Impact of Information Systems Implementations on Vertical Mergers and Acquisitions: A Framework

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Abstract

The present work is an attempt to develop a conceptual framework for evaluating the impact of information systems implementations on Mergers and Acquisitions (referred to as M&A). Although this work focuses on vertical M&A, the framework can easily be extended to horizontal and conglomerate mergers. We begin by attempting to understand what M&A really are. We then move on to understand information systems as we know them today. Thereafter, we classify the nature of businesses from an information perspective. Technology assessment is then carried out on the existing information systems that are implemented in a company. This gives us an understanding of the characterization of the merging entities. We then go about understanding what the strategic options for the companies post merger are. These options are then evaluated to study the impact on the merger. An analytical framework is then developed in two cases that have been considered.

Keywords: Merger and Acquisitions (M&A), Information Systems, Information Strategy.

Introduction

M&A has become one of the most popular subjects in b-schools, and rightly so, due to the increased popularity of the concept and the practice. While the coverage in literature is largely restricted to the financial perspective, the present work tries to assess M&A from an IT perspective. Information technology is probably, the most important meta-technology [9] today, and hence, we focus on the impact of this particular technology in the current work.

However, to proceed further, we formally define Information Systems based on CIMA as [3]:

> A computer system or related group system which collects and presents management information relating to a business in order to facilitate its control.

While this definition doesn't cover the basic issue of decision-making, it can be treated as a starting point. More advanced systems are seen to have many more advantages as described in [8] and [6].

Brief Understanding of M&A

M&A are typically of 3 types [2]:

1. Horizontal Mergers
2. Vertical Mergers
3. Conglomerate mergers.

The rationale for M&A are given as [3], [4]:

Economic Rationale

Value of the combined entity > Σ (value of individual entities)

With possible reasons being:

1. Economies of Scale
2. Strategic Benefits
3. Complementary Resources
4. Tax shields
5. Utilization of surplus funds
6. Management Effectiveness

However, the Chambers framework focuses on:

1. Shared vision of where the industry is heading and similar or complementary roles each company wants to play in it,
2. Short term gains for acquired employees who may be uncomfortable during times of M&A
3. Long term strategy wins for the share holders, employees, customers and business partners
4. Similar cultures and chemistry
5. Geographical proximity, particularly for large acquisitions

Information Systems as Understood Today

In the present work, information systems are classified into three broad categories:

1. Legacy systems
2. ERP systems
3. Extended ERP systems.

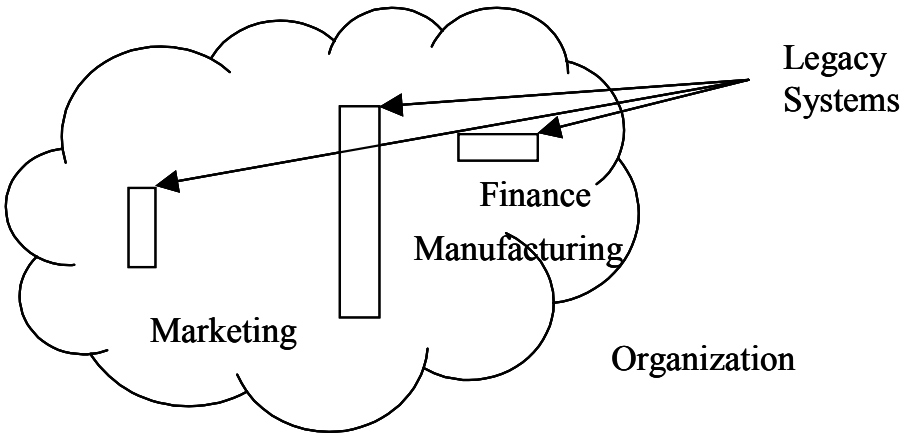


Figure 1. Legacy Systems in the organization

Legacy systems are largely functional in their approach as shown in the schematic Fig 1.

Specific advantages of legacy systems include the fact that they enable specific functionalities. Since legacy systems are built for the function alone, the efficiency of the system with regard to automation and information is very high. They can thus, be a source of strength. The company, in this case, has a well-aligned system with its strategy.

The transformation aspect of legacy systems is less than other IS. There is a tendency to increase inertia of the organization when it comes to change management. Legacy systems are thus, typically the inimitable strengths in many organizations. However, this cannot be generalized [6].

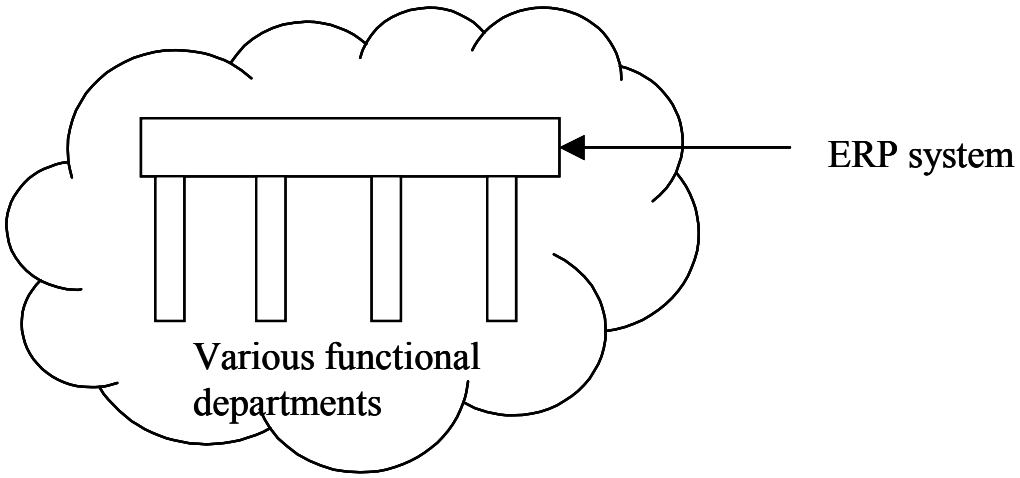


Figure 2. Typical ERP kind of architecture

ERP based systems, on the other hand, are more integrative in nature. (See Figure 2.)

Most ERP systems are not custom built due to the prohibitive price of the system. And hence, ERP solutions are normally bought off the shelf. ERP systems are also required to improve cross-functional information flows. However, implementation of the system involves (normally) a little bit of re-engineering and an alignment of operations in tune with the best practices [8]. This could also result in considerable deviation from existing methods of operations. This could possibly also result in a compromise of synergy

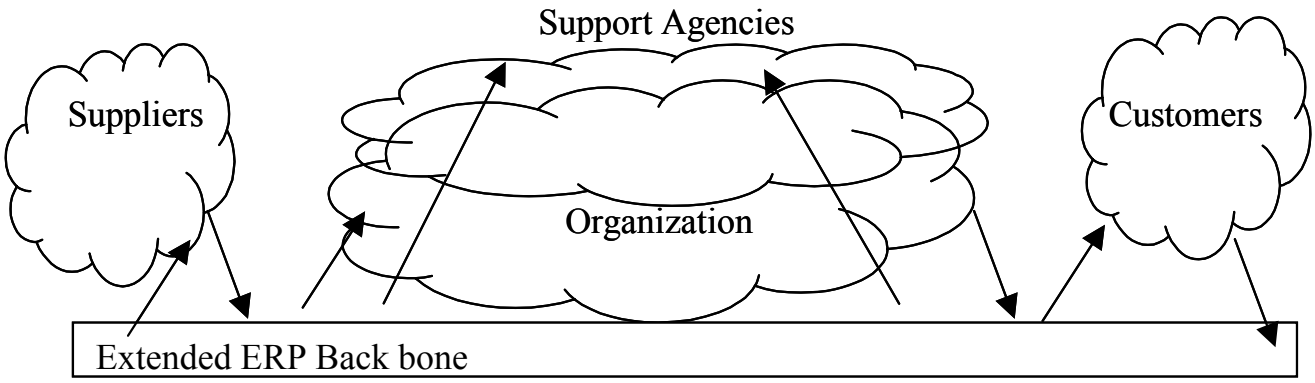


Fig. 3 Extended ERP architecture

or of even competitive advantage (in case the 'best practices' are not suitable for the particular environment). However, ERP systems must be formally strategised in order to get the best value over the long term.

Extended ERP systems are those in which the information network transcends the boundaries of the firm. (See Figure 3)

These systems have a very complex information flow sequence. They are similar to the paradigms on networked organizations. Such a system is having multiple implications in terms of strategies of various functions (ex:- supplier partnering, etc.). Thus, it is to be inherently linked with the strategies of more than one organization.

The ISs can be understood today as per the model suggested by Nalon [3]. Nalon divided the evolution into six stages:

1. Initiation: Largely done for cost saving.
2. Contagion: Development of applications in an uncontrolled way.
3. Control: First formal IS organization.
4. Integration: This slackens control for innovation. Specialists involved in development.
5. Data Administration: Business recognizes the value and potential of the IS.
6. Maturity: Information for strategy.

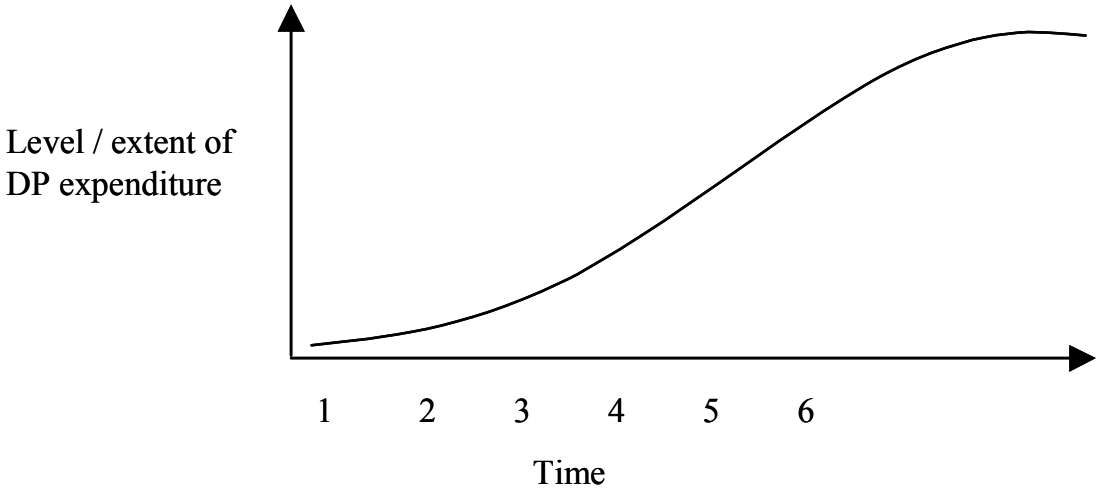


Fig 4. Level / extent of DP expenditure with Time in a normal implementation

Graphically, this can be observed as shown in Figures 4 and 5.

Technology shifts, as can be expected in the cases of M&A could modify the curve as shown below. It can be seen here that there is a sudden jump in the profile of the expenditure curves. The critical aspect is to understand in this case is the nature of shift from an economic perspective and from the system perspective. The present work focuses on the balance of these two perspectives.

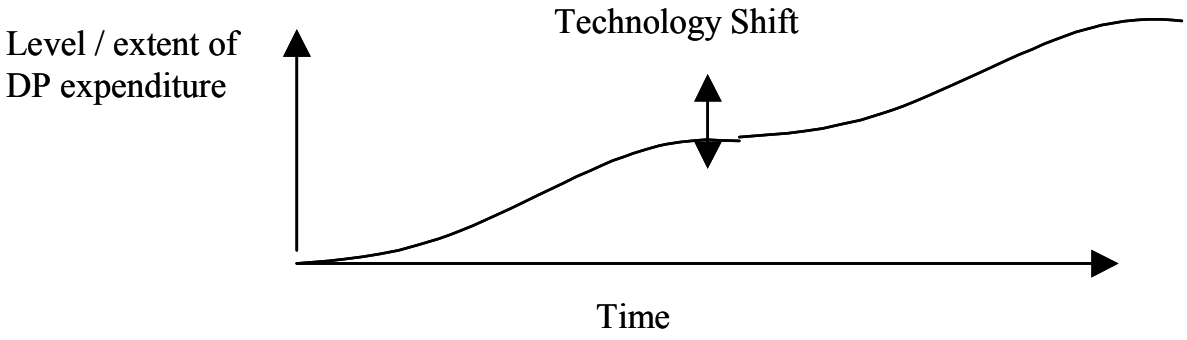


Fig 5. Shift in DP expenditure: financial perspective

The productivity of technological investment is often used to justify the investment. It is primarily measured by two parameters. (i) Relative expenditure of the IS to the total expenditure and (ii) Market share / technology share. Where market share is the proportion of total sale of products of the company to that of the market and the technology share is the proportion of the productive use of a technology accounted for by the company through in-house application or sales of the technology to others. Thus, the matrix would look like [5].

		Relative Expenditure	
		High	Low
Market Share /	High	Effective Technology Exploitation	Excellent Technology Exploitation

Impact of Information Systems Implementations

Technology Share	Low	Poor Technology Exploitation	The Empty Zone

For analysing the strategic perspective of an M&A, 3 basic matrices have been used[3].

1. McFarlan and McKenney's Strategic Grid Model
2. Generic Strategy Analysis of Michael Porter
3. Porter and Miller's Information Intensity Matrix.

Strategic Grid Model

		Strategic Importance of Current Information System	
		Low	High
Strategic Importance of Planned IS	High	Turn around	Strategic
	Low	Support	Factory

Predictions would largely depend on successful scenario planning as suggested in [7]. This would result in an applications portfolio as suggested by Peppard [3].

		Strategic Importance of Current Competitive Environment	
		Low	High
Strategic Importance in the Predicted Competitive Environment	High	High Potential	Strategic
	Low	Support	Key Operational

Generic Competitive Strategies

		Low Cost	Differentiation
Focus	High	Overall Cost Leadership	Unfocussed Differentiation
	Low	Cost Focus	Differentiation Focus

Information Intensity Matrix (Porter & Millar)

	Information Intensity of the Product	
	Low	High

Information Intensity of the Value Chain	Low Peppard Distribution	High Peppard Distribution
High	Oil Refining Legal Services	Newspapers Banking Education Airlines
Low	Cement Bricks Toys	Fashion Perishables

With these basic tools, let us try to analyse a few cases of M&A. It is important to note here that the Nalon stages have been reduced in our study to 3 illustrative cases of legacy systems (a combination of stages 1 and 2), ERP systems (a combination of stages 3, 4 and 5) and e-ERP systems (stage 6).

Case 1

Description:

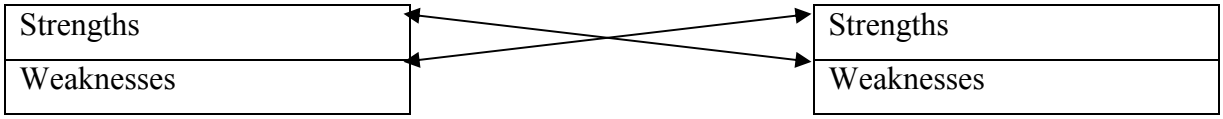
1. Type of merger: Vertical Merger satisfying all the pre-requisites of the Chamber's framework.
2. Assume that both the companies are using legacy systems. Both the legacy systems give it a strategic advantage. Thus, each company is benefiting from the system. It is thus, a case of excellent technology exploitation.
3. Let us assume that the Peppard distribution is also high for both the products.
4. The first case could be **independent networks of both the companies (as original)**.

In this case the following benefits can be realized.

Strengths of individual units would remain. Strengths have a high correlation with the IS, therefore, the retention of the IS would be ensuring retention of strengths of the companies. However, the system will not permit the development of new strengths.

Hence Strengths $_{A}$ + Strengths $_{B}$ > Strengths $_{A+B}$ (Sub Optimal function).

This feature could go against the business logic. However, if the information intensities are low, say in B (downstream) as compared with A, this system can function smoothly. The other case where the information in B is high unlike A, the system of A might suffer severe limitations. This is a very dangerous situation as it might involve a change in the IS implementations in A.



The business logic, in this case, as in the figure, cannot be supported. This is because, the strengths of the merged unit cannot be brought together due to rigid constraints of legacy systems.

A more potential problem in this case is the potential redundancies of the specific strengths. Many functionalities in the legacy system, might thus be unnecessary. Ex: - Forecasting module in the legacy system of A (upstream) which could become redundant.

Duplication of tasks would also go up. Special software would be required for data transfer. This would increase the operational complexity of the information chain (particularly loading and processing operations).

This system will be successful for companies which work on the SBU concept with strong functional orientation. In this, it could give rise to high synergies in operation.

Decentralization necessarily must be high in both the cases, otherwise the merger will not work from an IS perspective.

This system is extremely difficult to implement in practice.

Case II

Description:

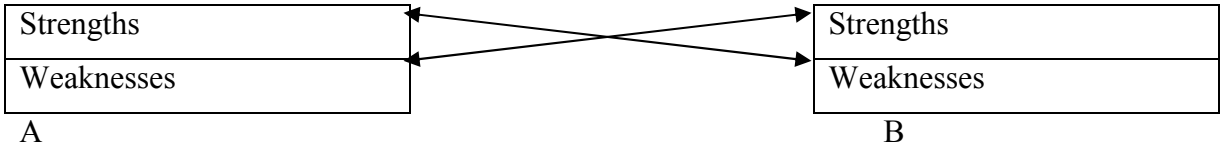
1. Type of merger: Vertical (satisfying all pre-requisites of the Chamber's framework)
2. Assume that one company is using an ERP system while the other is using a legacy system. Both the systems are strategic in nature and thus, a case of excellent technology exploitation.
3. Let us assume that the Peppard distribution is also high in both the cases.

In this case, the following benefits can be realized:

Every ERP supports the use of legacy systems through the Dynamic Enterprise Modellers [8]. Hence, synergy of strengths is easily realized in this case. The company can go in for a unified system working at different levels. However, the most critical aspect in this case is the re-configuration cost. If the reconfiguration cost of the system is high, the companies might hesitate to go for it.

The functionalities offered by the legacy system might be far superior to those of the ERP (due to the strategic nature of the system). If the ERP doesn't have adequate APIs (Advanced Programming Interfaces), a unified system might prove to be costly and possibly may not function. This would result in a compromise with a few strengths (as a networked system can prevail over a fully integrated system). Sub-optimal performance results in this case. This is typically the case where the information intensity of the legacy system is much higher than that of the ERP system.

If the system is highly centralized, the limitation of the above point would not be a cause of concern. In this case (ERP with legacy) we can nearly achieve a best / most optimal merger. The system architecture can accommodate the same.



Hence Strengths $_{A}$ + Strengths $_{B}$ < Strengths $_{A+B}$ (Desired Case).

Critical aspects also include the orientation of the management, in this case, as to how it influences their decision. Also important is the scales of operations of the two companies.

Conclusion

We have considered in the present study, cases of vertical M&A. The important aspect assumed being that the companies have similar scales of operations. Obviously, findings would change drastically when the scales of operations would differ.

The other important aspect assumed in this case is the business cycle. The response of various companies to different stages would be different. This would constrain the choice of the various courses of action.

However, this has been neglected in the current analysis. Incorporation of these aspects could be done using standard models in strategy management.

It was observed that success of legacy systems which are strategic is subject to several governing conditions. Managerial decision in this case, should be to go in for networked organizations rather than a unified system. However, it is also indicated that the operational complexity would grow, which could be undesirable in this case. When the company is to choose one system over the other, scale economy factors would dominate. However, the compromise would be on the strengths of the other system.

The combination of ERP systems with legacy systems was seen to be a more successful option in most cases. However, this system too depends on several factors, most importantly the APIs and DEM options. But, under the given constraints, this M&A case is more likely to be successful.

M&A activity, in general, is a case of multi-parameter analysis and hence, it would require a more elaborate study for a definitive framework.

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Biographies

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Prof. Manoj k Jha is a bachelor in Electronics & Power Engineering, MBA in Marketing and Ph.D in Design and Development of Information Systems. He started his career as a lecturer, Deptt. of Electrical Engg. in a Govt. Engg. College, Worked in Marketing Deptt. of Process Control Instrument Manufacturing Company, and also Worked as Programmer and developed application Software for different applications. At present he is working as Associate Professor in the Deptt. of Information Technology Group, at National Institute of Industrial Engineering (NITIE) , Mumbai, INDIA.

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