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ERP Non-Implementation: A Case Study of a UK Furniture Manufacturer

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Abstract. Enterprise Resource Planning (ERP) systems are pervasive information systems that have been fundamental in organisations for the past two decades. ERP systems may well count as the most important development in technology in the 1990s'. There are many ERP success stories; equally there are as many failure stories. This paper reviews current literature of the Critical Success Factors (CSF) of ERP implementations. This review will be used in conjunction with the case of a UK furniture manufacturer's (Company X) implementation of an ERP system. This paper considers the factors that resulted in the failure of the ERP at Company X in the initial phase of the implementation.

1. Introduction

November 2005, the authors were brought into a UK furniture manufacturer (Company X) to implement an integrated financial, manufacturing and distribution package; an ERP system. April 2006, Company X decided not to continue with the ERP adoption. The ERP system failed to be implemented.

Company X's case is not unusual; the Gartner Group (1998) reported that seventy percent of all ERP projects fail to be fully implemented, even after three years [16]. Soh *et al* [14] aid for support, they state that many companies that have installed an ERP system have had to abandon their efforts.

ERP failures have received a great deal of attention in literature [7]. Buckhout *et al* [1] found that seventy percent of ERP implementation projects fail to achieve their corporate goals. Ross [13] later found that most ERP systems fail to deliver their anticipated benefits. This problem is still profound in recent years, Ho *et al* [4] reported that currently there are relatively few ERP success stories, Kansel [6] also stated that a large number of ERP implementations still fail to meet expectations.

This paper addresses the issue of ERP failure. It considers nine critical success factors (CSFs) in the initial phase of ERP implementation. The case of Company X is analysed with respect to the identified CSFs. The findings allow conclusions to be made as to why the implementation of the ERP system at Company X failed in its initial phase.

2. What is an ERP System?

An Enterprise Resource Planning (ERP) system is a commercial software package [2, 10, 7] that promotes seamless integration of all the information flowing through a company [2]. Laudon *et al* [8] explain that an ERP system collects data from various key business processes, he states that the key business processes are: manufacturing and production, finance and accounting, sales and marketing, and human resources. The system then stores the data in a single comprehensive data repository where they can be used by other parts of the business. Managers have precise and timely information for coordinating the daily operations of the business and a firm wide view of business processes and information flows.

Davenport [2] explains how an ERP system can work, '*A Paris-based sales representative for a U.S. computer manufacturer prepares a quote for a customer using an ERP system. The salesperson enters some basic information about the customer's requirements into his laptop computer, and the ERP system automatically produces a formal contract, in French, specifying the products configuration, price and delivery date. When the customer accepts the quote the sales rep hits a key; the system after verifying the customer's credit limit, records the order. The system schedules shipment; identifies the best routing; and then working backward from the delivery date, reserves the inventory; orders needed parts from suppliers; and schedules assembly in the company's factory in Taiwan*'.

3. Why an ERP System?

During the 1990's, ERP systems became the de facto standard for the replacement of legacy systems[1] [5]. Somers *et al* [15] claim there are numerous reasons for the increasing demand of ERP systems, for example, competitive pressures to become a low cost producer, expectations of revenue growth, ability to compete globally and the desire to re-engineer the business. Markus *et al* [10] explains that ERP systems are rich in terms of functionality and potential benefits. She continues to explain that companies are implementing ERP systems for many different reasons, some companies have largely technical reasons for investing in ERP systems, other companies have mainly business reasons (Table 1).

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[1] Legacy systems are existing computer systems, often referred to in this way to refer to existing systems as 'antiquated'.

Table 1. Reasons for Adopting Enterprise Systems, Markus *et al* [10]

Technical reasons	Business reasons
• Solve Y2K and similar problems	• Accommodate business growth
• Integrate applications cross- functionally	• Acquire multi language and multicurrency IT support
• Replace hard-to-maintain interfaces	• Provide integrated IT support
• Consolidate multiple different systems of the same type (e.g., general ledger packages)	• Standardize different numbering, naming, and coding schemes
• Reduce software maintenance burden through outsourcing	• Improve informal and/or inefficient business processes
• Eliminate redundant data entry and concomitant errors and difficulty analyzing data	• Clean up data and records through standardization
• Improve IT architecture	• Standardize procedures across different locations
• Ease technology capacity constraints	• Reduce business operating and administrative expenses
• Decrease computer operating costs	• Present a single face to the customer
	• Reduce inventory carrying costs and stockouts
	• Acquire worldwide "available to promise" capability
	• Streamline financial consolidations

4. Understanding Critical Success Factors and Failure Factors

Gargeya e*t al* [3] reported on the success and failure factors of adopting SAP, a popular ERP system. Six factors that contributed to the success and failure of ERP implementation were identified in total.

1. Working with SAP functionality/maintained scope
2. Project team/management support/consultants
3. Internal readiness/training
4. Deal with organisational diversity
5. Planning/development/budgeting
6. Adequate testing

They noted that the primary factors for success (Factor 1 and Factor 2), were different to the primary factors for failure (Factor 3 and Factor 5). Gargeya *et al* [3] noted the factors that contribute to the success of SAP implementation are not the same as the factors that contribute to the failure. This point states that this paper should be focusing on one set of factors to understand failure and another set of factors to understand success.

Umble *et al* [17] claim there are nine CSFs, from these they proposed ten reasons why ERP implementations failed within a manufacturing environment (Table 2). This work contradicts the conclusions of Gargeya *et al* [3] because nine of the reasons for failure are the same as what they define to be CSF. They are in fact stating that the factors for success and failure are the same.

Table 2. CSFs and reasons for failure, Umble *et al* [17]

	Critical Success Factors		Reasons for Failure
1.	Clear understanding of strategic goals	1.	Strategic goals are not clearly defined
2.	Commitment by top management	2.	Top management not committed
3.	Excellent project management	3.	Implementation project management is poor
4.	Organisational change management	4.	The organisation is not committed to change
5.	A great implementation team	5.	A great implementation team is not selected
6.	Data accuracy	6.	Data accuracy is not ensured
7.	Extensive education and training	7.	Inadequate education and training
8.	Focused performance measures	8.	Performance measures are not adopted to ensure that the organisation changes
9.	Multi site issues	9.	Multi site issues are not properly resolved
		10.	Technical difficulties

Researchers have focused extensively on the CSF's of ERP implementations. Loh *et al* [9] state that there is an increasing amount of research in this area. Somers *et al* [15] suggest that the failure of ERP implementations calls for a better understanding of CSFs. So indeed it has been a common trend in research, to understand and compile CSFs in order to help practitioners avoid failure.

Although Gargeya *et al's* [3] work states that different factors contribute to success and failure of ERP implementation. Umble *et al's* [17] work contradicts this. In this vein, this paper believes it is logical to consider the CSFs of ERP implementations in terms of Company X in order to understand why the project failed.

5. The Initial Phase of an ERP Implementation

Somers *et al* [15] suggest that CSFs are much richer when viewed within the context of their importance in each stage of the implementation process. This paper will concentrate on ERP CSFs at what it defines to be the 'initial phase' of implementation, as this is the relevant research in relation to the case study of Company X. This paper defines the initial phase as a mixture of what Parr *et al* [12] consider to be called the 'planning phase' and Markus *et al* [10] label as the 'Chartering phase'.

Table 3. The Planning Phase [12] and the Chartering Phase [10]

Parr *et al* (2000) Planning Phase	Markus *et al* (2000) Chartering Phase
• Assembly of a steering committee	• Building a business case
• Determination of high level project scope and broad implementation approach	• Selecting a software package
• Selection of a project team manager	• Identifying a project manager
• Resource determination	• Approving a budget and a schedule

Table 3 outlines what Parr *et al* [12] and Markus *et al* [10] believe is involved in this phase. To clarify, the initial stage of ERP implementation in this paper is defined as involving; building a business case, the assembly of a steering committee and a project manager, approving a budget and a schedule and selecting a software package.

6. Critical Success Factors in the Initial Phase of an ERP Implementation

Loh *et al* [9] considered twenty one CSFs in SMEs. The CSFs were deduced to ten based on the grouping of similar factors together and the need for referral by five references. These ten critical success factors were then linked to their particular phase of ERP implementation adapted from the phases of Markus *et al* [10]. Loh *et al*'s [9] CSFs for the chartering phase are:

1. Project Champion
2. Business Plan and Vision
3. Project Management
4. Top Management Support

Based on the work of earlier papers, Nah *et al* [11] identified eleven factors that were critical to ERP implementation success. They too classified their CSFs into Markus *et al's* [10] phases of the ERP project lifecycle. In the chartering phase the factors noted by them are:

1. ERP Teamwork and Composition
2. Top Management Support
3. Business Plan and Vision
4. Effective Communication
5. Project Management
6. Project Champion
7. Appropriate Business and Legacy systems

Parr *et al* [12] considered two organisations implementing an ERP system and what CSFs they used in each stage. The CSFs identified at the planning phase were:

1. Management Support
2. Commitment to the Change
3. A Champion for the Project
4. A Vanilla ERP Approach

This paper intends to combine the work of Loh *et al* [9], Nah *et al* [11] and Parr *et al* [12] to obtain a unified framework of CSFs for the initial phase of an ERP implementation (Table 4).

Table 4. Unified framework of CSFs at the initial phase of an ERP implementation

CSFs at the Initial Phase	Loh *et al* (2004)	Nah *et al* (2001)	Parr *et al* (2000)
Project Champion	✓	✓	✓
Project Management	✓	✓	
Business Plan and Vision	✓	✓	
Top Management Support	✓	✓	✓
ERP teamwork and Composition	✓	✓	
Effective Communication	✓	✓	
Appropriate Business & Legacy systems		✓	
Commitment to the Change			✓
A Vanilla ERP Approach			✓

9th International Conference on Enterprise Information Systems, Madeira, Portugal.

6.1 Project Champion

Parr *et al* [12], state that a project champion is an advocate for the system who is unswerving in promoting the benefits of the new system. The project champion should be a high-level executive sponsor who has the power to set goals and legitimise change [11]. It is a CSF that there is a project champion with these attributes is involved in an ERP implementation.

6.2 Project Management

According to Loh *et al* [9], good project management is vital and that the scope of the ERP implementation project should be established and controlled. This includes the system implemented, the involvement of business units and the amount of project reengineering needed. They continue to explain that the project should be defined in terms of milestones and critical paths. Deadlines should also be met to help stay within the schedule and budget and to maintain credibility [9].

6.3 Business Plan and Vision

A clear business plan and vision to steer the direction of the project is needed throughout the ERP lifecycle [1]. There should be a clear business model, a justification of investment, a project mission and identified goals and benefits [11].

6.4 Top Management Support

Parr *et al* [12] describe top management support as top management advocacy, provision of adequate resources and commitment to the project. Top management need to publicly and explicitly identify the project as a top priority [11]. Senior management must be fully committed with its own involvement and have a willingness to allocate valuable resources to the implementation effort [5].

6.5 ERP Teamwork and Composition

The ERP team should consist of the best people in the organisation [1]. Building a cross functional team is also critical [11]. The team should have a mix of consultants and internal staff so the internal staff can develop the necessary technical skills for design and implementation. Both business and technical knowledge are essential for success [11]. Managers should be assigned full time to the implementation and partnerships should be managed with meetings scheduled regularly [9].

6.6 Effective Communication

Effective communication is critical to the success of ERP implementations [9]. Communication includes the formal promotion of project teams and the advertisement of project progress to the rest of the organisation [5]. Expectations at every level need to be communicated [11]. Nah *et al* [11] state that communication should penetrate all levels in the company, from upper managers to bottom operators, everyone should

know what to expect in the business process change. They continue to explain that communication increases the willingness of people to change and take part.

6.7 Appropriate Business and Legacy Systems

Nah *et al* [11] believe that appropriate business and legacy systems are important in the initial phase of the project as a stable and successful business setting is essential. They continue to explain that business and IT systems involving existing business processes, organisational structure, culture, and information technology effect success. The existing business and legacy systems determine the IT and organisational change required for success [5].

6.8 Commitment to the Change

Parr *et al* [12] define the commitment to the change as perseverance. They state that a company should have determination in the face of inevitable problems with implementation.

6.9 A Vanilla ERP Approach

According to Parr *et al* [12], a company should have a vanilla ERP approach in order to be successful. Parr explains that essentially a vanilla approach involves a minimum customisation and an uncomplicated implementation strategy. Organisations should be willing to change the business to fit the software with minimal customisation [5]. Holland *et al* [5] state that an organisation should try to purchase the package that fits best into its business processes.

7. Case Study: ERP Non-Implementation at Company X

This Case Study is a description of Company X's experiences which unfolds whether or not they achieved the CSFs identified in section six. This research is taken from the perspective of the author who was the project manager of the ERP implementation at Company X. As well first hand experience, documentation such as project proposals, vendor contracts and company research has been referred to.

7.1 Project Champion

The project management (the author) was mainly responsible for the role as the project champion. As a new employee solely employed to project manage the project, most questions and queries were directed towards her. The product Company X had chosen to implement was a well known ERP system, implemented in many companies worldwide. The project manager was able to promote the product knowing the functionality and the quality of the ERP system. However, as the project progressed and the project managers confidence in the system dropped due to the mismatch of the system and the companies requirements, the project manager no longer felt the same way about the system and this fact was picked up on by other members of staff.

7.2 Project Management

Project management at Company X could have been better. At the beginning of the project there was much uncertainty of the tasks that needed to be involved to complete the project. Communication errors had led the ERP vendors to believe they were implementing a smaller system than was required, for example, they had not been informed that any manufacturing modules were required. They were also not enlightened as to the timescales that the company wished to work to, so consequently their initial implementation dates and plans were effectively useless. The company created their own project plan including milestones. Again this suffered from being produced with communication errors as the ERP vendors input was not used. The plan was created not knowing any detail of the ERP system and how long the implementation of the software would actually take. Once the differing project plans were recognised, the problem was addressed. New plans were not drawn up however because the problem of the ERP system not fitting the company was highlighted, and this problem needed to be addressed before any further plans could be made.

7.3 Business Plan and Vision

Upon investigation it was evident Company X did not have a clear business plan and vision for the ERP system. Although some goals and benefits were identified, nothing was documented properly and defined in a united format. In November 2005, at the beginning of the project manager's recruitment, there was no clear idea what the ERP systems intention was. The modules of the ERP system that were purchased contradicted the majority of senior managers' ideas of what the system would do and what was actually required by the system. It was established that a project mission was non existent. The justification of investment was also a subject not approached in great detail.

7.4 Top Management Support

The senior management at Company X were committed to the project. Three of the four Directors were members of the steering committee, which meant they gave their input on the project on a regular basis. All of the steering committee members were encouraged to be committed to the project by the Directors. The budget for the ERP system had been approved and committed in the form of a contract between Company X and the ERP vendor. Overall time and money was allocated. The project however, may have benefited from top management publicly and explicitly identifying the project as their top priority. As the project progressed, the existing Managing Director left the company. A new Managing Director joined the company. The resources that had previously been allocated for the project were now in question. Especially as the project scope looked as if it was going to increase which of course meant the cost of the project would increase. The concerns from the new Managing Director made the commitment of the other Directors involved in the projects waver. This was portrayed in lack of attendance in meetings.

7.5 ERP Teamwork and Composition

The steering committee was cross functional. It consisted of the senior manager of each department and all of the directors that were available. An ERP consultant was also involved at the initial phase of the project. The ERP consultant's knowledge regarding the chosen ERP system was limited, although he still contributed well to the team. It would have been preferable to assign more than one person to the project full time, however because Company X is a SME this was simply not feasible. All the team were committed and meetings were scheduled regularly. Overall Company X achieved well in terms of teamwork and composition.

7.6 Effective Communication

Company X communicated well within the steering committee group. However, communication to outside of the steering committee was limited. Users could find out about the ERP project by asking questions of the steering committee, however no other formal way of communication was identified. In hind sight the project should have had newsletters or made use of notice boards and intranets.

7.7 Appropriate Business and Legacy Systems

Company X had its business faults prior to the ERP system implementation. Some business processes were duplicated or ineffective, especially processes that stretched over departments. Employees were allowed to carry out tasks in their own ways, which led to array of formats and systems. Business processes did not seem to be the businesses priority, rightly or wrongly the opinion seemed to be that as long as the job got done, it was ok. The organisational culture was not completely open to a new computer system either. Previous failed implementations of an ERP system had left the organisation guarded. Company X possibly was not the right company to adopt an ERP system, especially at that time.

7.8 Commitment to the Change

Company X was committed to the project. All the steering committee gave the project their full attention in terms of attending all the required meetings, doing all of the work required and being positive about the project. When problems occurred with the fit of the ERP system, the steering committee focused on all of options that were available at the time and came up with the most appropriate solution. The company can be seen as being committed to the change from this perspective.

7.9 A Vanilla ERP Approach

Company X had a vanilla ERP approach. They realised the time and cost implications of customising an ERP system extensively. They were extremely anti – customisation, this was made clear in all of the initial meetings.

Reviewing the business processes began shortly after the employment of the project manager. It immediately became apparent that the ERP system selected was a bad fit for Company X. Company X manufacture make to order furniture, they need the flexibility to make almost anything requested. This means that Company X needed an ERP system with a good product configurator. The ERP system selected did not have a product configurator. The vendors did not suggest using an external configurator or integrating the system with the existing bill of material system. It was later discovered that this may have been because the ERP vendor had never implemented the system in a similar manufacturer and the system was mainly marketed towards service organisations not manufacturing. Although Company X had a vanilla ERP approach. This approach was distorted because of the current situation. Company X could not implement the chosen ERP system in a vanilla format because it was a bad fit for the company.

Table 4: Summary of the extent Company X achieved each CSF

CSFs at the Initial Phase	Company X achieved	Company X partly achieved	Company X did not achieve
Project Champion		✓	
Project Management		✓	
Business Plan and Vision			✓
Top Management Support		✓	
ERP Teamwork and Composition	✓		
Effective Communication		✓	
Appropriate Business & Legacy systems			✓
Commitment to the Change	✓		
A Vanilla ERP Approach		✓	

8. Discussion

Company X's ERP system failed to be implemented, it failed in the initial phase. What constitutes ERP failure can be questioned. However it is almost irrefutable that the ERP system at Company X failed.

So why did it fail? Company X successfully achieved the CSFs, teamwork and composition and commitment to the change. They had a cross functional steering committee who were committed to the project, attended scheduled meetings regularly and faced the problems with the ERP system with determination. However, Company X's ERP implementation failed to be implemented; so it appears that achieving two CSFs, teamwork and commitment to change were not enough to make a successful ERP implementation in the initial phase.

It can be said that Company X only partly achieved the CSFs, project champion, project management, top management support, effective communication and a vanilla ERP approach. There was a project champion, however as the project progressed, the project champions promotion for the project diminished. Project Management of the ERP implementation was not admirable; the project plans differed between the ERP

vendor and Company X so the timescales were not defined. The project was clearly supported by three Directors, however top management support was hindered by the existing Managing Director leaving the company. His replacement was a new Managing Director who did not support the project. Communication within the steering committee was good, however, communication outside of the steering committee outside of the project was limited. There was no formal way of communicating the project to users. Although the company had a vanilla ERP approach, the selected ERP system was not a good fit to the companies processes so the vanilla approach was distorted. Company X only partly achieved five CSFs. A partly achieved CSF could have been a reason for the ERP failure. For example, the Project Champion's diminishing support for the project could have led to the rejection of the ERP system to the users which then progressed to the rejection of the system by the steering committee and a discontinuation of the whole project. Effectively, to only partly achieve can be said to fail in some way, and that partial failure could have led or contributed to the whole system failure.

Company X did not achieve the CSFs, business plan and vision and appropriate business and legacy systems. Although some goals and benefits were identified, nothing was documented properly and defined in a unified format. The company did not have the appropriate business and legacy systems. The culture at Company X was guarded against a new IT system. Failing to achieve these CSFs could have been the reasons for the failure of the ERP in the initial phase.

This research has distinguished that there is not one reason for the failure of Company X's ERP system. This research has defined seven reasons (five partly achieved CSFs and two not achieved CSFs) out of nine reasons that may have caused failure. Gargeya [3] found that factors leading to success and failure are complex and do not occur alone. This research clearly supports this assumption.

9. Conclusion

Considering CSFs has allowed the authors to explore a wide variety of explanations for the ERP failure in the initial phase of implementation at Company X. Prior to this research, it was deemed by the authors that Company X's ERP demise was simply due to lack of support of the project by the Managing Director. However, looking at the case in terms of CSFs, it was discovered that although lack of top management was a critical factor, it was not the only factor that led to the ERP failure. Company X only partly achieved and did not achieve in total seven CSFs. So in total, this paper has identified seven reasons for the failure of the ERP implementation at Company X.

This research is extremely useful for Company X to understand when they undertake IT projects in the future. Recognising what the CSFs are and that they need to be achieved will encourage successful IT implementations. This research is also useful for researchers and practitioners who wish to implement ERP systems. They will know that nine factors need considering in the initial phase of ERP implementation, and failure to meet or to only partially meet seven of these factors results in failure.

This paper is limited because it fails to identify the importance of each CSF in the initial phase of ERP implementation, for example whether the non achievement of one CSF is more critical to failure than others. This paper proves that the failure and the partial failure of seven out of nine CSFs cause ERP failure in Company X, however it does not recognise how many non achieved CSF were actually necessary to cause failure. This paper also fails to recognise if a particular combination of factors led to the ERP failure, for example, if the non achievement of two CSFs together signifies failure.

This research would be validated further if the same conclusions were made by considering the subject from a different perspective; possibly looking at the ERP implementation from a user perspective, the Managing Director's perspective or the ERP vendor's perspective.

References

1. Buckhout S, Frey E and Nemec J, 'Making ERP Succeed: Turning Fear into Promise', IEEE Engineering Management Review, Second Quarter, 1999, pp116-123.
2. Davenport T H, 'Putting the Enterprise Back into the Enterprise System', Harvard Business Review, July-August 1998, pp121-131.
3. Gargeya V B and Brady C, 'Success and Failure factors of adopting SAP in ERP System Implementation', Business Process Management Journal, Volume 11, No 5, 2005, pp 501-516.
4. Ho C F, Wu W H and Tai Y M, 'Strategies for the Adaptation of ERP systems', Industrial Management and Data Systems, Vol 104, No 3, 2004, pp 234-251.
5. Holland C P and Light B, 'A Critical Success Factors Model for ERP Implementation', IEEE Software, May-June 1999, pp 30-36.
6. Kansel V, 'Enterprise Resource Planning Implementation: A Case Study', The Journal of American Academy of Business, Cambridge, Vol 9, No 1, March 2006, pp165-170.
7. Kim Y, Lee Z and Gosain S, 'Impediments to successful ERP implementation process', Business Process Management Journal, Vol 11, No 2, 2005, pp 158-170.
8. Laudon KC and Laudon J P, 'Management Information Systems', Pearson Education, New Jersey, 2006.
9. Loh T C and Koh S C L, 'Critical Elements for a Successful Enterprise Resource Planning Implementation in Small and Medium Sized Enterprises, International Journal of Production Research, Volume 4, 17 September 2004, pp 3433-3455.
10. Markus M L and Tanis C, 'The Enterprise System Enterprise – From Adoption to Success', in R W Zmund, 'Framing the Domains of IT Research', Pinnaflex Educational Resources, 2000, pp173-207.
11. Nah F F and Lau J L S, 'Critical Factors for Successful Implementation of Enterprise Systems', Business Process Management Journal, Vol 7, no 3, 2001 pp 285-296.
12. Parr A and Shanks G, 'A Model ERP project Implementation', Journal of Information Technology, Vol 15, 200, pp289-303.
13. Ross J W, 'Surprising Facts about implementing ERP', IT Professional, Vol 1, No 4, 1999, pp 65-68.
14. Soh C, Kien S S and Tay-Yap, 'Cultural Fits and Misfits: Is ERP a Universal Solution', Communications of the ACM, Vol 41, No 4, April 2000, pp 47-51.
15. Somers T M and Nelson K, ' The Impact of Critical Success Factors across the Stages of Enterprise Resource Planning Implementations', Proceedings of the 34th Hawaii International Conference on System Sciences, January 3-6 2001.
16. Taube L R and Gargeya V B, 'An Analysis of ERP System Implementation', The Business Review Cambridge, Vol 4, No 1, Summer 2005, pp 1-6.
17. Umble E J, Haft R R, Umble M M, 'Enterprise Resource Planning: Implementation Procedures and Critical Success Factors', European Journal of Operational Research, Volume 146, 2003, pp 241-257.