

INTEGRATING THE ENTERPRISE SYSTEMS AFTER A MERGER: MANAGING THE CHANGE IN A MANUFACTURING COMPANY

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Abstract

The importance of the post-merger integration (PMI) is derived from the fact that the value creation can only begin when the organizations begin to work towards the purpose of the acquisition. Besides merger, another source of radical change in a company's life cycle is the implementation of an enterprise system (ES), such as ERP. Both mergers and acquisitions and enterprise systems implementation miscarry frequently. In this paper we study the post-merger integration of the enterprise systems (ES) by testing the Motwani et al. (2002) Framework for ERP Implementation that is based on Business Process Change Theory in this context. We conclude that besides change management, issues relevant to successful post-merger ES integration include: M&A factors, factors related to company expertise & resources and factors related to software & vendor. Furthermore, an important notion is that different units may require different managerial approaches or different amounts of resources because of the possible differences in there IS capacities and readiness to change.

Keywords: post-merger integration, IS, M&A, Enterprise system

1 INTRODUCTION

A merger or an acquisition (M&A)¹ or – more precisely – the possible post-merger integration (PMI) of the businesses is always about change. The 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 the post-merger integration is derived from the fact that the value creation can only begin when the organisations begin to work towards the purpose of the acquisition. Besides this, faulty integration is a significant cause for merger failures. (Habeck et al. 2000; Haspeslagh – Jemison 1991; Shrivastava 1986) Furthermore, since the information systems (IS) are of utmost importance in the operation of (large) business, a merger or acquisition may not succeed if the information systems planning is inappropriate. Besides this, potential counter-synergies can be concealed in information systems. (I/S Analyzer 1989; Franck 1990)

Another source for radical change is implementing an enterprise system² that typically brings along a significant change in the business processes (see e.g. Motwani et al. 2002; Davenport 1993, Clemmons – Simon 2001 etc.) The integration of the enterprise systems in a post-merger situation faces contradictory pressures. For example, the information systems personnel are expected to reconcile the systems quickly but, on the other hand, incremental, strategy lead, and cautious ES implementation projects are more likely to be successful (Stylianou et al. 1996; Motwani et al. 2002). Also, different procedures and processes should be harmonised, and cultural clashes – e.g. power struggles over whose system will be chosen – may arise.

On top of all the previously mentioned, both mergers and acquisitions and enterprise systems implementation miscarry frequently. (See e.g. Shrivastava 1986; Thach – Nyman 2001; Motwani et al. 2002; Davenport 1998 etc.) All this makes post-merger integration of the enterprise systems both a challenging task, and an interesting topic for academic studies. Consequently, several authors recognise the importance of IT in the post-merger integration (See e.g. Franck 1990; I/S Analyzer 1989). Nevertheless, after reviewing the 567 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 567 articles on M&A reviewed by Parvinen (2003), and found 18 titles that had any 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 equivalent.

Our aim is to study what factors are relevant in post-merger integration of the enterprise systems. 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 post-merger integration of the information systems.

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 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

¹ This study uses the term ‘mergers and acquisitions’ (M&As) to cover both mergers by consolidation and mergers by acquisition

² In this study, the term enterprise system refers to any integrated, modular information system that covers several key functions of the company and is essential for running the business. Generations of enterprise systems include material requirements planning (MRP), MRP II, enterprise resource planning (ERP), ERP II, etc.

merger itself. Also, problems such as high IS employee turnover or collapse of morale of the IS personnel have been quoted. (Merali – McKiernan 1993; McKiernan-Merali 1995; Weber et al. 1996; Kubilus 1991)

Stylianou et al. (1996) provide a more comprehensive explanation for IS integration success, that is developed further in Robbins et al. (1999). Robbins et al. (1999) found out that the factors critical for achieving a positive outcome in post-merger integration of the IS are managerial in nature, and moreover, largely controllable. They conclude that in order to integrate the information systems 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 describes the past research in this field as factors research, referring to identifying the factors or variables that are critical for implementing an enterprise system successfully (Aladwani 2001) Examples of this branch of literature include e.g. Ang et al. (1995), and Yen et al. (2002). Nah et al. (2001) review this branch of literature, and identify eleven critical factors for successful implementation of enterprise systems: 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 IT legacy systems.

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

Since ES implementation typically involves changing business processes, Motwani et al. (2002) propose 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) information technology leveragability and knowledge-sharing capacity, and (5) network relationships. All these 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.'s 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, 94)

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. For example while Motwani et al (2002) talk about *strategic initiatives*, e.g. Nah et al (2001) mention *business plan and vision* and Ang et al. (1995) uses the terms *clear goals and objectives* (See e.g.: Chen 2001, Gupta 2000, and Aladwani 2001 for more). Similar plurality of terms can be found in the issues related to *Cultural Readiness, IT Leveragability and Knowledge-sharing Capacity, Network Relationships, Change Management, and Process Management* that all have their counterparts with different names in the ES literature (see: Nah et al 2001, Ang et al 1995, Yen et al 2002, Chen 2001, Gupta 2000, Aladwani 2001 etc.)

However, the literature also presents several factors that do not coincide with those presented in the model by Motwani et al. (2002). Besides these, 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 factors mentioned in Motwani et al (2002). We classify the remaining factors into (1) Factors related to software & vendor (including issues such as suitability of the software, quality of the software & vendor, and ES complexity); (2) Factors related to company expertise & resources (including issues such as organisational and management IS maturity, IT and ES expertise and resources, and project management), and (3) M&A issues (including political and power structure issues, cultural fit, and overall merger management)

3 CONDUCTING THE STUDY

The empirical evidence for this paper was collected as a longitudinal case study on the IS integration in Company X, a manufacturing company that gained its current form through a joint venture of Corporate Y and Corporate Z, in which Corporate Z's factory became part of Company X. The selected case is interesting in this context as 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. Furthermore, most of the users had a significant change in either in the use process of the enterprise system or in their work processes.

Currently, the new information system is in use in four factories. The system supports the operations, and clear benefits such as better control and co-ordination of resources between the factories have been realized. However, software bugs still bother the end-users. Also, the implementation to one of the factories 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 is not sufficient yet. A longitudinal case study has enabled in-depth understanding of this sometimes troublesome integration process.

The data for the study comes from four sources, and it was collected both during the pilot phase (the system was implemented to one factory) and during the actual implementation (the system was implemented to three more factories). Firstly, semi-structured interviews conducted with 11 subjects in April 2003, and 6 subjects in May 2004. The interviewees adequately cover various actors and management levels that were involved in the IS integration processes studied; including a representative of the software vendor. Secondly, a small questionnaire directed to the end-users was carried out in April 2003 and May 2004. This information was completed by observation, and internal company reports. The data was gathered in a case study database and analyzed using pattern-matching. Finally, complete case study reports after both rounds of data collection were reviewed by representatives of both the case company and the software provider.

4 RESEARCH FINDINGS

Company X 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, Company X could start implementing the new system only 3 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. 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 Corporate Y administrates them centrally.

One year after the first installation and five months after the installation in the other factories, the implementation seems to be somewhat troubled. The system is 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, and the implementation in one factory was postponed because its critical nature, and Company X thought it is too risky to implement buggy software there. Also, the budget has been exceeded by 10-15%.

Change Management

In their study, Motwani et al. (2002), compare two ES implementations, a successful one (Company B), and another one (Company A), that had substantial problems. Companies A and B are separate entities, and there is no industry restructuring involved in neither of the cases.

Table 1 summarises the research findings at Company X, and the approaches of companies A and B presented in Motwani et al. (2002, 89).

Construct		Company X (2003-2004)	Motwani et al. 2002: Approach A: TROUBLED	Motwani et al. 2002: Approach B: SUCCESSFULL
Strategic initiatives	Stimuli	Reactive	Reactive	Reactive
	Formulation Scope	Somewhat revolutionary in each factory; more incremental in terms of the whole enterprise	Revolutionary	Incremental
	Decision Making	- Bureaucratic (Adapting the system) - Autocratic & Bureaucratic (Go-live)	Autocratic	Bureaucratic
	Strategy led	From onset	Not strategy led	From onset
Learning capacity	Adaptation	Response to organisational change	Response to technology change	Response to technology change
	Improved efficiency	Learning by doing	Learning by doing	Learning from others
	Declarative knowledge	Developed knowledge base for communication with the vendor	Did not develop knowledge base	Developed knowledge base
	External information use	Relied on own & vendors knowledge	Boundary spanners	Technology gatekeepers, customers
	Learning type	Double loop learning	Deutero	Deutero
Cultural readiness	Change agents & leadership	Change Agents, Senior Management's role has become more and more invisible as the implementation proceeded	Senior Management	Senior Management, Change agents
	Risk aversion	Slightly aggressive, biggest risks were avoided by postponing the implementation in the 5 th factory	Aggressive	Cautious
	Open communications	High (but not totally effective), users felt they don't get information on how the project proceeds	Low	High
	Cross-training	Little / Some	Some	Some
IT leveragability & knowledge-sharing	IT Role	Enabling	Enabling	Enabling
	Use of communication technology	High	Medium	High
Network Relationships	Inter-organisational linkages	Mostly High (with vendor, customers, and paper suppliers)	Low	High (with vendor)
	Cross-functional co-operation	Low (ES implementation)	Medium	High
Change Management	Pattern of Change Management	Semiformal Process Committed	Semiformal Process Committed	Formal Phased Process Committed
	Readiness to change	Leap / Step depending on which system the factory used before	Radical	Improvement
	Scope of Change	Somewhat adequate	Inadequate	Adequate
Process Management	Management of change	Somewhat adequate	Inadequate	Adequate
	Process Measurement	Increasing	Little	Use of process metrics
	Tools and Techniques	Low	High	High
	Team based	Somewhat	No	Yes

Table 1. Comparison of approaches of Company X and companies A & B

As shown in Table 1, the evidence from Company X shows features similar to both the successful and the unsuccessful case in Motwani et al. (2002). 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 co-operation with vendor, and moderate scope of change in some factories. And, on the other hand, problematic areas include the revolutionary change in each factory, autocratic features in decision making, sub-optimal learning strategies, risky implementation, communications problems, inadequate change management, and radical scope of change in some factories. Hence, in short, the evidence presented in Table 1 points to ineffective strategies in implementation management as an explanation for the trouble encountered in the implementation. Nevertheless, we believe that there are also other, underlying, explanations (See: e.g. Yin 1984). In order to embrace these, we take a look on the other factors and issues identified in the ES implementation and post-merger IS integration literature.

M&A issues

The evidence also points out several issues that are IS integration specific. In Company X, the IS integration was used to enforce the implementation of the harmonized 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, and comments of the following type were frequent: *"We are very frustrated as we were forced to start using Corporate Y's system. It is very rigid and bothers more than helps!"* and 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 organizational 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, the management was more pleased with the changes since harmonizing 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.

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. In the case of Company X, problematic areas include: the top management team does not include an IS specialist, and also the implementation project manager gained his expertise on corporate level IS issues with this project, Company X 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 not 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.

Again, installing the hardware and software were carried out successfully, and the system support is highly appreciated by the users. Respondent's comments included: *"Anna [a key member of the user support team] has been a true life-saver, without them we wouldn't have been able to survive!"*

Factors related to software and vendor

Furthermore, also factors related to software and vendor showed to have a significant effect on the post-merger IS integration success. 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 shown above, company X opted for tailored software that would match its processes perfectly. However, the implementation was troubled by software bugs, and requirements engineering problems as well as problems with project management were cited.

5 DISCUSSION 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 ERP implementation coincide to a vast extent. Since post-merger integration is a change process by nature, we test the Motwani et al (2002) framework ERP implementation that is based on a BPC model in the PMI of ES context. The empirical findings of this study show that even though the framework presented in Motwani et al. (2002) offers valuable insights to the implementation of an enterprise system, it does not cover all the relevant aspects in post-merger ES integration. Consequently, we suggest the framework presented in Table 2 for post-merger ES integration.

Element	Related Issues
Corporate Level Change Environment	(1) M&A factors, (2) Factors related to company expertise & resources (3) Factors related to software & vendor
Integration Level Change Environment	(1) strategic initiatives, (2) learning capacity, (3) cultural readiness, (4) information technology leveragability and knowledge-sharing capacity, and (5) network relationships.
Post-merger ES integration Management	(1) Change Management, (2) Process Management

Table 2. A framework for post-merger integration of the ES

The framework presented in Table 2 builds on the Motwani et al (2002) framework for ERP implementation, by adding the constructs relevant to post-merger ES integration, i.e. M&A factors, factors related to company expertise & resources and factors related to software & vendor. These elements for the *Corporate Level Change Environment*, whereas the change environment Motwani et al (2002) refer to, form the *Integration Level Change Environment* in the post-merger ES integration context. Importance of good quality ES integration management – including formal implementation project management – is emphasised. Furthermore, an important notion is that different units may require different managerial approaches or different amounts of resources because of the possible differences in there IS capacities and readiness to change.

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 e.g. Stylianou et al. 1996, Robbins et al. 1999. 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.

Major limitations of this study stem from the fact that post-merger integration 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 repeat this study in different contexts (different industries, NGO's, SME's, etc.), and carry out a multiple case study.

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