, M.R. (2000) *After the Merger – Seven Rules for Successful Post-Merger Integration*, Edinburgh Gate, GB: Pearson Education Limited.

I/S Analyzer (1989) 'Dealing with mergers and acquisitions', *I/S Analyzer*, Vol. 27, No. 3, pp.1–12.

Koch, C. (2001) 'Enterprise resource planning – information technology as a steamroller for management politics?', *Journal of Organizational Change*, Vol. 14, No. 1, pp.64–78.

Kubilus, N.J. (1991) 'Acquired and abandoned', *Journal of Information Strategy: The Executive's Journal*, Vol. 7, No. 2, pp.33–40.

McKiernan, P. and Merali, Y. (1995) 'Integrating information systems after a merger', *Long Range Planning*, Vol. 28, No. 4, pp.54–62.

Merali, Y. and McKiernan, P. (1993) 'The strategic positioning of information systems in post-acquisition management', *Journal of Strategic Information Systems*, Vol. 2, No. 2, pp.105–124.

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Motwani, J., Mirchandani, D., Madan, M. and Gunasekaran, A. (2002) 'Successful implementation of ERP projects: evidence from two case studies', *International Journal of Production Economics*, Vol. 75, pp.83–96.

Nah, F.F-H., Lau, J.L-S. and Kuang, J. (2001) 'Critical factors for successful implementation of enterprise systems', *Business Process Management Journal*, Vol. 7, No. 3, pp.285–296.

Parvinen, P.M.T. (2003) 'Towards a governance perspective to mergers and acquisitions', Doctoral dissertations of Helsinki University of Technology, Helsinki: 2003/3. ISBN: 951-22-6324-6.

Robbins, S.S. and Stylianou, A.C. (1999) 'Post-merger systems integration: the impact on IS capabilities', *Information and Management*, Vol. 36, pp.205–212.

Saarinen, T. (1996) 'An expanded instrument for evaluating information system success', *Information and Management*, Vol. 31, pp.103–118.

Shrivastava, P. (1986) 'Postmerger integration', *The Journal of Business Strategy*, Vol. 7, No. 1, pp.65–76.

Stylianou, A.C., Jeffries, C.J. and Robbins, S.S. (1996) 'Corporate mergers and the problems of IS integration', *Information and Management*, Vol. 31, pp.203–213.

Taylor, J.C. (1998) 'Participative design: linking BPR and SAP with an STS approach', *Journal of Organizational Change Management*, Vol. 11, No. 3, pp.233–245.

Thach, L. and Nyman, M. (2001) 'Leading in Limbo Land: the role of a leader during merger and acquisition transition', *Leadership and Organization Development Journal*, Vol. 22, No. 4, pp.146–150.

Weber, Y. and Pliskin, N. (1996) 'The effects of information systems integration and organizational culture on a firm's effectiveness', *Information and Management*, Vol. 30, pp.81–90.

Yen, D.C., Chou, D.C. and Chang, J. (2002) 'A synergic analysis for web-based enterprise resources planning systems', *Computer Standards and Interfaces*, Vol. 24, No. 4, pp.337–346.

Yin, R.K. (1984) *Case Study research: Design and Methods*, Beverly Hills, CA, USA: Sage.

Yin, R.K. (1993) *Applications of Case Study Research*, Newbury Park, CA, USA: Sage.

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Appendix

End user questionnaire

The end users were asked to evaluate the following statements by using the scale: totally agree, agree, indifferent, disagree, totally disagree and don't know.

Note: In the list below, we will present the questions reported only in this study. The original questionnaire was used to both serve as a data collection method of this study and as a formal evaluation tool for internal use of PrintComp Ltd. The original questionnaire included 45 questions of which the questions related to the quality of the system and the use process are mainly omitted from this list. A complete list of questions can be obtained from the authors upon request.

Communication with regard to the implementation has been open.
I have received enough information on the implementation.
The top management team is committed to the change.
The management team of our factory is committed to the change.
The line managers are committed to the change.

The employees are committed to the change.
The implementation and the related change process were managed well.
The quality of the user support is good.
The system performs fast.
The system is used successfully.

- Mention two issues with regard to the system or its use that should be changed or corrected.

- Other comments related to the system, its use, the implementation etc?

Thank you for your reply!

PAPER 3: A FRAMEWORK FOR UNDERSTANDING POST-ACQUISITION IS INTEGRATION

Abstract

The number of mergers and acquisitions (M&A's) is increasing all over the world. As a result, more and more firms face the challenges of integrating e.g. operations, personnel, information systems and R&D once the deal is closed. Information systems (IS) issues are important in the overall merger processes and for its success. However, both post-merger integration and post-merger IS integration receive little attention in the literature. This paper attempts to fill that gap by exploring the relationship between what influences and shapes post-acquisition IS integration and how it consequently evolves. Based on a synthesis of prominent IS literature, an analytical framework is developed using three perspectives: 1) the structuralist, 2) the individualist and 3) the interactive process perspective. Each supplies a set of key concepts for conceptual understanding and empirical exploration of post-acquisition IS integration in practice. The analytical framework is applied to a longitudinal case study of post-acquisition IS integration in a print house after it acquired a plant from a competitor, where tailored software was chosen to enable better integration and coordination of the production capacity.

Keywords: mergers, acquisitions, M&A, information systems, IS integration, post-merger integration

1.   Introduction

Mergers and acquisitions (M&As) have become a prominent tool for corporate strategy and the number of M&As is ever-increasing worldwide. As a result, more and more firms face the challenges of integrating operations, personnel, information systems and/or R&D once the deal is closed. Often, this integration is not without problems.

On March 4th 2007, 500 US Airlines passengers missed their flights at Charlotte-Douglas International Airport and altogether thousands of US Airways passengers suffered long delays. Some passengers claimed they had not been able to speak to a ticket agent after waiting for more than two hours. This happened because of a problem with the reservation system and the fact that the automated kiosks did not work. The underlying reason was that the same day, the airline was trying to combine the reservation systems of US Airways and America West, two years after their merger in 2005. (Post-gazette.com March 05, 2007)

This example illustrates the importance of post-merger IS integration in practice and how problems in information systems integration frequently result in delays, lost opportunities, decreased revenues (Cf. Stylianou, Jeffries et al. 1996) and huge capital costs (Merali and McKiernan 1993; Harrell and Higgins 2002). Potential counter-synergies can be hidden in information systems (Robbins and Stylianou 1999).

The importance of post-merger integration is derived from the fact that value creation can only begin when the organisations start to work towards the purpose of the acquisition. In other words, the integration is the source of value creation. Besides this, faulty integration is a significant cause of merger failures (Shrivastava 1986; Haspeslagh and Jemison 1991; Habeck, Kröger et al. 2000). Information systems integration is noted as one of the crucial issues in overall post-merger integration and ultimately for the success of the merger or acquisition (I/S-Analyzer 1989; Merali and McKiernan 1993; McKiernan and Merali 1995; Weber and Pliskin 1996; Chin, Brown et al. 2004; Mehta and Hirschheim 2004; Wijnhoven, Spil et al. 2006). Also business journals have recently recognized post-merger IS integration as an important contemporary topic (e.g. Montana 2000; Harrell and Higgins 2002; Honore and Maheia 2003; White-Dollmann 2004).

There is however a paucity of post-merger IS integration research, the phenomenon is little understood and the scholarly literature on post-merger IS integration is scarce, as noted by, for example (I/S-Analyzer 1989; Cossey 1991; Merali and McKiernan 1993; McKiernan and Merali 1995; Stylianou et al. 1996; Goodwin 1999; Mehta and Hirschheim 2004). This is in concordance with the findings of Parvinen (2003): after reviewing the 567 M&A related articles published in 65 management science journals in the 1990s, he concluded that "post-integration management… enjoy[s] conspicuously little attention". In our search for post-merger IS integration literature, we examined the titles of the articles reviewed by Parvinen (2003), and found 15 titles that had any reference to the post-merger integration activities. We inspected these papers, and only one (McKiernan and Merali 1995) contained the words "Information Systems".

We also searched for published research papers in ten reputable IS journals (as identified by e.g. Mylonopoulos and Theoharakis 2001; Vessey, Ramesh et al. 2002): Information Systems Research (ISR), Journal of Management Information Systems (JMIS), MIS Quarterly (MISQ); Communications of the ACM, Information and Management, Management Science, Harvard Business Review, Decision Sciences, Decision Support Systems, and the European Journal of Information Systems (EJIS). The search covered all papers electronically available by the end of 2005. In these journals, we searched articles that contained the words "merger" and "acquisition", as they would cover also articles containing words such as "mergers", "acquisitions", "post-merger" and "post-acquisition". In brief, only five papers were found in these journals, four in Information & Management and one in MISQ.

M&As are frequently described as phased processes (e.g. Haspeslagh and Jemison 1991) that can be roughly divided into pre-merger (or pre-acquisition) activities, closing the deal, and post-merger (or post-acquisition) integration. This paper discusses integration of the information systems after an acquisition, focusing on the organizational implementation.

The paper aims to improve the understanding of post-acquisition IS integration processes, and our research question thus is: what influences the post-acquisition IS integration process and how is it shaped? The empirical part of this paper discusses the case of a print house acquiring a plant from its competitor. In this case, the management opted for the integration of the computer-based information systems controlling the production process.

The paper is organized as follows. In the next section, we develop an analytical framework for understanding the post-acquisition IS integration. The framework consists of three perspectives: the structuralist, the individualist, and the interactive process perspective, each of which applies a set of key concepts for conceptual and empirical evaluation. In Section 3, our research approach is described.

In the fourth section, the post-merger IS integration process is described as it took place in the case company. In Section 5, the features of the post-merger IS integration process are reviewed and explained through the lens of the analytical framework. Finally, the findings and their implications are discussed, and some conclusions are drawn in sections 6 and 7.

2. Theoretical Background

In the M&As literature, the use of the term "merger" is confusing, as it is frequently employed to cover both activities; merger of equals, and merger by acquisition in which the parties are non-equal in terms of their size and power, or the terms are used interchangeably (Granlund 2003; Parvinen 2003; Mehta and Hirschheim 2004; Wijnhoven et al. 2006). Similarly, this paper uses the terms "merger" and "post-merger" to cover both mergers and acquisitions, especially when reviewing previous literature that uses the terms in this sense. The terms "acquisition" and "post-acquisition" are used

to emphasize that the situation in question involves the power difference of the "acquirer" and "acquired" parties. These terms are used both when reviewing previous literature that explicitly speaks of situations where one of the parties is larger and more powerful, and also when discussing the case study. The acquired party may be an entire company, or a smaller asset (Wijnhoven et al. 2006) such as the acquired plant in the empirical part of this study.

Very few papers define integration explicitly. In this paper, the term integration is used to imply a 'blending together of organizational components' (Cf. Shrivastava 1986; Mehta and Hirschheim 2004). The depth of post-merger information systems integration ranges from maintaining the status quo, to different types of partial integration (e.g. front-end or back-end integration only), to full integration. Integration may be achieved by adopting one company's system, 'picking and mixing' when the best applications are taken from each system, acquiring a new system, or by outsourcing (cf. I/S-Analyzer 1989; Giacomazzi et al. 1997; Goodwin 1999; Bentley 2002; Harrell and Higgins 2002).

Previous studies on post-merger IS integration examine the role of IS in the merger context (Merali and McKiernan 1993; McKiernan and Merali 1995; Weber and Pliskin 1996), discuss the strategic decisions and the strategic decision-making process related to post-merger IS integration (Main and Short 1989; Giacomazzi, Panella et al. 1997; Wijnhoven, Spil et al. 2006), and analyze the factors affecting post-merger IS integration success (Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999). Johnston & Yetton (1996), in their study on integration in a bank merger, focus on the IT departments and discuss their organizational level fit. In this branch of the literature, a strong emphasis lies on the contextual issues, even though the studies conclude that the most important determinants of post-merger IS integration success are the managerial actions. Granlund (2003) however concludes that contingency factors do not alone offer a sufficient explanation for the evolution of management accounting systems following a merger, and examines the process of change from multiple theoretical and conceptual perspectives, including Giddens's (1997) structuration theory which suggests that structure and action are inseparable and hence form an interactive process.

Our work builds on their insight, and we use similar concepts and share similar assumptions about their interrelations. While, in the earlier studies, either contextual issues, managerial actions, or the process perspective were used as largely independent explanatory tools, we combine and extend them with more constructs into a more comprehensive framework. Thus, whilst recognizing the merits of previous studies, our work expands on them using a longitudinal in-depth case study in order to create a more thorough picture of the post-acquisition IS integration process.

We draw on three perspectives for the analytical framework: the structuralist, the individualist and the interactive process perspectives. These perspectives have previously been used in the IS field to empirically study a similarly complex phenomenon, namely the implementation of software process improvement innovations and the emergence of IS development methods (Kautz 2004; Kautz and Nielsen 2004; Madsen, Kautz et al. 2006). These three perspectives, based on social theories, were

described and originally used by Slappendel (1996) to analyze research on innovations in organizations. The framework also has a general relevance, as it addresses the discussion of structure and agency (Giddens 1997) which is one of the major discussions in information systems (See e.g. Rose, Jones et al. 2005).

M&A activities present a dramatic change in a company's life-cycle, and the post-acquisition integration processes create possibilities for organizational innovations. Thus, we find this theoretical lens appropriate for our research, too. The three perspectives facilitate our focusing on the structural characteristics, the actions of individuals belonging to relevant stakeholder groups, as well as on the complex and dynamic interaction between socially constructed structure and purposeful human action over time.

We develop the elements which constitute the three perspectives further, and adapt them to suit the analysis of the post-acquisition IS integration. By doing so, we integrate and complement the contributions of the previous studies on post-acquisition IS integration, and form a coherent framework for understanding what influences the post-acquisition IS integration process and how it is shaped.

From the structuralist perspective, structural characteristics influence and shape post-acquisition IS integration. The perspective is inspired by the view that the M&A situation is case specific (e.g. Granlund 2003). The acquisition context is characterized by issues such as the IS integration strategy selected, the IS/business alignment in the merger, related organizational changes, the role of the IS in the merger, and the distribution of decision making (Merali and McKiernan 1993; McKiernan and Merali 1995; Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999; Granlund 2003; Wijnhoven, Spil et al. 2006).

Furthermore, the structural characteristics of the existing information systems and their fit, as well as those of the IS integration team as a structural element, affect the organizational implementation of post-acquisition IS integration (Harrell and Higgins 2002). Also, the characteristics of the new, desired information system, such as its complexity, affect the integration through the magnitude of the change required (Harrell and Higgins 2002; Mehta and Hirschheim 2004; Wijnhoven, Spil et al. 2006).

The concepts illustrate the particular post-acquisition IS integration setting, the project under investigation, and allow for an understanding of how certain structural characteristics affect the post-acquisition IS integration. The emphasis lies on descriptive and static characteristics. The structuralist perspective does not address the impact of the individuals' actions or of the interaction between structure and individual action over time.

The individualist perspective holds that the characteristics and actions of individual stakeholders influence and shape the post-acquisition IS integration process. Previous studies emphasized the relevance of this perspective, inasmuch as Robbins and Stylianou (1999) discovered that managerial factors have a strong influence on

integration outcomes, and Granlund (2003) concluded that in his study, the role of dominant individuals was evident.

The previous literature on post-merger IS integration identifies several stakeholders. These include the IS integration project manager (I/S-Analyzer 1989), IS integration team, IS staff (I/S-Analyzer 1989; Cossey 1991; Merali and McKiernan 1993; Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999; Harrell and Higgins 2002), top management, users (Main and Short 1989; Cossey 1991; Merali and McKiernan 1993; McKiernan and Merali 1995; Stylianou, Jeffries et al. 1996; Robbins and Stylianou 1999; Harrell and Higgins 2002), and in some cases also external consultants (Harrell and Higgins 2002).

Prior post-merger IS integration experience (I/S-Analyzer 1989; Stylianou, Jeffries et al. 1996) can help the managers responsible develop skills that influence and shape their actions when managing this complex process, such as project management, adequate planning (I/S-Analyzer 1989; Merali and McKiernan 1993; McKiernan and Merali 1995; Stylianou, Jeffries et al. 1996; Harrell and Higgins 2002), including devoting sufficient resources to the integration project in terms of time, funds, and personnel (Merali and McKiernan 1993; McKiernan and Merali 1995; Giacomazzi, Panella et al. 1997; Harrell and Higgins 2002; Granlund 2003), as well as resolving conflicts and managing resistance (Harrell and Higgins 2002; Granlund 2003) and the "rumor mill" (I/S-Analyzer 1989). Similarly, the project team and external consultants also need to possess sufficient experience and skills to deal with both technical and business aspects of the IS integration (Harrell and Higgins 2002). Top management's commitment and support (Main and Short 1989; Robbins and Stylianou 1999) affect post-acquisition IS integration, too. Communication to the (end) users (Robbins and Stylianou 1999; Harrell and Higgins 2002), as well as between other stakeholder groups such as the planners and implementers (McKiernan and Merali 1995), has frequently been mentioned as an important issue in post-merger IS integration. This communication includes clarifying both the need for change and the shared vision (Harrell and Higgins 2002). Finally, users' skills to utilize the new system and their resistance to change are relevant issues in post-merger IS integration (Harrell and Higgins 2002).

These concepts allow for an in-depth understanding of the individuals responsible for and involved in the post-acquisition IS integration, and their influence on the process. But the concepts lack a focus on the post-acquisition IS integration as a change process that is inherently social.

The interactive process perspective is based on the assumption that the post-acquisition process comes about over time through the interaction between structural influences, the actions of individuals and the content of change; that is, the post-acquisition IS integration process and the new, (to be) integrated IS.

The M&A phenomena are traditionally seen as a rather straight-forward process (e.g. (Haspeslagh and Jemison 1991), and the IS integration after an acquisition is seen as a process that evolves over time (Merali and McKiernan 1993; McKiernan and Merali 1995; Chin, Brown et al. 2004). A process view on post-merger IS integration has also,

more recently, been taken by e.g. Jonston and Yetton (1996), Granlund (2003) and Wijnhoven et al. (2006). Much of this literature views the post-merger IS integration process as a straight-forward exercise with unidirectional causalities. However, Merali & McKiernan (1993) suggest that subsequent acquisitions form an iterative process, and that in order for the organization to reach the full potential of the acquisitions, it must also complete (and iterate) a learning cycle. Granlund (2003), who draws from several theoretical perspectives including Giddens's (1997), suggests that structure and action are inseparable in post-merger management accounting systems integration. The interactive process perspective developed in this study shares that view. Organizational implementation of post-acquisition IS integration is viewed as being perceived subjectively and subject to ongoing reinvention and reconfiguration.

Kautz (2004) and Madsen et al. (2006) chose the concepts of content of change, social context and social process to achieve an understanding of the interactive process of emerging IS development methods. These concepts and the notion of their interaction over time were originally presented by Walsham (1993) for studying change in the context of information systems development and use. The framework presented here follows Walsham (1993) as well as Kautz (2004) and Madsen et al. (2006), and utilizes these concepts.

Content of change refers to how the planned and actual post-acquisition IS integration process and the product of change emerge in interaction with the social context and social process. Relevant issues may include changes in the integration strategy, schedule delays (Granlund 2003), technical difficulties (Merali and McKiernan 1993; McKiernan and Merali 1995), unintended consequences (Granlund 2003) such as the disruption of business operations (Robbins and Stylianou 1999), changing goals and users' needs (Harrell and Higgins 2002), or different outcomes with regard to user satisfaction, ability to exploit merger opportunities, improved IS capability, avoidance of merger problems and IS resource utilization during the integration process (Robbins and Stylianou 1999); (Stylianou, Jeffries et al. 1996). It may be affected by the role of IS as a tool for restructuring and integration (I/S-Analyzer 1989; Merali and McKiernan 1993; McKiernan and Merali 1995; Granlund 2003), the new IS's level of innovation, its impact on business, and the extent to which the outcome of the IS integration project and the integrated system depends on external issues (Harrell and Higgins 2002; Mehta and Hirschheim 2004).

The elements of the social context include social relations between the participants of the IS integration, the social infrastructure, and the history of previous commitments to information systems (Walsham 1993; Madsen, Kautz et al. 2006). In the post-acquisition situation, the social context may be particularly complex because of the various stakeholders with different backgrounds in the merging organizations.

The social process includes the effect from a cultural and a political point of view (Walsham 1993; Kautz 2004; Madsen, Kautz et al. 2006) on post-acquisition IS integration. Several studies (I/S-Analyzer 1989; Weber and Pliskin 1996; Granlund 2003; Chin, Brown et al. 2004) have found that organizational cultures and their conflicts affect post-acquisition IS integration. The lack of a common language

(Granlund 2003) adds to these problems. Also political and power structure issues (Merali and McKiernan 1993; McKiernan and Merali 1995; Granlund 2003), including power differentials between the acquirer and the target (Mehta and Hirschheim 2004), play a role in post-acquisition IS integration. Thus, the interactive process perspective builds on and complements the structural and individualist perspectives, facilitating an understanding of the post-acquisition IS integration as a dynamic and complex change process that is embedded in its cultural and political context.

The three perspectives form an analytical structure that is used to organize, describe and analyze the data from the post-acquisition IS integration in the case of PrintComp. Table 1 summarizes the three perspectives and their key concepts that have been elaborated in this section and are employed here to study and understand post-acquisition IS integration.

PERSPECTIVE	KEY COMPONENTS
Structuralist (Structural characteristics)	*Acquisition context; existing information systems; new, desired information systems; and IS integration team* – characteristics hereof influence and shape the post-acquisition IS integration.
Individualist (Individual characteristics and action)	*Prior post-acquisition IS integration experience; post-acquisition IS integration skill; top management commitment; communication, resistance to change* – influence the individuals' actions, which in turn influence the post-acquisition IS integration.
Interactive Process (Structure, action, and their interaction over time)	*Content of change* – the planned and the actual post-acquisition IS integration process emerge in interaction with the social context and social process. *Social context* – social relations, infrastructure and the history of previous procedures, structures and commitments influence and shape the post-acquisition IS integration. *Social process* – cultural, political and power aspects of the merging organizations and IS departments influence the post-acquisition IS integration.

Table 1: The analytical framework

3.   Research Approach

The research presented in this paper is based on a longitudinal case study. Case study research allows in-depth understanding and appreciation of the dynamics present within

single settings (Eisenhardt 1989). It is also especially suitable for sparsely explored phenomena and the "how?" type of research questions (Cf. Yin 1984; Eisenhardt 1989). Post-acquisition IS integration is inherently embedded in the overall acquisition context, and a case study is a suitable method for studying context-bound phenomena in cases where the boundaries between the phenomenon and the context are blurred in terms of how they in fact exist in their natural, real-world settings (Yin 1984; Eisenhardt 1989; Lee 1989). Thirdly, a longitudinal in-depth case study facilitates the examination of the case from the different perspectives chosen for this study at the desired level of detail.

Our understanding of post-acquisition IS integration has come through an iterative process of the interpretation, comparison and intertwining of prior research and empirical data. This together with the focus on developing a context-based process-oriented description and explanation of the phenomenon that acknowledges individuals as actors fits the interpretive epistemological and ontological orientations of this research.

The empirical data for this paper was collected from the IS integration at PrintComp (pseudonym), a manufacturing company that assumed its current form in 1999 when it acquired a plant (Plant P1) from a competitor.

The data for the study are drawn mainly from semi-structured interviews, and were triangulated with an end-user questionnaire. The key informants were chosen in co-operation with the integration project manager. The extent of the group of interviewees adequately covered various actors and management levels involved in the studied IS integration processes; including representatives of top management, the integration project manager, user support, users at different levels and the software vendor. Several interviews were conducted with some key interviewees such as the implementation project manager. The interviews were conducted by the author of this paper listed first. They all lasted between one and one-and-a-half hours. The interview themes covered the four phases of the post-acquisition IS integration: Designing the post-acquisition integration strategy, designing the strategic IS integration plan, designing the execution plan for IS integration, and execution of the IS integration (Alaranta-Parvinen 2005). For each phase, problems, strengths, and success and failure issues were covered. The fifth theme of the interviews was the overall success of the IS integration. In cases where the interviewee felt he or she was not capable of commenting on some of the issues, the particular question was omitted from the interview. In 2003 and 2004, extensive notes were taken during the interviews, and in 2005, when more trust was established, interviews were tape-recorded and transcribed.

The data collected via interviews was triangulated with an end-user questionnaire to "show empathy to all sides" (Stake 1995) and gain a broader view of the phenomenon in question. Hence, the role of the questionnaire in this study was to provide an efficient way to collect the end-users' perceptions and opinions to complement the data from the interviews, and there was no causal model to be tested. The end-user questionnaire was loosely based on the Motwani et al. (2002) framework on change management in ERP implementation, and Saarinen's (1996) instrument for evaluating information system success, choosing and modifying suitable constructs of each of these.

The post-acquisition IS integration took the form of the development of a new information system which was implemented in three phases in three subsequent years in the existing plants and the newly acquired plant. The data collection as summarized in Table 2 was repeated after each implementation and took place throughout the whole period. Further details about the actual IS integration process are provided in Section 4.

	Project milestone	Time of data collection	Data collected
Jan. 1, 2003	Pilot implementation: Plant P1	April 2003	11 interviewees 33 responses to user survey (50%)
Jan. 1, 2004	Implementation in 3 other plants	May 2004	6 interviewees 168 responses to user survey (51%)
Jan. 1, 2005	Implementation in the last plant & follow-up	May-June 2005	7 interviewees 220 responses to user survey (58%)

Table 2. Data collection

The textual data, i.e. the interviews as well as the textual reports created based on the end-user survey, were analyzed with the help of NVivo software. For the purposes of this research, the data from the end-user questionnaire was analyzed and collected into yearly reports. The reports provided the case company not only with the numbers, but also with explanations for them. In the reports, key figures such as average and mode as well as histograms of the responses to each question were produced with SPSS.

The key concepts identified in the literature review for the development of the analytical framework (Table 1) were used in the coding of the empirical data. The data fit the categories well because of the iterative nature of this study: our knowledge concerning the case together with the previous literature on post-merger IS integration informed the crafting of the concepts in Table 1. On the few occasions where the data did not match these nodes, such as the simultaneous changes in the way of doing business, the observations were coded as free nodes. Triangulation across data sources (multiple informants) and across data collection methods (interviews and end-user survey) as well as the constant search for contrasts, negative evidence and unexpected findings served to strengthen the concepts further. This analysis and interpretation carried out node by node finally led to producing the account provided in Section 5. The interview questions and end-user survey questions are presented in the Appendices.

4.   Case Description: Post-Acquisition IS Integration In PrintComp

The empirical data for the research were collected from the post-acquisition IS integration of PrintComp, a European print house that assumed its current form when it acquired a plant (Plant P1) from a competitor. The selected case is interesting for several reasons: PrintComp chose to pursue a full IS integration to improve control of the production process, better co-ordinate its overall production capacity, and enable better financial reporting. PrintComp grew substantially after acquiring P1, and its profitability has continuously been satisfactory. However, the implementation process has been troublesome, and different problems have been reported in different plants. The sector's business model changed during the IS integration with the unforeseen introduction of mass-customization in digital printing, and furthermore a key customer changed its operations mode which posed new requirements for PrintComp's IS.

In the following, we provide a brief history of the integration project from before its inception in 1999 up to its official close in 2005. In 1998, PrintComp employed approximately 300 people. At that same time, the number of personnel at P1 numbered around 230. The plants PrintComp owned prior to the acquisition were organized on a functional basis. They operated with an integrated, tailor-made IS that imposed a great deal of control on the production process. Production at P1 was organized in terms of processes focused on customer service. P1 used flexible software tailor-made to its needs.

In 1999, PrintComp acquired P1, at which point the company's management concluded that P1 had the more efficient production processes. Hence, they decided to implement those processes in the other plants, too. Their attempts, ongoing from 1999 throughout 2002 – before starting to implement the new integrated IS – proved unsuccessful. In parallel, PrintComp's production function asked for IS integration as soon as the acquisition decision had been made. Since P1's previous owner had not included the continued use of its IS in the deal, PrintComp decided to develop a tailored IS to run P1 alone and appointed a project manager in 1999. A deal was made with a vendor to deliver the software within three years and work to define the requirements for the new information system for P1 was conducted in 1999.

In early 2000, following completion of the definition of the requirements for the new IS for P1, management decided to extend the system's scope to the rest of the company, as they felt that a tailored integrated system would bring strategic competitive advantage. Accordingly, between 2000 and 2002, PrintComp's new IS was developed and in January 2003, as agreed, PrintComp started to implement the new system in P1. The other plants were supposed to implement the software the following year. The new IS consisted of applications for sales, manufacturing, inventory and supply, as well as for cost accounting and financial reporting. However, accounting functions such as accounts receivable and payable, asset accounting, book-keeping as well as human resource management applications were not run in the new, integrated system because PrintComp's parent company administers them centrally.

Utilization commenced at P1 in 2003, but the users were frustrated. The project manager and user support personnel explained that implementation at the pilot site was proving difficult as the software was buggy. Officially, the test period was due to end four months after the implementation. However, due to the poor quality of the system, the test period could not be pronounced finished at that point and some functions had to be tuned and reprogrammed. The project's official steering committee vanished and conflicts of interest with the vendor became apparent. The project manager deployed the results of a user survey – which demonstrated users' dissatisfaction with the system – in negotiations with the vendor. Nevertheless, the operative functions used the system.

In 2004, the system was implemented in three more plants together with the new work processes. Implementation at a fifth plant had to be delayed due to the insufficient quality of some critical software modules designed for use in that plant alone. Bug fixing continuede. The system was up and supporting operations, and clear benefits such as better control and coordination had been realized. While user satisfaction at P1 improved, though the users continued to be dissatisfied, users at the other plants were frustrated and found it hard simultaneously to change their work processes and start using the new IS. They felt that the work processes and system developed for P1 had been imposed on them; 'us and them' attitudes prevailed.

In 2005, the system was finally in use at all five plants. A newly performed user satisfaction survey showed that satisfaction had widely improved, but over 20% of the respondents still felt that the system was not successful. One interviewee concluded that: "*[A few years ago] we had significantly fewer internal interdependencies and probably now we could not operate with the old system at all. So the new system is indispensable. Today we increasingly use the three different plants for producing one item … but the change, the benefit we got from this change could definitely have been greater.*" In May, the project manager claimed that he only worked part time on the projects and at the end of the year the project as a whole was officially closed; but in practice, the integration work continues.

5. Analysis of the Post-Acquisition IS Integration Process

To analyze the elements and interactions that contributed to the post-acquisition IS integration in more detail, the following three sections emphasize different aspects of the case according to the structuralist, individualist, and interactive process perspectives and their key concepts.

5.1. The structuralist perspective

The starting point for the post-acquisition integration was the acquisition of Plant P1 by PrintComp. This was a 'friendly' acquisition of similar business. The motivation was that in P1 and in P2, a similar plant already owned by PrintComp, the machinery was getting old and heavy investments were required. This would have created significant

overcapacity in the market. To enable full organizational integration and synergies in production, top management decided that full information systems integration was necessary. This decision resulted in a good alignment between business and IS. The production manager described the situation as follows: "… *we have congruent resources, similar printing machines, and we supply similar products in [P2 in] the Historical City and partly in [P1 in] the Capital City … and of course to manage deliveries and materials, but above all for controlling production.*"

Management found that acquired plant P1's production processes were more efficient and decided to implement them in all plants, which gave P1 a prominent role in the forthcoming requirements definition. Management also felt a general need to control and coordinate the operations better as well as to harmonize the production processes. This led to vague requirements for the new IS which had to be refined and changed, resulting in an unstable development process.

The acquisition context was also characterized by a business environment that was simultaneously changing in aspects such as the emergence of mass customization of print products, which also resulted in the refinement of requirements and functions and de-stabilized the development process.

A closer look at the old and the new ISs reveals the following: P1's IS had to be substituted as soon as possible, as its previous owner only permitted continued usage for a short period. Therefore, PrintComp decided to develop the new system first for P1 alone. Later, the management chose to extend the new IS to the whole company. Before the acquisition, both P1 and PrintComp used proprietary information systems, tailored to their needs. However, neither of these systems possessed the properties appropriate for the support of the new company, and there were no new software versions available. As mentioned above, the new IS was to harmonize production, enable better control and coordination, and to adapt to a changing business environment. To fit these and other company peculiarities, a tailored system was chosen.

The user interface of the new system was similar to that of PrintComp's previous system, while its functionality was similar to P1's processes. As the users in P1 had employed a more flexible tool, they disliked the new IS. It also had many bugs which frustrated the users further. When the IS was implemented in the other plants, the users there felt that they had to start using "the others'" IS and suspected that it would not support their work.

The project organization comprised a steering committee and a three-member project team with a project manager from PrintComp. Various functional groups were formed for the requirements definition. However, the steering committee was dissolved before the first installations, and also the functional groups disappeared soon after the original requirements were defined and long before the project ended. Thus, the views of the functional groups were not represented properly. There was no IS participation in the acquisition, perhaps because PrintComp did not have a formal IS department or a Chief Information Officer (CIO). The lack of a steering group led to almost no resources being devoted to strategic planning during the project. The fading of the functional

groups also caused problems, as the vendor's project manager describes: "*…one should not have let those responsible for the different parts get away because three people cannot build an IS like this*." The small IS integration team did not have time to test new modules effectively, and erroneous software was implemented.

Table 3 shows which and how structural characteristics influenced and shaped the post-merger IS integration process. The structuralist perspective provides valuable insight into the case study setting, the process under study, and the choice and implementation of the new information system. However, the descriptive characteristics do not in themselves explain why the managers of PrintComp chose the tailored IS and the specific vendor, and why the implementation process was troubled. These issues are examined in more detail from the individualist and interactive process perspectives.

Elements	Characteristics	*Influence on post-merger IS integration process*
Acquisition context *Decision making* *IS/business alignment* *IS integration Strategy* *Organizational changes*	* Management made initial decisions * Management found P1's processes superior * Requirements based on a general need to coordinate & control production better * Simultaneously changing business environment	Fully integrated system Good IS/business alignment P1 had a prominent role in the requirements definition Vague requirements definitions and unstable development Refinement of some functions
Old & *New* *Information systems*	* P1 needed a new IS as continued use of old IS was not permitted * P1 & PrintComp used IS tailored to their needs * None of the existing ISs had the necessary properties * The new IS should fit PrintComp's peculiarities * The new IS was erroneous and complex * The user interface resembled PrintComp's old IS, its functionality P1's old IS	The new system was developed first for P1 then extended to the whole company A tailored system was chosen Users in P1 were dissatisfied with the degree of user friendliness Users in all plants felt they had to use 'the others' IS, which would not support their work
IS integration team	* Small IS integration team * No IS department or CIO * Steering committee dissolved quickly * Functional groups dissolved early	No proper testing No IS participation in the merger planning The functional groups' views were not represented properly

Table 3: The structuralist perspective

5.2. The individualist perspective

Turning to a view of the different stakeholders as individuals, not as structural elements, uncovers the fact that no top manger showed, despite other claims, particular commitment. They provided only very limited human resources and no other support for the project team. The user survey showed that the users were unaware of the top management's degree of involvement. Furthermore, the steering committee already dissolved before the installation of the system. The vendor's project manager recalled: "*…The top management is not involved in this project … support for their people, we have not seen that at all. So [the Project Manager] has been leading this project alone from the customer's side. And this is not how it should be.*"

The company's chief financial officer (CFO) was an exception and deserves a little more attention. He had experience from a smaller-scale acquisition. He had an overall strategic vision of the IS needed and a positive attitude towards state-of-the-art IT; but he possessed no specific IS planning skills. As such, he pushed IS as an enabler for the overall organizational change, communicated his positive attitude, which helped to remove 'us and them' feelings in the different plants at the management and company level, and he heavily influenced the decision to opt for a tailored solution. But, he could not compensate for the project manager and the production manager, who, both from P1, did not have significant experience of large IS projects or any M&A experience and a clear vision of post-acquisition integration. This contributed to the problem of vague requirements definitions and equally vague system functions, and resulted in the use of inefficient policies when choosing the new IS, and resource and scope problems when IS integration was extended from a new system for P1 to a new system for the whole company.

The managers' inadequate understanding of the complexities of implementing an IS in a large organization led to poor managerial actions at the beginning of the process, such as the decision to implement all modules simultaneously and over-optimism which aggravated schedule problems. Also due to the estimation errors, insufficient personnel were devoted to the project, which led to implementing poorly tested and erroneous software. This, as confirmed by the vendor's project manager, was however also due to a poor understanding of the system by the vendor's representatives. Management also neglected some of the different plants' needs. This initially led to the users feeling that they had to use other plants' IS that was erroneous and did not correspond to their needs. They therefore complained heavily about the system and did not use one of the modules, the pricing module, at all.

Overall, the users were dissatisfied with the quality of change management. They also felt that they did not have enough skills when the system went live, and that they needed more training. They lacked an understanding of why it was important to key in the information carefully and saw it just as an extra chore.

This brings us to communication issues. Communication was meant to be open, but it was not effective, and there was very little two-way communication between the users and the project team. Communication within the project team was efficient and the team

functioned well. However, the CFO preferred receiving information from the project manager, thus management support was invisible to the team and the users. The project manager claimed that he was initially too occupied with technical problems to have time to inform the users of the project's progress. This frustrated the users as they got no response to their complaints and concerns. However, the project manager later prioritized communication and the users were able to get help from project user support staff. This was highly appreciated and supported the eventual acceptance of the system.

Table 4 provides an overview of how the individual managers' and users' skills and communication preferences influenced and shaped the post-acquisition IS integration process of PrintComp.

Elements	Characteristics	Influence on post-merger IS integration process
Top management commitment	* No commitment in general	No support for the project team Insufficient human resources
Prior post-acquisition IS integration experience; Post-acquisition IS integration skills	* CFO had experience from smaller acquisition, an overall strategic vision of IS & a positive attitude towards IT but no specific IS planning skills * Project manager had no M&A experience, post-acquisition IS integration experience, experience from large IS projects nor significant IS planning skills * Vendor project manager & representatives had a poor understanding of the needs of PrintComp * Users lacked skills and understanding of the importance of the new IS	IS as enabler of the change process Purchase of a tailored IS Removal of "us and them" feelings at management and company level Simultaneous implementation of processes & IS Inefficient project & change management Inefficient requirements definition Inefficient policies to choose the IS Poor handling of 'us and them' attitudes related to the new IS; Users felt they had to use other plants' IS Users felt that IS did not fulfil their needs Problems with testing Problems with system quality Schedule delays Lack of human resources Insufficient user training Opposition in the form of complaints Resistance to using one module
Communication	* CFO preferred receiving information from project manager only * Project manager e-mailed with the project team; at first had no time to inform users * Project manager & staff communicated help to users	Top management support invisible to the project team and users Efficient communication within the team Users became frustrated Users lacked understanding of the new IS Support staff help was appreciated Increased acceptance of the system

Table 4: The individualist perspective

5.3.   The interactive process perspective

Prior to the IS implementation, the new work processes based on P1 were planned to be transferred to the other plants; this however failed and the new IS was used as a vehicle for organizational change, and the changed process was finally successfully implemented together with the IS. The new IS itself had been planned as a solution to support effective production and coordination. It materialized as a tailored system based on P1's work processes and the interface of PrintComp's previous system. It was initially criticized by all the parties involved, but eventually accepted by everyone.

The plan had been to develop and implement the system first only in P1. However, the project's scope, budget and schedule were already extended during the development for P1 to comprise the whole company. The phased implementation with P1 as a pilot led to opposition in P1 where the new interface was considered inflexible, and in the other plants where the work processes and functionality were disliked. Together, these led to implementing initially erroneous software and a fair degree of redevelopment, and the implementation of the system in one plant (P5) had to be postponed for a year; but in the end, management's goals concerning more effective planning, coordination, control and reporting were all realized.

Using the background imparted by the structuralist and the individualist perspectives, this content of change can be further explained by the social context and process. The selection of the vendor to develop a tailored IS demonstrates the interdependence of the elements of the social context and process.

PrintComp's previous system had been purchased from a domestic vendor, thus a social relationship had developed, the vendor was known to management and favoured by the CFO, and he had the power of decision over the choice of vendor as well as to opt for a tailored solution.

The employees in the different plants were used to different types of systems. Thus, the history explains why the users in P1 - who were acquainted with the system's functionality - and the users in the other plants were equally displeased with the system. The former criticized the systems' interface as 'antique and complex', the latter acquainted with the interface felt that they had to use 'the others' system.

The social infrastructure of the IS integration was characterized by several pairs of antagonists and relationships, which were new and detached resulting in formal and distant communication. Beyond the communication problems between the project manager, the project team and the users, in particular the relationship between the plants led to tension and frustration among all users and to frequently changing requirements. These also affected the relationship between PrintComp's Project Manager and the vendor. He used the yearly user survey to show the users' dissatisfaction with the product in the sometimes tense negotiations. Later, they agreed on a development process which professionalized the handling of repairing the bugs and also the company's recurrently emerging changes of requirements. When these were formally

archived in a database, vendor communication improved and resulted in an acceptable system.

Finally, top management – having made the initial decisions – largely withdrew from the project, leaving it, as noted, to an inexperienced project leader. However, having no social relationship with this leader or the other project members resulted in management not providing any further support. The only tighter social relationships existed between the project manager and the two user support persons. Their collective effort contributed to the final acceptance of the system by the users.

Power struggles between PrintComp and P1 appeared at the operational level. Before the IS integration, both parties had their own system of naming production lots. When defining the requirements for the new IS, a dispute arose on which system should be followed. In the end, a compromise was found. Solving these problems was time consuming, but helped the plants to find a shared language and common, agreed-upon work routines.

The absence of top management led to another power issue: the project manager and the project team did not have enough power over the users in the plants. The users' refusal to employ the pricing module may be related to this. The lack of power contributed also to another problem, described by the vendor's project manager: "… *the responsibility shifted to the end-users, and they … are not satisfied with the software. …nothing will come out of it if 500 end-users get to say in what way each of them would like some feature to function. So it must be the project team that bears the responsibility. This has been the problem here.*" In practice, this translated into constant requirement changes during the implementation, which in turn created tensions with the vendor. The limited power of the project manager might also have been the reason why no new staff was hired when a key member left the integration team for several months.

The political and cultural rivalry of the cities in which the plants were located also contributed to the explanations of the problems that accompanied the integration. The competition between the cities is usually expressed through ironic humour and that was also the case here, especially with P1 located in the actual and the other plants in the former capital of the country. Mutual resentment and doubts were expressed this way and led in particular after the pilot phase to aggravated 'us and them' attitudes.

The problems decreased as the users became better informed, learned to use the new IS, the errors were fixed, and users got used to the system. The last end-user survey in 2005 showed that the users were clearly more satisfied with the new IS than they had been in the two years before.

Table 5 presents the influence of social context, social process, and content of change, on the post-acquisition integration process.

Elements	Characteristics	Influence on post-merger IS integration process
Content of Change		
New IS & Work processes	*Planned:* * Transfer of work processes from P1 to other plants before implementation of new IS * Development of an effective production planning, coordination & control IS * Development & Implementation of a new IS with P1 as pilot and later for the other plants * Development of a common IS for the whole company	*Materialized:* New IS used as a vehicle for organizational change Process change implemented together with new IS A tailored solution Initially criticized by all parties involved Eventually accepted by everyone Project scope, budget & schedule early extended to cover the whole company Opposition and frustration in all plants Implementation in Plant P5 postponed Initially erroneous software Redevelopment Realized management's goals
Social Context		
History	* Previous system purchased from domestic vendor * Different types of previous systems	Selection of the same vendor Opting for tailored system P1 users acquainted with functionality criticized interface as 'antique & complex' Other users acquainted with the interface felt they had to use 'the others' system
Social Infra-structure	* Pairs of antagonists: project manager, project team & users P1 & other plants PrintComp & vendor	Communication problems Tension and frustration Frequent requirements changes
Social Relations	* Management (CFO) favoured known domestic vendor	Selection of vendor & tailored IS Distant & formal communication Improved communication & relationship

	* New & detached relationships	No concrete management support
	* Tense relation between the project manager and the vendor, later a database for handling repairing the bugs -> improved communication	System acceptance
	Appropriate communication support with vendor	
	* Withdrawn top management	
	* Close relation of project manager & team	
Social Process		
Politics	* CFO had power to opt for known domestic vendor	Selection of vendor & tailored IS
	* Operational level power issues during design of the IS	Disagreement in design process
	* Project manager had only limited power	Time consuming solution
		Shared language & agreed work routines
		Users' refusal to use a system module
		Frequent requirements changes
		Tensions with vendor
		Limited resources
Culture	* Rivalry of the cities of plants' locations; different processes and procedures	Aggravated 'us and them' attitudes after pilot

Table 5: The interactive process perspective

6.   Discussion

On first inspection, the post-acquisition IS integration in PrintComp could be seen as an organizational implementation of a production control IS in a multi-unit environment, with the M&A context having no or very little effect on the situation. In practice, this was not the case. For the purposes of this study, we have elaborated the concepts of a 3-dimensional framework (presented by Kautz 2004; Kautz and Nielsen 2004; Madsen, Kautz et al. 2006; Slappendel 1996) to fit post-acquisition IS integration.

The application of the analytical framework led to a deep appreciation of the PrintComp case where first the structural characteristics of the acquisition situation helped to explain the strategic choices (whether to integrate, what to integrate, choosing the new IS). This result is in line with earlier work by Giacomazzi et al. (1997) who explain the choice of IS integration strategy (from no integration to full integration) by structural

factors including, among others, the motivation for the merger and the related organizational integration. In the case of PrintComp, the acquisition context imposes several requirements on the IS integration. First, the purpose of the acquisition was to prevent over-capacity in the market by acquiring a plant from a competitor and thereafter seeking synergies in production. This led to the need for a deep integration of the production processes and for a fully integrated IS. Our analytical framework also addresses the decisions on what to integrate and on choosing a new IS. The acquisition situation obligated PrintComp to change its information systems, as the previous owner of the acquired plant would not permit the continued use of the information systems in place. Furthermore, the acquisition situation also pushed PrintComp to develop its information systems, as the acquisition brought with it new ways of operating, including the need to coordinate production and production capacity between several plants. On the other hand, the acquisition context provided PrintComp with an opportunity to improve its IS capacity as best practices in previous information systems were sought. This shows that the structural characteristics of the acquisition situation clearly have an effect on the post-acquisition integration that follows.

Furthermore, our framework also takes into account structural characteristics of the old and new information systems as well as the IS integration team responsible for the post-acquisition integration. Prior to the acquisition, the different plants had been using different information systems and different ways of operating. The operations mode was adopted from the acquired plant and the style of IS that imposed more control and coordination was brought from the other plants. This resulted in all users initially feeling that they had to start using "the others' IS", i.e. the "us and them" feelings frequently encountered in M&A situations. Finally, the structural characteristics of the IS integration team also affected the post-acquisition IS integration processes in PrintComp. The small size of the integration team and the fact that the steering committee vanished led to inefficient managerial actions, and the dissolution of the functional groups led to insufficient representation of their needs in the requirements definition.

The individualist perspective sheds more light on why the implementation phase took the shape it did. The repertoire of prior knowledge on acquisitions and post-acquisition IS integration on the part of the individual managers responsible, together with top management commitment, communication preferences and user resistance, helped to explain the strategic choices and the actions of the various stakeholders during the implementation.

The two key managers of the post-acquisition IS integration at PrintComp were the Project Manager and the CFO. This finding is in concordance with Granlund (2003), who concludes that in his study the role of dominant individuals is evident. The CFO's and Project Manager's post-acquisition IS integration experience and skills affected the shape the process took. For example, the CFO's positive attitude to state-of-the-art IS led to choosing a tailored IS, and his sharing of previous experience of a smaller-scale acquisition led to the removal of the "us and them" attitudes at company level. On the other hand, the Project Manager's lack of experience from prior post-acquisition IS integration or larger-scale IS projects led to inefficient change and project management

policies. However, his learning resulted in more efficient approaches in latter phases, including the decision to postpone implementation in P5 in order to ensure a successful implementation. In addition to the input of these two managers, top management's commitment also played a role in the post-acquisition IS integration process. The lack of visible and active top-management commitment led to problems such as not devoting enough human resources to the project and the end-users' lack of understanding of the importance of the new IS. This is in concordance with Robbins and Stylianou (1999), in that managerial factors have a strong influence on positive post-merger IS integration outcomes, and the framework applied in this study provides deeper insights into this issue.

The third and fourth components of the individualist perspective, namely communication and resistance to change, also contribute to explaining how the post-acquisition IS integration process evolved at PrintComp. The positive effect of the CFO's communication of his previous experience has been described above, while the ineffective communication between the CFO, the Project Manager and the end-users led to problems such as the invisibility of top management support for the end-users, and to frustrated users. The end-users in all plants felt they had to start to use "the others' IS" and opposed it actively through complaints; the pricing module simply was not used. On the other hand, communication within the project team was efficient. However, resistance diminished as the bugs were fixed and the users became accustomed to and learned to use the new IS.

The interactive process perspective complements the insights provided by the structuralist and the individualist perspectives by identifying the idea that the post-acquisition process evolves over time through the interaction between structural influences, the actions of individuals and the content of change, that is, the post-acquisition IS integration process and the new, integrated IS. Applying this perspective showed that as Granlund (2003) suggests, structure and action are inseparable in the process of post-acquisition IS integration, and it also showed how. The perspective draws attention to the social context, the social process and the content of change.

Focusing on the social context explains the roles that history, the social infrastructure and social relations play in the post-acquisition IS integration processes at PrintComp. Due to the recent acquisition, the social context was in a state of turmoil, which resulted in "us and them" attitudes, criticism of the new IS, tensions and frustrations, as well as inefficient cooperation between different organizational levels. This further emphasizes that the social context has a significant effect on IS implementation and integration. Studying the social process reveals how the issues related to politics and culture shape the post-acquisition IS integration process and the resulting new IS. Several political and power issues and their interplay were observed which was also found in previous literature, but primarily as separate factors (Merali and McKiernan 1993; McKiernan and Merali 1995; Granlund 2003; Mehta and Hirschheim 2004). In the case of PrintComp, the Project Manager came from the acquired plant and had restricted power. He was not always able to control the use and the users of the new IS in the other plants and had only limited resources, as illustrated by the departure of a key user support person, who was not replaced, and by the inadequate resources for testing the software.

The framework applied in this study enabled the observation that negotiating with the vendor was a political issue. This had not been described in the previous literature.

Cultural differences played a role in the post-acquisition IS integration of PrintComp as earlier reported by (I/S-Analyzer 1989; Weber and Pliskin 1996; Granlund 2003; Chin, Brown et al. 2004). There were differences in the quantity of control coordination versus flexibility and freedom in the use of the previous information systems, and there was the jocular juxtaposition of the cities where plants P1 and P2 are located. These differences aggravated the "us and them" attitudes at the beginning.

The final concept of the interactive process perspective, the content of change, focuses on identifying the structural elements and influential actors that played a major role in how the planned post-acquisition IS integration process and the new, integrated IS evolved into the shape they finally took. Initially, the plan was to develop a new IS for the acquired plant only. This plan evolved into one of acquiring a new IS for the whole company and, furthermore, resulted in PrintComp ultimately implementing buggy software that did not totally correspond to the needs described by the users but nevertheless helped to realize top management's desires for better control and coordination. As for the implementation, the new IS finally enabled the desired organizational changes, too. On the other hand, the implementation was troubled by users' resistance and frustrations, and the implementation in one plant (P5) had to be postponed by one year.

The application of the theoretical framework to the post-acquisition IS integration of PrintComp shows clearly that, in practice, post-acquisition IS integration is a complex and messy process as opposed to the rather straight-forward process view taken by some authors e.g. (Haspeslagh and Jemison 1991; Chin, Brown et al. 2004). The three perspectives – the structuralist, the individualist and the interactive process perspective – offer different types of insights that complement rather than exclude each other, thereby allowing an in-depth description and understanding of what influences the post-acquisition IS integration process and how it is shaped. The analytical framework is informed by both theory and practice for understanding post-acquisition IS integration. In the post-merger IS integration literature, a strong emphasis lies on the contextual issues (see Merali and McKiernan 1993, McKiernan and Merali 1995, Weber and Pliskin 1996, Main and Short 1989, Giacomazzi et al. 1997, Wijnhoven et al. 2006, Stylianou et al. 1996, Robbins and Stylianou 1999, Johnston and Yetton 1996), and the importance of managerial actions is recognized in some studies (Stylianou et al. 1996, Robbins and Stylianou 1999) but has not been studied profoundly. Finally, some studies (Granlund 2003, Wijnhoven et al. 2006) take a process perspective. While not denying the merits of the previous studies, this work builds on, integrates, complements and deepens their findings through an in-depth case study in order to create a more comprehensive picture of the post-acquisition IS integration process. As a result, a more comprehensive framework with a greater number of constructs is provided in the present study. The analytical framework's ultimate strength lies in the way in which it facilitates a focus on the complexity of relations that in the existing literature are often viewed as much more simplistic. Much of the post-merger IS integration literature can be described as factor research (examples include e.g. Stylianou, Jeffries et al. 1996;

Giacomazzi, Panella et al. 1997; Robbins and Stylianou 1999) and it neglects the interactive process perspective even if it does emphasize the importance of managerial actions. For the researcher, the analytical framework can be used to perform, analyze, present and compare longitudinal case studies on how the post-acquisition integration process evolves in practice and over time. While more empirical work will be needed to elaborate, verify and further develop the framework, it presents an extension of the existing post-acquisition IS integration literature and is a promising starting point.

The framework developed in this paper also has practical applicability as, first, the concepts proposed are intimately related to actual post-acquisition IS integration practice as they are derived from such a process. Secondly, the analytical framework covers not only the IS integration process but also the context, relevant actors and the content of change, which makes the framework sufficiently general for application to a range of situations around the post-acquisition IS integration processes. Thirdly, it can serve as a basis from which practitioners can plan and execute actual post-acquisition IS integration with a better understanding of the integration's complexities and dynamics; practitioners may as a result be less likely to underestimate complexities and problems and hence reduce uncertainty and risk of failure. The framework achieves this by providing practitioners with an understanding of the relevant issues related to the context, and the stakeholders and their interaction in the change process evolving over time, and should therefore provide some useful guidance. In short, the framework can be used, first, for planning the unique and case-specific post-acquisition IS integration through the anticipation of potential opportunities and obstacles, which structural characteristics, individual managers and the interactive process might represent in the given situation; and second, in coping with the interactive process during the integration; finally, for post hoc reflection and collection of lessons learned.

7.   Conclusion

This study has extended the existing body of knowledge by presenting a detailed case description and a framework that is a step towards an integrated theory of post-acquisition IS integration. However, the application of the analytical framework has not been entirely unproblematic. It has been a complex matter to determine what falls into each of the perspectives and to decide on clear-cut distinctions between certain concepts, such as between the business, organizational and social context and social infrastructure; between manager characteristics and their repertoire of skills and communication preferences; and between social context and social process. It also required careful thought on how to include issues that were not initially emphasized by the framework, such as the simultaneous changes in the business environment and the Project Managers' developing experience and learning that resulted in better post-acquisition IS integration management skills. Yet, as pointed out by (Madsen, Kautz et al. 2006) the emphasis lies on understanding the interplay and influence of structures, activities, and events; and hence, such difficulties seem less significant.

Empirical validation and elaboration of the concepts proposed in this paper are needed in other settings, as the framework was created and examined based on only one case

site, albeit in depth. More empirical grounding and comparison with other cases' unique and situated characteristics will sharpen and enrich the concepts developed here and yield a more complex understanding of post-acquisition IS integration. Two initial strategies for further studies can be proposed.

First, some of the concepts that proved to be problematic to apply may need to be elaborated or refined. While the distinctions employed were adequate for this study, it is possible that future empirical work will require combining, further dividing or otherwise redefining these concepts. Secondly, it would be beneficial to examine different contexts where post-acquisition IS integration processes take place. The case study here represents only one acquisition situation with certain organizational settings. More post-acquisition IS integration processes need to be studied to see whether the proposed framework and concepts are relevant in e.g. situations where the merger objectives and IS integration needs are different, the units to be integrated are located in different countries, the organization has significant previous acquisition experience, etc. In this way, the analytical generalization suggested here – that other organizations' experiences of post-acquisition IS integration under similar conditions will resemble the patterns detailed in this paper – could be tested and elaborated.

References

[1]   Alaranta, M. and P. Parvinen (2005). "Contribution of Governance Theories of the Firm to the Analysis of Post-Merger IS Integration." The ICFAI Journal of Mergers & Acquisitions 2(1): 24-38.

[2]   Chin, P. O., G. A. Brown, et al. (2004). "The Impact of Merger & Acquisitions on IT Governance Structures: A Case Study." Journal of Global Information Management 12(4): 50-74.

[3]   Cossey, B. (1991). "Systems assessment in acquired subsidiaries." Accountancy International 107(1169): 98 - 99.

[4]   Eisenhardt, K. M. (1989). "Building Theories from Case Study Research." Academy of Management Review 14(4): 532 - 550.

[5]   Giacomazzi, F., C. Panella, et al. (1997). "Information Systems Integration in Mergers and Acquisitions: A normative model." Information & Management 32: 289-302.

[6]   Giddens, A. (1997). Sociology (Third Edition). Cambridge, UK, POLITY PRESS.

[7]   Granlund, M. (2003). "Management Accounting System Integration in Corporate Mergers - A Case Study." Accounting, Auditing & Accountability Journal 16(2): 208-243.

[8]   Habeck, M. M., F. Kröger, et al. (2000). After the merger - seven rules for successful post-merger integration. Edinburgh Gate, GB, PEARSON EDUCATION LIMITED.

[9]   Harrell, H. W. and L. Higgins (2002). "IS integration: Your Most Critical M&A Challenge?" The Journal of Corporate Accounting & Finance 13(2 Jan/Feb): 23-31.

[10]   Haspeslagh, P. C. and D. B. Jemison (1991). Managing Acquisitions - Creating Value Through Corporate Renewal. New York, USA, THE FREE PRESS.

[11]   Honore, R. A. and M. W. Maheia (2003). "The Secret to a Successful RIM Merger or Acquisition." Information Management Journal 37(5 Sep/Oct): 57-63.

[12]   I/S-Analyzer (1989). "Dealing with mergers and acquisitions." I/S Analyzer 27(3): 1 - 12.

[13]   Johnston, K. D. and P. W. Yetton (1996). "Integrating information technology divisions in a bank merger Fit, compatibility and models of change." The Journal of Strategic Information Systems 5(3, Sept): 189-211.

[14]   Kautz, K. (2004). The Enactment of Methodology: The Case of Developing a Multimedia Information System. International Conference of IS 2004, Washington DC, USA.

[15] Kautz, K. and P. A. Nielsen (2004). "Understanding the Implementation of Software Process Improvement Innovations in Software Organisations." Information Systems Journal 14(1): 3-22.

[16] Lee, A. S. (1989). " A Scientific Methodology for MIS Case Studies." MIS Quarterly 13(1, March): 33-50.

[17] Madsen, S., K. Kautz, et al. (2006). "A framework for understanding how the unique and local IS development method emerges in practice." European Journal of Information Systems 15(2 April): 225-238.

[18] Main, T. J. and J. E. Short (1989). "Managing the Merger: Building Partnership Through IT Planning at the New Baxter." MIS Quarterly 13(4): 469 - 484.

[19] McKiernan, P. and Y. Merali (1995). "Integrating Information Systems After a Merger." Long Range Planning 28(4): 54 - 62.

[20] Mehta, M. and R. Hirschheim (2004). A Framework for Assessing IT Integration Decision-Making in Mergers and Acquisitions. Proceedings of the 37th Hawaii International Conference on System Sciences - 2004.

[21] Merali, Y. and P. McKiernan (1993). "The strategic positioning of information systems in post-acquisition management." Journal of Strategic Information Systems 2(2): 105 - 124.

[22] Montana, J. C. (2000). "Rentention of Merger and Acquisition Records and Information." Information Management Journal 34(2 Apr): 54.

[23] Motwani, J., D. Mirchandani, et al. (2002). "Successful implementation of ERP projects: Evidence from two case studies." International Journal of Production Economics 75(83 - 96).

[24] Mylonopoulos, N. A. and V. Theoharakis (2001). "Global perceptions of IS journals." Communications of the ACM 44(9 Sep): 29.

[25] Parvinen, P. M. T. (2003). Towards a governance perspective to mergers and acquisitions.

[26] Post-gazette.com (March 05, 2007). Glitch with kiosks forces US Airways passengers to wait. Post-gazette.com.

[27] Robbins, S. S. and A. C. Stylianou (1999). "Post-Merger systems integration: the impact on IS capabilities." Information & Management 36: 205 - 212.

[28] Rose, J., M. Jones, et al. (2005). "Socio-theoretic accounts of IS: the Problem of Agency." Scandinaviann Journal of Information Systems 17.

[29] Saarinen, T. (1996). "An expanded instrument for evaluating information system success." Information & Management 31: 103 - 118.

[30] Shrivastava, P. (1986). "Postmerger integration." The Journal of Business Strategy 7(1): 65-76.

[31] Slappendel, C. (1996). "Perspectives on Innovation in Organizations." Organization Studies 17(1): 107-129.

[32] Stake, R. E. (1995). The Art of Case Study Research. CA, USA, SAGE PUBLICATIONS.

[33] Stylianou, A. C., C. J. Jeffries, et al. (1996). "Corporate mergers and the problems of IS integration." Information & Management 31: 203 - 213.

[34] Walsham, G. (1993). Interpreting Information Systems in Organizations. Chichester, UK, John Wiley & Sons.

[35] Weber, Y. and N. Pliskin (1996). "The effects of information systems integration and organizational culture on a firm's effectiveness." Information & Management 30: 81-90.

[36] Vessey, I., V. Ramesh, et al. (2002). "Research in information systems: An empirical study of diversity in the discipline and its journal." Journal of Management Information Systems 19(2 Fall): 129.

[37] White-Dollmann, M. M. (2004). "ISO 15489: A Tool For Records Management Mergers." Information Management Journal 38(Sep/Oct 5): 39-44.

[38] Wijnhoven, F., T. Spil, et al. (2006). "Post-merger IT integration strategies: An IT alignment perspective." The Journal of Strategic Information Systems 15(1 March): 5-28.

[39] Yin, R. K. (1984). Case Study Research - Design and Methods. CA, USA, SAGE PUBLICATIONS.

APPENDIX A - Examples of interview questions

Semi-structured theme interviews were conducted. The interviews were conducted in the mother tongue of the interviewees (i.e. not English). Among others, the interview themes included:

- Integration strategy
    - What integration strategy was chosen? (Full consolidation vs. partial integration vs. no integration; details) Why?
    - How were these decisions made? (Who, when, etc.)
- Executing the integration strategy
    - How was it executed? (When was it integrated, who managed the integration, all at once vs. phased, how were the users taken in account etc.) Why?
    - How were these decisions made? (Who made them, who participated, when, what changes occurred, etc?)
    - What has been difficult? What problems have been experienced? (How did you get over / cope with these problems, why, etc?)
    - What opportunities appeared? (How were they exploited? Why? etc.)
- Success
    - How would you define success in this IS integration? Why?
    - To what extent were these success objects reached? Why?
    - How is this related to the overall integration success at the level of the whole organization? (goals & reaching them?)

APPENDIX B – End-user survey

BACKGROUND INFORMATION

Factory:

F1   F2   F3   F4   F5

Position and Context of IS use:

Sales

Customer Service Clerk

Supervisor/line manager/production

Accounting/finance

End-user (I use the IS mainly for printing out work orders and reporting work/machine time)

	Totally agree	Agree	Neutral	Disagree	Totally disagree	Don't know
I received enough training for using the new IS						
I need more training						
My skills were sufficient when the new IS was installed						
I participated sufficiently in defining the requirements						

The attitude of user support is good						
The relationship with user support is good						
The communication with user support is good						
The quality of user support is good						
The attitude of the vendor's personnel is good						
The relationship with the vendor's personnel is good						
The communication with the vendor's personnel is good						

The IS is used successfully.						

In the future, I get changes in or increments to the IS flexibly						

In the future, I get completely new functions for the IS flexibly						

The data in the IS are accurate (not e.g. round-ups or estimations)						
The data in the IS are error-free						
The data in the IS are reliable						

The IS has all the data I need						
I find the information relevant to and necessary for my work in the IS						
Irrelevant data disturbs the use of the IS						
The data in the IS are available at the right time						
The data in the IS are up-to-date						

The format of the data is good						
The user interface is clear and logical						
The information is clear and understandable						
The IS functions and its quality is good						

The IS is well-suited to performing the tasks of my unit						
The IS is better suited to performing the tasks of other units						
The way of using the IS and the logic of the IS are well-suited to my unit						
The way of using the IS and the logic of the IS are better suited to units other than mine						

The communication related to the implementation of the IS has been open						
I have received information on the implementation effectively.						

I received information related to the implementation notably by e-mail						
I received information related to the implementation remarkably from an Intranet, a database or other electronic source (documents etc.)						

During the implementation, I received information or help remarkably from other departments using the IS (excluding the IT department, trainers and user support).						
During the implementation, I gave information to be used in other departments or advised the employees of other departments remarkably.						
During the implementation, I collected information in a database (or other similar						

repository) remarkably to be used in other departments or other factories.						

The top management (of the whole company) is committed to the change.						
The top management (of each individual factory) is committed to the change.						
The line management (/supervisor) is committed to the change.						
The employees are committed to the change.						
When the new IS was implemented, I understood why it is important to [the case company].						
I know what the new IS aims at.						

The problems and issues I raised were reacted to well.						
In the management of the implementation, the particular needs of my unit were taken in account well (e.g. in the quantity and quality of communication, training, etc.)						
The implementation of the new IS and the related changes were well managed.						

What are the two most important issues that you would like to change in the IS or its use?

1._____
2._____

Other issues related to the IS, its use, implementation, etc.? (You may continue on the other side of the paper)

_____

THANK YOU FOR YOUR REPLY!

PAPER 4: EVALUATING SUCCESS IN POST-MERGER IS INTEGRATION – A CASE STUDY

Evaluating Success in Post-merger IS Integration: A Case Study

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Abstract: Despite the importance of post-merger IS integration to the success of the whole merger, post-merger IS integration literature remains scarce. This paper attempts to synthesise the often implicit or vague definitions of post-merger IS integration success with those provided in the vast body of literature on IS evaluation. As a result, four categories of success issues for post-merger IS integration are proposed: User satisfaction with the integrated software's system and information quality as well as its use; Efficient and effective IS integration management; Efficient IS staff integration; and IS ability to support the underlying motives of the merger.

1. Introduction

Today, the number of mergers and acquisitions exceeds even the records of the merger wave in the 1980s, and consequently, more and more firms are facing the challenges of post-merger integration of such things as their operations, personnel, cultures and information systems. Post-merger integration is a gradual and interactive process, in which the individuals from two or more organisations learn to co-operate in the transfer of strategic capabilities. The importance of post-merger integration is derived from the fact that value creation can only begin when the organisations begin to work towards the purpose of the acquisition. In other words, integration is the source of value creation. Besides this, faulty integration is a significant cause of merger failures (Habeck et al. 2000; Haspeslagh – Jemison 1991; Shrivastava 1986), and mergers and acquisitions frequently miscarry. (See e.g. Shrivastava 1986; Thach – Nyman 2001 etc.)

Furthermore, since information systems (IS) are of the utmost importance in the operation of (large) business, a merger or acquisition may not succeed if information systems planning is inappropriate. Furthermore, potential counter-synergies can be concealed in information systems. (I/S Analyzer 1989; Franck 1990)

All this makes post-merger integration of enterprise systems both a challenging task, and an interesting topic for academic studies. Consequently, several authors recognise the importance of IT in post-merger integration (See e.g. Franck 1990; I/S Analyzer 1989). Nevertheless, after reviewing the 567 mergers and acquisitions (M&A) related articles published in 65 core journals in the 1990s, Parvinen concludes that "- -*post-integration management - - enjoy[s] conspicuously little attention*" (Parvinen 2003). Consequently, the literature covering post-merger integration of the IS is also scarce. We examined the titles of the 567 articles on M&A reviewed by Parvinen (2003), and found 18 titles that had some reference to the post-merger integration phase. Out of these, 16 abstracts were found, and only one of them (i.e. McKiernan – Merali 1995) contained the words "Information Systems" or the equivalent. Similarly, e.g. Merali-McKiernan (1993), Stylianou et al. (1996), Mehta-Hirschheim (2004) and McKiernan-Merali (1995) note that the literature on post-merger IS issues is sparse, and furthermore, it has been claimed that the research has been case-specific and anecdotal in nature, and has appeared in practitioners' rather than academic journals.

On the other hand, information systems success is an ambiguous, multi-faceted phenomenon that can be addressed with various measures. In practice, there are nearly as many measures as there are studies. IS success has often been defined as a result or outcome, or a favourable result or outcome. Already defining how this outcome should be characterised, however, or for whom the result should be favourable, is ambiguous. Furthermore, there may exist complicated contextual effects on what is considered favourable or satisfactory (Saarinen 1996, 104-105). Similarly, addressing post-merger IS integration is likely to be equally challenging.

So determining IS success in general is problematic, and so is finding reliable measures for it. Hence, the measures used are often surrogate and criticised for lacking strong theoretical underpinnings. One of the roots of these problems is the fact that IS investments often have corporate-wide, intangible and long-lasting effects. Because of this, quantitative measures and economic evaluation tend to be difficult to obtain and easy to manipulate. (Saarinen 1996, 105. See also: Brynjolfsson – Hitt 1998, 51-52; DeLone-McLean 1992, 61; Goodhue 1995, 1827, Kortteinen et al. 1995, 175 etc.) In fact, "There are no generally acceptable measures available to quantitatively and objectively assess an information systems' success. Researchers have, therefore, developed surrogate measures based on subjective evaluation approaches." (Saarinen 1996, 116) Attempts to address post-merger success bear out these challenges. Furthermore, the complex and multi-faceted nature of merger processes makes this task even more challenging.

This paper attempts to explore the various aspects of post-merger IS integration success. In order to reach this aim, IS evaluation and post-merger IS integration success are discussed, and a case study is conducted to illustrate the discussion.

The expected results of this study include an in-depth understanding of the multi-faceted concept of success in post-merger IS integration.

2. Addressing success in post-merger IS integration

As explained in Section 1, the literature on post-merger IS integration is scarce. Furthermore, much of this scarce literature does not define post-merger IS integration success, e.g. Buck-Lew et al. (1992), Merali-McKiernan (1993), McKiernan-Merali (1995), Weber-Pliskin 1996, Giacomazzi et al. (1997), I/S Analyzer 1989, Bentley 2002, Mehta-Hirschheim (2004).

At best, post-merger IS integration success is addressed implicitly, stating that IS integration is expected to be carried out within a predefined timeframe, and without disrupting the work of employees or inconveniencing customers (I/S Analyzer 1989, 2; Merali – McKiernan 1993, 111; Kubilus 1991, 34). Problems such as the cost of ineffective integration, ignoring information quality issues in merger planning, the loss of IS expertise and failure to evaluate the alignment of the IS integration with the achievement of corporate and acquisition objectives, are quoted (e.g. Merali-McKiernan 1993, Cossey 1991).

Merali and McKiernan (1993) claim that IS integration processes are typically not formally evaluated, and both executives and academics frequently evaluate acquisition performance and acquisition strategies on monetary criteria in the short-term right after the acquisition. Examples of this include e.g. Cossey (1991), Weber and Pliskin (1996) and Goodwin (1999), who all suggest cost-savings (economies of scale) and synergies (reducing or exploiting redundant capacity) as benefits obtainable from post-merger IS integration.

On the other hand, Cossey (1991) states that, first, any system can be scored on functionality and value to the business, and secondly, systems success depends on the users' perceptions of them. Main and Short (1989) see increased partnership between the IS and general managers as a key result of post-merger IS integration. This partnership includes (1) alignment of the firms' business strategies and IT, (2) better understanding of line managers' information requirements and readiness to manage IS locally, and (3) better determination of future systems needs. (Main – Short 1989, 470-471)

Perhaps the most comprehensive definition of post-merger IS integration success found in the literature was first presented by Stylianou, Jeffries and Robbins (1996), and then further refined by Robbins and Stylianou (1999). Robbins and Stylianou (1999) suggest the following components of success in post-merger IS integration:
- The ability to exploit opportunities arising from the merger,
- The ability to avoid problems stemming from the merger,
- End-user satisfaction with the integration process and integrated system,
- Improved IS capabilities that help support the underlying motives for the merger, and

▪ Efficiency and effectiveness of resource utilisation during the integration process.

Robbins and Stylianou (1999) elaborate the construct "Improved IS capabilities" further by claiming that successful IS integration can generate a wide range of positive outcomes that support the merger goals. These include:

▪ enhancing the firm's competitive position,

▪ shaping or enabling business strategies,

▪ integrating IS planning with organisational planning,

▪ contributing to overall organisational financial performance,

▪ providing integration of related technologies across organisational units, providing corporate-wide information accessibility,

▪ providing good quality (accurate, useful, timely information),

▪ managing its own financial performance,

▪ operating systems efficiently by ensuring system availability, reliability and responsiveness,

▪ developing systems efficiently and effectively,

▪ providing adequate end-user support,

▪ recruiting and maintaining a technically and managerially competent staff, and

▪ identifying and assimilating new technologies.

The list above provided by Robbins and Stylianou (1999) illustrated the complex and multi-faceted nature of success in post-merger IS integration.

This list, however, as well as all the other literature quoted earlier in this Section fails to make use of the vast body of IS evaluation literature.

In brief, the IS evaluation literature started moving from technical measures such as system response times towards a more user and organization oriented view, with the surge of the first user- satisfaction measures, such as the User Information Satisfaction (UIS) instrument by Ives et al. (1983). The UIS is a measure of user-satisfaction and hence it is subjective, and addresses IS success indirectly. Being one of the best known tools, it offers a standardised measure (results can be compared across different organisations, systems and points of measurement). On the other hand, it has been criticised for such things as insufficient definition of key concepts, weak theoretical underpinnings and a narrow approach. A step towards more sophisticated measurement tools is, for example, the End-User Computing Satisfaction instrument by Doll – Torkzadeh (1988) that includes the constructs of Content, Accuracy, Format, Ease of Use, and Timeliness of the information. Thereafter, attempts such as the Task-Technology Fit model by Goodhue (1995) or the four Main dimensions of IS success (development process, use process, quality of the IS, and impact on the organisation) by Saarinen (1996) aimed at providing a more comprehensive and multi-faceted view of IS success.

In their seminal review of the IS evaluation literature, Smithson and Hirschheim (1998) divide the IS evaluation criteria into Efficiency Zone (doing things right), Effectiveness Zone (doing the right thing), and Understanding Zone. This model, however, does not provide actual success measures and constructs. One of the contributions of the Effectiveness Zone literature is that measuring IS success is context-bound, and different systems and situations require different evaluations (e.g. Smithson-Hirschheim 1998). In post-merger IS integration, for example, a partial integration of operational IS is likely to have very different goals – and hence very different success measures – from a full consolidation of strategic IS. Therefore, it is only feasible to attempt to define central categories of post-merger IS integration success issues and perhaps give examples of these issues The relative importance of these categories and their contents must then be decided upon for each evaluation situation individually.

Another seminal literature review was carried out by DeLone and McLean (1992). This condenses IS evaluation literature into an IS Success Model. In a revised version of their model (2003), they

also present a set of six categories. First, system quality, information quality, and service quality affect both user satisfaction and use & intended use. These, in turn, are interrelated and yield net benefits. Finally, these net benefits also affect user satisfaction and use & intended use. In the following, the DeLone-McLean (2003) model is discussed with respect to the post-merger IS integration literature and modified to suit this domain.

1. *System quality*: The importance of system quality in post-merger IS integration was noted by Robbins-Stylianou (1999) and Cossey (1991), and Merali and McKiernan (1993) state that integration should not disrupt the work of employees nor inconvenience customers.

2. *Information quality:* The integrated system may provide corporate-wide information accessibility (Robbins-Stylianou 1999), and it should provide accurate, useful and timely information (Robbins-Stylianou 1999, and Cossey 1991).

3. *Service quality:* The integrated IS departments should operate systems efficiently, develop new systems efficiently and effectively, provide integration of related technologies across organisational units, provide adequate end-user support and manage their own financial performance (Robbins-Stylianou 1999).

4. *Use, intended use:* This construct was not mentioned in the post-merger IS integration literature reviewed.

5. *User satisfaction:* The importance of user satisfaction with the integrated system was noted by Robbins-Stylianou (1999) and Cossey (1991). This construct, however, is not without problems in the context of post-merger IS integration. For example, in some cases users are asked to change their well-functioning systems for others, which is likely to cause frustrations, as the adoption of a new system is always troublesome but does not necessarily bring benefits at the level of the individual user. Also, systems integration may translate into more co-ordinated systems that dictate the users' work processes more than before, and this may be considered a drawback by individual users.

6. *Net benefits:* The integrated system is expected to support the underlying motives of the merger. These include enhancing the firm's competitive position (Robbins-Stylianou 1999; Cossey 1991), as well as shaping or enabling business strategies and integrating IS planning with organisational planning (Robbins-Stylianou 1999). Furthermore, post-merger IS integration may contribute towards overall organisational financial performance by providing possibilities for cost-savings and synergies (Robbins-Stylianou 1999, Merali-Mc-Kiernan 1993, Cossey 1991, Weber-Pliskin 1996, Goodwin 1999).

The above list shows that, while the DeLone-McLean (2003) model offers a valuable insight into the components of post-merger IS integration success, it does have some shortcomings. First, the use or intended use was not found to be an important issue in the post-merger IS integration literature. This could perhaps be because this construct has been widely criticised for such reasons as the amount of use is a meaningful measure of success only when the use is voluntary, more time in use does not necessarily give better results. Secondly, the construct *net benefits* seems to be too general and simplistic effectively to embrace the full richness of the phenomenon. Also DeLone and McLean (2003) admit that, in some studies, finer granulation may be necessary. Furthermore, the post-merger IS integration literature provides some further benefits that do not correspond to the DeLone-McLean (2003) model.

First, issues such as the ability to exploit opportunities arising from the merger, and the ability to avoid problems stemming from the merger (Robbins-Stylianou 1999) are too ambiguous to be classified, and they may be related to practically all the categories above, depending on the particular opportunities and problems.

Besides this, other issues include:

- Efficiency and effectiveness of resource utilisation during the integration process (time, money, personnel) (Robbins-Stylianou 1999, I/S Analyzer 1989, Kubilus 1991)

- Recruiting and maintaining a technically and managerially competent staff (Robbins-Stylianou 1999, Merali-Mc-Kiernan 1993)

- The learning opportunity to manage better future IS integrations (Merali-Mc-Kiernan 1993)

To sum up the post-merger IS integration discussion, and to make effective use of the IS evaluation research to support it, four components of post-merger IS integration are proposed: User satisfaction with the integrated software's system and information quality; Efficient and effective IS integration processes; Efficient IS staff integration; and IS ability to support the underlying motives of the merger. These, as well as the issues pertaining to these categories, are presented in Table 1.

Table 1: Components of post-merger information systems integration success

Post-merger IS integration success component	Issues
User satisfaction with the integrated software's system and information quality as well as its use	Not disrupting the work of employees, not inconveniencing customers, corporate-wide information accessibility; accurate, useful and timely information
Efficient and effective IS integration management	Efficient and effective use of resources (time, cost and personnel) during the integration processes, effective management policies with regard to project management, change management, outsourcing, etc.
Efficient IS staff integration	Avoiding the loss of key IS people and their expertise; Recruiting technically and managerially competent IS staff; Avoiding problems like: Reduced commitment and disloyalty, Reduced productivity, Motivational problems, Dissatisfaction, frustration, confusion and stress, Dysfunctional behaviour and sabotage, People refusing assignments, Increased absenteeism, Health problems, Power struggles.
IS ability to support the underlying motives of the merger	For example, cost-cutting and exploiting redundancies in the IS function; supporting synergies in production by e.g. better co-ordination of production capacity; supporting new, integrated R&D function; supporting vertical integration and visibility with the supplier/client acquired, etc.

The post-merger IS integration success components presented in Table 1 are illustrated in a case study in the following Sections.

3. Methodological choices

The empirical evidence for this paper was collected as a case study on IS integration in Company X, a manufacturing company that gained its current form through a joint venture of Group A and Corporation B in 1999. A case study was chosen to enable the in-depth understanding of different aspects of post-merger IS integration. The selected case is interesting in this context as Company X chose to pursue deep IS integration in order to co-ordinate better the production capacity between the factories, and to enable better financial reporting. On the other hand, the implementation process has been somewhat complicated, and different problems have been reported in different factories.

The data for the study come mainly from interviews, and was complemented with a short questionnaire, observation and documents. The data were collected both during the pilot phase (Factory F1) and during the actual implementation (the system was implemented in three more factories). The pilot implementation started January 1, 2003, and semi-structured interviews conducted with 11 interviewees in April 2003. The new enterprise system (ES) was implemented in three more factories on January 1, 2004, and six interviewees gave their opinions in May 2004. The interviewees adequately cover various actors and management levels that were involved in the ES integration processes studied. They included the integration project manager, representatives of top management, user support, users of different levels and the software vendor. With some key interviewees such as the implementation project manager, several interviews were carried out.

A short questionnaire was directed to the end-users in April 2003 and May 2004. 33 and 168 responses were received in 2003 and 2004, respectively. The questionnaire was based on the Motwani et al. (2002) framework on change management in ERP implementation, and Saarinen's (1996) instrument for evaluating information system success, choosing and modifying suitable constructs of each of these. The role of the questionnaire in this study was to provide an efficient way to collect the users' perceptions and opinions to complement the data from the interviews; that

is to say, there was no causal model to be tested. The data were completed by observation, and internal company reports. The raw data from the interview transcripts, responses to the questionnaire, field notes and internal company reports were first collected into a case study database consisting of an organised folder structure, and thereafter the data were analyzed according to the classes suggested by the theory. (See: Yin 1984, Yin 1993)

4. Case: company x

4.1 Research environment

The empirical evidence for this paper was collected from the enterprise systems (ES) integration in Company X, a manufacturing company that gained its current form in 1999 through a joint venture between Group A and Corporation B, in which one of Corporation B's factories (Factory F1) became part of Company X. Company X chose to pursue deep IS integration in order to better co-ordinate the production capacity between the factories, and to enable better financial reporting.

The production function asked for information systems integration as soon as the decision to go ahead with the merger was made. Tailored software was chosen, as it was thought to better support the new company structure. Implementing the new system started on January 1, 2003, three years after the merger took place. The new information system consists of sales applications, manufacturing applications, inventory and supply applications, cost accounting and financial reporting. However, accounting functions such as accounts receivable and payable, asset accounting, book-keeping etc., as well as human resource management applications, are not run in the new, integrated system because Group A administers them centrally.

According to the deal, the vendor delivered the software three years after Company X was formed. During this first phase, it was implemented only at Factory F1. Three other factories implemented the software the following year, and implementation at a fifth factory was postponed by one year because of problems with software quality.

4.2 Findings: post-merger IS integration success in Company x

4.2.1 User satisfaction with the integrated software's system and information quality

One year after the first installation and five months after the installation in the other factories, the operative functions were using the system, but its use was not trouble-free. The system was up and running and, as one interviewee put it: "*Despite all the trouble there has not been any order that we wouldn't have been able to deliver*". The end-users, however, were highly dissatisfied with the system and its usage. One of the interviewees commented: "We have reached a satisfactory level of know-how in using the system. However, the system has not fulfilled the hopes and expectations we had [with regard to quality]." The results of the end-user survey supported this view: 61% of the respondents felt that the system was slow, and only 11% almost or totally agreed that the system was fast (N=168). Furthermore, only 26% of the respondents totally or almost agreed that the system was being used successfully whereas 47% held the opposite view (N=167).

4.2.2 Efficient and effective IS integration management

In Company X, post-merger IS integration took a relatively long time since the new enterprise was programmed from scratch. Before the merger, both factories were using proprietary enterprise systems, tailored by different domestic software vendors. Neither of these systems, however, was thought to have the properties necessary to support the new company, and there were no new versions available of either software. Consequently, Company X chose to develop a tailored integrated system in order to gain a strategic competitive advantage. Due to the time required for programming new software from scratch, Company X could only start implementing the new system on January 1, 2003, three years after the merger took place. This time span, however, was planned and accepted by the decision makers.

As explained before, economies of scale were sought in production, not in the IS function. In fact, the IS integration turned out to be a significant investment for Company X. The budget for this investment was exceeded by 10-15%.

Implementation was carried out within the planned timeframe with the exception of the fact that in the fifth factory it had to be delayed. The implementation team was relatively small, and hence, their time was consumed in training and solving daily problems. There was therefore insufficient time to test the critical software modules that were to be used in that factory, as their quality did not meet the expectations of Company X. Finally, the quality of these modules was not thought to be up to standard, and the implementation was postponed.

As the implementation team was occupied with daily issues, not enough time was left for strategic planning and efficient managing of the software vendor. No formal project management tools or techniques were used, as only major steps such as go-live dates were formally tracked. Managing the vendor relationship was complicated despite the close relationship with the vendor. A database for communicating with the vendor was only established more than six months after first implementation. On top of this, their first formal and extensive evaluation of the project was a side project of this study, and only the project manager initiated the second evaluation.

With regard to users' perceptions on managing the change, 49% of the respondents totally or almost disagreed with the statement that the implementation and the change related to it were well managed, whereas 20% totally or almost disagreed, and 25% were indifferent (6% didn't know, N=166). Also related to this, the interviewees frequently reported that user involvement in the requirements engineering phase was not sufficient. On the other hand, the interviewees emphasised the efforts made with user training, and the users were pleased with the quality of the user support. Moreover, the changes required in different factories were different. The project manager claims that these differences have been taken into account during IS integration, as the individual sites have been allowed to maintain their particular features, as long as the system and the overall merger goals permit it.

4.2.3 Efficient IS staff integration

In the case of Company X, none of the typical merger-related problems stemming from lay-offs, such as corruption of morals, stress and losing key IS workers was encountered, as there was no need for staff reduction. Instead, a few extra people were recruited to participate in the extensive end-user training programmes.

According to the first plans, the new system was only meant to be implemented in the pilot Factory F1, and an implementation project manager was appointed from Factory F1. Later on, it was decided that this software was to be used to run the whole company, and the implementation project manager now faced a larger-scale, more complex implementation project than he had originally accepted. Besides the project manager, the implementation team consisted of IS professionals from both Factory F1 and other factories belonging to Company X, and the team was supported by Group A's IS department. Issues such as the lack of formal project management and problems with managing the vendor, showed that the implementation team needed more support and expertise in these areas, at least at the beginning of the project.

4.2.4 IS ability to support the underlying motives of the merger

The motive for this merger was the fact that machinery was getting old both in Group A's factories and in Factory F1, and heavy investments were required. This, in turn, would have created a huge over-capacity in the market, and therefore Group A and Corporation B decided on the joint venture. Related to this, and in order better to co-ordinate the production between the different factories, Company X pursued full consolidation of the enterprise systems. That is to say, synergies were sought in production, not in the IS function. Despite the bugs, the system supported the operations, and clear benefits such as better control and co-ordination of resources between the factories were realised.

Furthermore, when Company X was formed, the management of the company concluded that Factory F1 – that used to belong to Corporation B – had more efficient processes. Hence, they decided to implement these processes in the other factories. Before starting to implement the new software, however, these attempts met with little success. This illustrates the reactive and proactive roles of IS integration. First, IS integration has a reactive role in the sense that it follows the overall post-merger integration strategy. On the other hand, it has a proactive role in the sense that it is used to implement changes in company processes.

5. Summary and concluding remarks

Sections 1 and 2 of this paper show that, first, post-merger IS integration literature is scarce and secondly, most of this literature does not define success in post-merger IS integration at all. The definitions provided are often implicit or vague, the only exception being the papers by Stylianou et al. (1996) and Robbins-Stylianoi (1999). Furthermore, none of this literature manages to exploit the vast body of literature on IS evaluation.

Much of the IS evaluation literature is summed up in the DeLone-McLean models (1992, 2003). This paper compares the success issues proposed by the post-merger IS integration literature with those presented in the DeLone-McLean model (2003). As a result, four categories of success issues for post-merger IS integration are proposed: User satisfaction with the integrated software's system and information quality as well as its use; Efficient and effective IS integration management; Efficient IS staff integration; and IS ability to support the underlying motives of the merger.

Issues pertaining to each of these categories were observed in the illustrative case study presented in this paper. The case study also demonstrates some of the complex interrelationships between the success issues and categories. For example, an insufficient number of IS personnel combined with somewhat inefficient IS integration management aggravated the system quality problems as observed by the users. Furthermore, low system quality caused dissatisfaction among the users, however, the system functions well enough to support the new processes and the coordination of production capacity between different factories – i.e. the underlying merger goals.

Further studies are recommended, first to study these interrelationships in more detail, and secondly to provide more comprehensive lists of success issues related to different types of merger goals.

References

Bentley, Ross (2002) IT key to integration success. Computer weekly, 1/31, p.32

Brynjolfsson, Erik – Hitt, Lorin M. (1998) Beyond the Productivity Paradox. Communications of ACM, Vol. 41, No.8, p. 49 - 55

Buck-Lew, Maylun – Wardle, Caroline E. – Pliskin, Nava (1992) Accounting for information technology in corporate acquisitions. Information & Management, Vol. 22, p. 363 – 369

Buono, Anthony B – Bowditch, James L – Lewis, John W III (1985) When Cultures Collide: The

Cossey, Bob (1991) Systems assessment in acquired subsidiaries. Accountancy, Vol. 107 No 1169, p. 98 – 99

DeLone, W.H. – McLean, E.R. (1992) In Information Systems Success: The Quest for the Dependent Variable. Information Systems Research, Vol.3, No.1, p. 60 – 95

DeLone, W.H. – McLean, E.R. (2003) The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. Journal of Management Information Systems, Vol 19, No 4, pp. 9 - 30

Doll, William J. – Torkzadeh, Gholamreza (1988) The Measurement of End-User Computing Satisfaction. MIS Quarterly, June, p. 258 – 274

Franck, Guillaume (1990) Mergers and Acquisitions: Competitive Advantage and Cultural Fit. EMJ, Vol. 8, No. 1, p. 40 – 43

Giacomazzi, Franco – Panella, Carlo – Pernici, Barbara – Sansoni, Marco (1997) Information Systems Integration in Mergers and Acquisitions: A normative model. Information & Management, Vol. 32, p. 289-302

Goodhue, Dale L. (1995) Understanding User Evaluations of Information Systems. Management Science, Vol. 41, No. 12, p. 1827 – 1844

Goodwin, Candice (1999) Merging IT. Accountancy International, Vol. 124, No, 1271, p. 37-38

Haspeslagh, Philippe C – Jemison, David B. (1991) Managing Acquisitions – Creating Value Through Corporate Renewal THE FREE PRESS: New York, USA

Habeck, Max M – Kröger, Fritz – Träm, Michael R (2000) After the merger – seven rules for successful post-merger integration PEARSON EDUCATION LIMITED: Edinburgh Gate, GB

I/S Analyzer (1989) Dealing with mergers and acquisitions. I/S Analyzer, Vol 27, No 3, p. 1 – 12

Ives, Blake - Olson, Margrethe H. - Baroudi, Jack J. (1983) The measurement of user information satisfaction. Communications of the ACM, Oct 1983, Vol. 26 Issue 10, p785, 9p

Kortteinen, B. – Nurminen, M.I. – Reijonen, P. – Torvinen, V.(1995) Improving IS Deployment through Evaluation: Application of the ONION Model. 3rd European Conference on the Evaluation of IT, Bath University, p. 175 – 181

Kubilus, Norbert J (1991) Acquired and Abandoned. Journal of Information Strategy: The Executive's Journal, Vol. 7, No 2, p. 33 – 40

Main, Thomas J. – Short, James E. (1989) Managing the Merger: Building Partnership Through IT Planning at the New Baxter. MIS Quarterly, Vol. 13, No.4, p.469 – 484

McKiernan, Peter – Merali, Yasmin (1995) Integrating Information Systems After a Merger. Long Range Planning, Vol. 28 No 4, p. 54 – 62

Mehta, Manjari – Hirschheim, Rudy (2004) A Framework for Assessing IT Integration Decision-Making in Mergers and Acquisitions. Proceedings of the Hawaii International Conference on Systems Sciences.

Merali, Yasmin – McKiernan, Peter (1993) The strategic positioning of information systems in post-acquisition management. Journal of Strategic Information Systems, Vol. 2, No 2, p.105 – 124

Motwani, Jaideep – Mirchandani, Dinesh – Madan, Manu – Gunasekaran, A. (2002) Successful implementation of ERP projects: Evidence from two case studies. International Journal of Production Economics, Vol. 75, p. 83 - 96

Parvinen, Petri M.T. (2003) Towards a governance perspective to mergers and acquisitions. Unpublished doctoral thesis, Helsinki University of Technology. Helsinki

Robbins, Stephanie S. – Stylianou, Antonis C. (1999) Post-Merger systems integration: the impact on IS capabilities. Information & Management, Vol. 36 p.205 - 212

Saarinen, Timo (1996) An expanded instrument for evaluating information system success. Information & Management, Vol. 31 p. 103 – 118

Smithson, S - Hirschheim, R.A. (1998) Analysing information systems evaluation: Another look at an old problem. European Journal of Information Systems, Vol.7, No.3, p.158-174

Shrivastava, Paul (1986) Postmerger integration. The Journal of Business Strategy Vol. 7, No. 1, p. 65-76

Stylianou, Antonis C. – Jeffries, Carol J. – Robbins, Stephanie S. (1996) Corporate mergers and the problems of IS integration. Information & Management, Vol. 31, p.203 – 213

Thach, Liz – Nyman, Mark (2001) Leading in Limbo Land: the role of a leader during merger and acquisition transition. Leadership & Organization Development Journal, Vol. 22, No. 4, p. 146 – 150

Weber, Yaakov – Pliskin, Nava (1996) The effects of information systems integration and organizational culture on a firm's effectiveness. Information & Management, Vol. 30, p. 81-90

Yin, Robert K. (1984) Case Study Research – Design and Methods. SAGE PUBLICATIONS, CA, USA

Yin, Robert K. (1993) Applications of Case Study Research. SAGE PUBLICATIONS INC: Newbury Park, California, USA

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