Evaluating Enterprise Resource Planning (ERP) Systems using an Interpretive Approach

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ABSTRACT

Enterprise Resource Planning (ERP) systems involve the purchase of pre-written software modules from third party suppliers, rather than bespoke (i.e. specially tailored) production of software requirements, and are often described as a *buy* rather than *build* approach to information systems development. Current research has shown that there has been a notable decrease in the satisfaction levels of ERP implementations over the period 1998-2000.

The environment in which such software is selected, implemented and used may be viewed as a social activity system, which consists of a variety of stakeholders e.g. users, developers, managers, suppliers and consultants. In such a context, an *interpretive* research approach (Walsham, 1995) is appropriate in order to understand the influences at work.

This paper reports on an *interpretive* study that attempts to understand the reasons for this apparent lack of success by analyzing issues raised by representatives of key stakeholder groups. Resulting critical success factors are then compared with those found in the literature, most notably those of Bancroft *et al* (1998).

Conclusions are drawn on a wide range of organizational, management and political issues that relate to the multiplicity of stakeholder perceptions.

Keywords

ERP evaluation, interpretive study, stakeholder analysis.

1. INTRODUCTION

Enterprise Resource Planning (ERP) systems may be defined as the implementation of standard software modules for core business processes, usually combined with bespoke customization for competitive differentiation. The aim is to provide breadth of integration and depth of functionality across multi-functional and often multi-national organizations. For many organizations, such development may begin with a single pilot project, or within a single business function. However, potential for extension to corporate-wide integration remains a key factor of an ERP implementation.

Commercial off-the-shelf software has been available since the 1960s, with companies preferring to *buy* rather than *build* their information systems in order to minimize the risks historically associated with bespoke development. However, an ERP system is more than the use of stand-alone pre-written software. It is a change management initiative, which encompasses a review of processes across the whole organization, requiring careful management. This may be achieved via a Business Process Re-engineering (BPR) exercise, which can be viewed as the prologue to the implementation of the project.

The last ten years have seen a dramatic growth in the use of ERP systems, in particular by world-class organizations eager to develop an international information systems strategy. Key drivers in this trend can be summarized as:

- Legacy systems and Year 2000 system concerns
- Globalization of business
- Increasing national and international regulatory environment e.g. European Monetary Union
- BPR and the current focus on standardization of process e.g. ISO9000
- Scaleable and flexible emerging client/server infrastructures
- Trend for collaboration among software vendors

ERP is often viewed as a new paradigm for information systems development, because of the following differentiating factors:

- The number and variety of stakeholders in any implementation project
- The high cost of implementation and consultancy
- The integration of business functions

- The consequent configuration of software representing core processes

- The management of change and political issues associated with BPR projects

- The enhanced training and familiarization requirement

Historically, packaged software was seen to fulfil specific functional roles in an organization. Although current packaged applications, in the form of ERP systems, consist of standard multi-functional, multi-language, multi-legislative software modules, and can offer integration across an entire organization.

However, Davenport (2000) has identified a number of corporate ERP failures and argues that companies are doing more than installing a computer system, but are in fact, changing the way the company is organized and often acting against the prevailing company culture. Ezingeard and Chandler-Wilde (1999) found few examples that involve ERP systems as a source of business advantage. In fact, there have been some notable reported failures e.g. Dell, Fox-Meyer and Hershey. A Gartner group survey (Hunter, 1999) was carried out in 1300 European and American companies and found that 32% of ERP projects were delivered late.

This paper aims to look into this situation by utilizing an appropriate research design.

2. RESEARCH METHODOLOGY

Walsham (1995) outlines the interpretive strand in information systems research, which has been dominated by positivist approaches, as follows:

Interpretive methods of research adopt the position that our knowledge of reality is a social construction by human actors. In this view, value-free data cannot be obtained, since the enquirer uses his or her preconceptions in order to guide the process of enquiry, and furthermore the researcher interacts with the human subjects of the enquiry, changing the preconceptions of both parties. Interpretivism contrasts with positivism, where it is assumed that the 'objective' data collected by the researcher can be used to test prior hypotheses or theories.

Wynekoop and Russo (1997) review research methods, which may be used for investigating the use, adaptation and evaluation of system development methods, defining interpretive research as:

An attempt to understand a phenomenon, by studying it in its natural context from participants' perspectives. No controls, a priori theories or attempts to generalize. Includes case studies and action research from this perspective.

Myers (1998) in a discussion of interpretive field research, states:

In more traditional positivist techniques, context is treated as either a set of interfering variables that need controlling, known as noise in the data, or other controlled variables which are experimentally set up in order to seek for cause and effect relationships. The context of a situation is seen as something that can be factored out of the analysis or operationalised as a variable. In interpretive approaches, however, context is treated as the socially constructed reality of a named group, or groups, of social agents and the key task of observation and analysis is to

unpack the webs of meaning transformed in the social process whereby reality is constructed.

When examining any ERP project, the situation becomes complex because of the variety of associated stakeholders and the interrelationships between them. Some of the important factors and issues may be illustrated by a *rich picture* (Figure 1). A *rich picture* shows the key issues and relationships within a human activity system in a simple and straightforward pictorial manner, providing the reader with the 'richness' of a particular situation. This type of diagram is normally used as part of the formulation stage of a soft systems analysis project (Checkland and Scholes, 1990), and is extremely useful when faced with the type of unstructured or 'messy' environments encountered in business and systems development.

Figure 1 shows the four key parties i.e. management, users, developers and consultants, with possible areas of conflict indicated by a 'crossed-swords' symbol. These conflict points are a potential source of problems that may seriously affect project success. The 'think' bubbles provide a simplified indication of the thoughts and emotions typically encountered by the four parties when involved in this activity.

The authors believe that within the context of an ERP project, an interpretive approach is appropriate, in order to capture the corresponding contextual *richness* and complexity.

Therefore, interviews were held with firms that have implemented or are in the process of implementing ERP systems. Representatives were interviewed from five organizations, which will be known as Company A, B, C, D and E, to preserve confidentiality and encourage frankness in discussions.

The aim of the interviews was to identify the key issues of concern with individuals who have actually been involved in and managed the ERP change process. Data was gathered through a series of interviews that lasted between one and two hours.

A semi-structured questionnaire formed the basis for the interviews, but allowed scope for further, alternative lines of questioning if, during the discussions, this appeared necessary. All questions were open-ended. The framework used for the interviews was Bancroft's (1998) nine critical success factors (CSFs). The reason for this is that much of the ERP literature is congruent with these CSFs, which are:

Communicate continuously with all levels of new users in business, not technical terms. Set reasonable expectations. Then communicate again.

Provide superior executive championship for the project.

Understand the corporate culture in terms of readiness and capability for change

Begin business process changes prior to implementation. Make the hard decisions early and stick to them.

Ensure the project manager is capable of negotiating equally between the technical, business and change management requirements.

Choose a balanced (IS and business) team, and provide it with clear role definitions. Expect to shift to non-traditional roles.
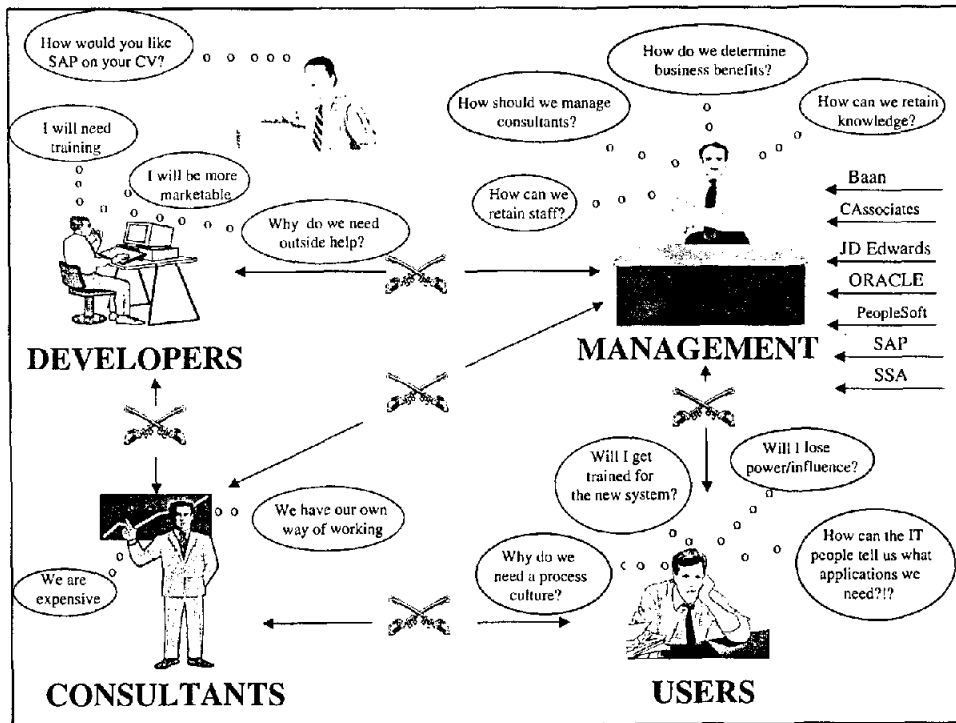
Figure 1. Rich Picture depicting ERP Project

Select a good project methodology with measurements

Train users and provide support for job changes. Don't forget to train the project team.

Expect problems to arise: commit to change.

Each interview was documented and summarized. Through a preliminary analysis of the first set of interviews, responses to each question were coded into themes. The interviews focused on identifying and reviewing the various internal and external stakeholders that are key to driving the ERP change process.

Specifically, the research studied managers, consultants, developers and users in order to consider their power to affect the ERP project and the different types of influence strategies. Interviews were conducted between July and September 2000.

The research examined stakeholders, change management techniques and internal politics through in-depth case studies. It also analyzed the constraints that inadequate communications and people skills have on the success of an ERP project.

Although it was recognized that, by only interviewing people from a small number of organizations, personal bias could distort the findings, the timescale did not allow for multiple interviews at a large number of organizations with users, implementers and executives. The conclusion of the research takes this into consideration. As companies are also becoming increasingly unwilling to divulge commercially sensitive information to outsiders, it was felt beneficial to concentrate on five in-depth case studies.

3. CASE STUDIES

Company A is an international food group, which incorporates a leading European business. The UK division is involved in a three year ERP project (1998-2001) based on SAP's R/3 product.

Company B is a German based company manufacturing and distributing a comprehensive range of household appliances. In 1997, the company purchased an ERP system in order to solve the Y2K problem, produce timely and accurate management information, help streamline current processes and unite the operations of the group. In January 1998, the company embarked on implementing SAP R/3. Those subsidiaries with non-Y2K compliant systems were converted to SAP R/3 by mid 1999, while the remaining subsidiaries will have the product installed by mid-2001.

Company C is a large financial broker based in France. The financial sector has evolved dramatically due to technological advancements and the move from open outcry to electronic trading. To maintain their market position, the company reviewed its business processes and integrated its computer systems. This enabled it to contain its costs and apply a policy of diversification, but resulted in a difficult environment due to major restructuring.

Company D and its subsidiaries are involved in international manufacture and distribution of branded beverages, confectionery and related foods. In the mid 1990s, it implemented a major ERP system in order to streamline business processes and integrate its operations. However, the project was beset with many problems such as difficulty in matching orders with stock items.

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Company E is a UK regulatory authority that is involved in a major change management programme that includes new systems to support their organizational, people and technology strategies.

The case studies show that companies in both the public and private sector are going through continual change. They must carry out these changes in congruence with their individual business contexts and cultures. The interviewees were all able to share their knowledge and experiences in either ERP implementations or extensive change management programmes in which roles and responsibilities change, divisions merge or disappear entirely. The analysis and results are summarized below using the stakeholder classification identified in Figure 1, and consider the key issues that emerged concerning stakeholders' power and influence over the ERP project and the strategies for gaining support for the project.

4. MANAGEMENT ISSUES

4.1 Incentives

Retaining key people with a broad range of skills and knowledge is important. In Company A's experience, continuity appears to be a big problem with ERP projects that can be delayed because of staff turnover. Retaining the key people through bonuses, share options etc., as well as non-monetary rewards such as recognition and career development, appears to be critical to long term success.

Interviewees suggested the best way to get support for the project is for the entire senior executive team to have bonuses tied to the achievement of benefits and this should not end when the system goes live, but continue as on-going benefits are achieved. For example, 25 percent of the executive team's compensation could be tied to accomplishing ERP process and financial performance goals. This can also extend to the key players. For example at Companies A and B, loyalty bonuses were awarded to all the staff viewed as key players in the project team.

4.2 Top Management

For the ERP project to have the best chance of success it must have the commitment of the Managing Director (or equivalent). Placing a senior business executive in the role of sponsor rather than another board executive conveys the message that an ERP project is a business initiative, and not merely a technology project.

It gives the project political clout. Linked to this is the power and influence of the Managing Director (MD). For example, the MD at Company A has a strong character and did not "let people off the hook too easily". He measured progress every week. He also appeared to understand the depth of the changes required, which was a bonus for the project team. The research found that continuity of MD sponsorship throughout the project is critical, as it shows commitment to the project. He also has the final say and can resolve conflicts of interest.

4.3 Project Board Stakeholders

By getting the key players involved from the start, an organization can reduce major power blockages to change. Company A found that the selection of the project board members was a key critical success factor and that getting them involved was a successful strategy.

4.4 Involvement from the start

At Company A, the Marketing Director was not involved at the start, which caused problems not only because of his political influence but also because the Marketing and Sales Director/Finance Director interface was viewed as very important. The sales and finance processes would have a much greater link following ERP implementation. Their divisions needed to speak to each other much more often and communication between divisions starts at the top.

4.5 Project Director

Company A's Project Director had a good understanding of what was going on and was very influential. He had previously implemented SAP R/3 at another organization and his experience was essential to manage conflicts that arose before and after implementation.

4.6 Customers

Company A reported that one of their supermarket customers had told them that they experienced a lack of communication when other suppliers had introduced ERP systems. Keen to avoid the same pitfalls, the project team set up a series of workshops for employees who deal with customers. During the workshops participants discussed how to brief customers about the changes, and walked through some elements of SAP R/3.

Teams of Business Account Managers went on to make presentations to the top ten customers that Company A supplies, and also approached smaller customers. The main aim was to give customers confidence in the implementation plans and help them understand what they were trying to do. The account managers worked on go-live and contingency plans with their opposite numbers at each company, to avoid panic ordering prior to going live.

5. CONSULTANTS

This section examines the consultants' role and suggests that consultants are a very important influence in the implementation of ERP projects, but that closer monitoring and control of their involvement is required.

5.1 Knowledge Transfer

Company A said that it is important to transfer the consultants' knowledge in-house as quickly as possible. Company C supported this argument, and said that they prefer knowledge to be in-house rather than "allowing it to walk out of the door".

It was felt that the power and influence of a consulting firm can be too great, and they often provide standard solutions for business problems. In defence of consultants, one interviewee said that they could not possibly understand their client's business and culture in sufficient detail in a limited time period to provide exactly what is required.

Companies are also making it clear in contracts that consultants must also transfer knowledge wherever possible allowing firms to save money on off-site user and developer training.

5.2 Motivation

Since consultants are involved in a major part of the implementation of most ERP projects, they should be encouraged to help achieve the business benefits. When process performance

targets reach a certain level, it was suggested that consultants could be paid a bonus.

5.3 Communication

Company A felt that with their consultants, it was definitely a 'them and us' scenario, as communication was particularly poor. They also felt that the consultant's documentation for the ERP project should have been a lot more tailored to client needs. Descriptions were different from that which the company's management and staff were used to seeing within the organization e.g. a costing invoice was called a 'different outlet' which did not make much sense to their employees. Clearly, the consultants were talking a different language, without much thought to how they were communicating their messages.

The research revealed that that consultants tended to employ a particular type of person, who often found it difficult to communicate with people at lower levels, such as factory workers.

Consultants often put a heavy reliance on e-mail with less direct contact, whereas Company A preferred telephone communication.

5.4 Managing Consultants

To ensure maximum knowledge sharing, Company A introduced a 'Buddy' system whereby all key players had a consultant 'Buddy'. This was also part of their strategy to capture and retain knowledge.

Company D experienced many problems with consultants and stressed the importance of being able to manage the relationship with them. An example they gave concerned not only the consultants but also the software vendors. When Oracle sold Company D the software, they recommended an implementation partner. This is normal practice and a 'big six' consultancy firm such as Andersen or Price Waterhouse is usually recommended. Firms such as Andersen usually deal with the business process review side and another firm of IT consultants is hired to deal with the configuration side. As a result, Company D were dealing with three separate organizations. This led to massive problems when the ERP system would not work. The software vendor and both consultants blamed each other for the problems and were not willing to take responsibility.

Companies implementing ERP can learn a lesson from Company D's problems and make it clear in the contractual documentation who is responsible in the event of ERP failure.

5.5 Agenda Differences

When Company D went through their ERP implementation in the mid-1990s, they found that the consultants also wanted to get the ERP job done as quickly as possible, and appeared to be following their own agenda. The reason for this is that ERP was growing at phenomenal rates in the mid-1990s, but without the same increase in experienced quality staff to do the work. As a result, consultants were trying to get the job done so that they could move onto the next client. It could be argued that consultants were thriving on the demand for their skills, with low commitment to organizations.

The research also found that some consultants had a lack of experience of working on ERP projects. The interviewees questioned consultants' technical and business skills. Time overruns were also quite common. It could be argued that once

hired they could hold a company to ransom. This emphasizes the need to vet consultants closely before signing the contract.

5.6 Influence of Consultants

Three of the interviewees said the influence of the consulting firm is huge. Company A's staff often felt that the consultants were running the project, and were doing the project announcements. This was not what Company A wanted and the situation was soon reversed.

Clearly, the reason for their power and influence is not just because of their ERP knowledge and experience, but also because managers are so busy in their day to day jobs that they do not have the time to come up with ideas. One senior manager remarked that the higher a manager's status, the narrower his skills. Spending more time in meetings, they rely more on people around them to have the other skills. Consequently, consultants are paid to come up with ideas and as a result have become more influential.

5.7 Contracts

Contractual agreements are now being looked at more closely to address some of the problems with consultants. Firms have now become much more battle hardened since the mid-1990s. Contracts can now include the right to remove consultants whose performance is considered unsatisfactory. In particular, no inexperienced consultants are now tolerated in many organizations. For example, when Siemens implemented SAP R/3 they stated that they would not be liable for any cost overruns in consulting fees beyond 20% over budget (Hirt and Swanson, 1999). This is a good sign for the future showing that organizations are now requiring more value for money from their projects.

6. DEVELOPERS

Developers are defined as staff who are involved in configuring the system and may be contracted staff with specific technical skills or re-trained in-house staff seconded from the business for the duration of the implementation.

6.1 Performance

Many interviewees said developers do not have a real understanding of the marketplace, the competitive situation, and the economic climate. The study identified that developers lacked the 'big picture' perspective of the company's business operations and focused instead on time consuming technical issues.

In contrast, Company A found that developers would sometimes take too much initiative without consulting managers or having knowledge of the business. Once the software had been configured it was difficult to go back.

6.2 Skills Shortages

ERP systems are now being extended across the supply chain by incorporating electronic commerce. The current skills shortage is therefore likely to get worse. This will continue to be a major problem for organizations in the foreseeable future, as developers do not generally have loyalty to the company, but are more interested in personal career development.

6.3 Hybrids

Because ERP packages are enormously complex, successful implementation requires that the staff possess various skills, such

as political, communication and negotiation skills. Unlike the vast majority of employees with no power or influence, the case studies show that hybrids (Skok and Hackney, 1999) can play an important role by making use of their valuable tacit knowledge.

Company C discussed a new role in the organization that had been created, namely, a 'Relationship Manager' to fill the gap between business and IT. The Relationship Manager may be responsible for communicating between IT and financial users. A hybrid can understand both IT and business problems, he is almost an interpreter and can understand if IT people are 'bending the truth' about what is needed.

6.4 Communications

Developers had a tendency to speak a 'different language' from the business managers and were often viewed as arrogant. It was also noticeable that they did not have the same organizational values or ways of operating, particularly so when they were younger than the business managers. However, they were more accustomed to working in a fast moving, rapidly changing environment.

7. USERS

7.1 Communications

When a company goes live with an ERP system, following Lewin's (1951) model the research study indicated that people experience a range of emotions in response to this change, including fear, anger and denial, and that people resist changing the way they work. New roles and skills were required in many areas of business as a result of the ERP programme. It is common for staff to want to hear about what will happen to their jobs, grades etc not how ERP will alter the strategy or competitiveness of the company.

7.2 The International Dimension

A senior manager in Company E said that in his own country, Germany, a manager gets the job done and staff have little involvement in decision making. The majority or all the decisions will be made by senior management whether or not staff like it or not. This raises an interesting point that highlights different cultural approaches i.e. the British propensity to debate against the German acceptance of authority. With SAP being a German company, the difference in accepting standard processes can be crucial in successful implementation of their software. This is something they need to consider as it may be critical to their continuing long-term success.

7.3 A sharing culture

Interviewees indicated that following departmental and systems integration, staff should share more information. However, the study found that users can be reluctant to share information and unwilling to transfer knowledge.

7.4 The Importance of Training

All the interviewees agreed that training is really important in developing users' skills and knowledge for ERP. It also enables users to realize the implications of their actions for the rest of the organization. The majority of interviewees agreed that a skills audit was important prior to staff going on training. The argument against a skills audit was that as ERP is new to the

organization, staff would develop their ERP skills during the project.

7.5 Super Users

At Company A, SAP trained the super users, who would then be accountable for training end users. The super users came from the business areas, and continued in their line roles following implementation. A key benefit in this approach is that, once initial end user training is done, end users will work side by side with the people who gave them initial training and thereby improving communications. With such an important responsibility, these super users needed to be the best performers in the functions and departments they represented.

7.6 Competencies

To buy into the organizational values, the interviews highlighted the importance of forming a competency framework, with behavioural competencies linked to the organizational objectives. This details the types of behaviour that staff need to exhibit following ERP implementation.

7.7 Process Culture

Company B thought that the reason ERP projects fail is because staff are not able to accept standard processes and are unable to see the impact of integration on other areas e.g. each stock movement creates a posting in the book keeping and this had to be explained to the typical worker

8. CONCLUSIONS

The research does not support Bancroft's view that tackling ERP is not much different from other large scale IT projects. It is clear that an ERP project is far larger than the biggest IT project and must be viewed as a business project from the start e.g. unlike an IT project, Company A found they were "betting the company on ERP".

The case study findings are now examined in comparison with Bancroft's nine critical success factors.

8.1 User Communication

The case studies show that to communicate continuously with all levels of new users in business, not technical, terms is not enough. Users are important, but managers and customers must also be clear about the ERP project and the implications for them. If an organization neglects these stakeholder groups, it may find that managers are reluctant to release their best staff for the project, or may try to block the project.

Interestingly, customers are not mentioned in Bancroft's success factors, but can wield a lot of power. If they are not advised of problems at an early stage, they have the power to adversely affect profitability.

8.2 Executive Championship

The research found that executive sponsorship is not enough to get full commitment. It needs to be sponsored by the Chief Executive or Managing Director (MD). If it is sponsored by another executive such as the Finance Director or IT Director it may only be viewed as a cost saving project or another IT project. If this is the case, staff will lose interest and without MD level sponsorship, a project team will face major battles. Political manoeuvring can sabotage the project.

8.3 Corporate Culture

Bancroft states that companies implementing ERP must understand their corporate culture. This implies that companies embarking on ERP projects should be aware of the dimension of cultural change and prepare managers and other staff to deal with it. However, the research found that there is a golden aura around ERP. Many people may think it is a cure for all problems, but it does not sort out the cultural issues.

Understanding the culture is not enough; companies must use long term strategies to change it. It will not change overnight and strategies need to be used to get staff not only to change how they work but also how they behave. One of the key findings is that staff were reluctant to share information and knowledge. They saw this as a threat to their jobs. Some organizations need to start changing the culture long before ERP is implemented, as it will take people many years to change their ways. This cannot be achieved just by understanding the culture. The research shows that behavioural changes need to be linked to competencies, which in turn must be linked to performance and pay. These competencies should then be used as a tool for recruiting staff to work in an ERP environment.

8.4 Business Process Changes

Bancroft found that organizations need to begin process changes prior to implementation. The research supports this view. Consultants are heavily involved in the process changes and in some cases can be the biggest sticking point.

The language barrier between users and consultants, whose lack of business knowledge, experience and general attitude can be a source of major problems. Managing consultants is therefore critical to success.

The international perspective is also a key influence. By interviewing somebody from Germany, the research highlighted the German acceptance of authority and processes compared to the British propensity to try and get around processes if possible. One of the biggest problems with ERP is that people are not prepared to accept standard processes. However, with SAP being a German company following German best practices, the international differences can be critical in the successful implementation of their software

8.5 Project Manager

The fifth Bancroft rule of implementation is to ensure the project manager is capable of negotiating equally between the technical, business, and change management requirements. As the research shows, with a mix of user departments playing strong roles in the design and implementation process, it is easy for political turf battles to erupt.

The results found that the goals of the two sides can be different. The sponsor wishes the project to be completed to a high quality standard at the lowest time and cost possible. The project manager on the other hand wants to meet agreed targets but with the least strain possible on the team. It is clear that conflicts will arise and that the project manager is the person directly in line of fire. Therefore, the project manager must be selected as much for his or her political astuteness in an uncertain environment as their ability to discover the best technical solution to a business problem.

8.6 Balanced IS and Business team

A key difference between Bancroft's findings and the case studies is the power of hybrids who have both IT and business knowledge. They can be critical to future success and to keeping consultant costs down.

The importance of hybrids was clearly recognized in the case studies. They have the ability to ask questions and not to accept the professional judgement of business or technical people as easily as somebody does without the hybrid skills and knowledge. By recruiting staff with hybrid skills, an organization will need fewer people on the project, resulting in fewer conflicts between business and IS people.

8.7 Project Methodology

Selecting a good project methodology with measurements implies that the project is an IT project rather than a business project. Having a good project methodology was not viewed as critical to the success by the interviewees. Having a strong leader monitoring the achievement throughout the life of the project is much more critical.

8.8 Training

According to Bancroft, the eighth critical success factor is to train users and the project team, while providing support for job changes. The research supported this as the second most important success factor for realignment of people. However, there is no virtue in training for its own sake. The training needs to be tailored to individual needs and knowledge transferred as much as possible e.g. knowledge sharing between consultants and workers.

8.9 Expect problems to arise

Bancroft's last critical success factor is so general that it cannot be disputed. What it does not say is that central to this is that ERP will have an impact on various stakeholder groups within the organization. Particular departments, functions or management levels may gain or lose from the consequent reallocation of resources, as their status changes.

9. RECOMMENDATIONS – GOING BEYOND THE NINE CRITICAL SUCCESS FACTORS

The importance of stakeholder involvement in the management of ERP investments and the delivery of benefits was clearly recognized in the case studies. The interviewees came from various organizations, and possessed a variety of backgrounds, skills and knowledge. This enabled a greater understanding of what is really involved in managing such a huge project.

The contributions of this research derive from the stakeholder analysis approach taken to tackle the issue of ERP critical success factors. Particular emphasis is made in a number of important areas.

9.1 Staff Retention

The companies implementing ERP lost more staff than expected at the end of the project. The results show that people with business and IT skills are essential. These issues emphasize the need for the development of a 'pull' strategy as staff work hard in the approach to ERP implementation. A substantial bonus may be required to recognize the hard work that transition of the organization demands, the increased marketability of staff externally, and to prevent the loss of talent that the organization will need during the post implementation phase.

9.2 Conflicts in ERP Projects

The use of external staff i.e. consultants and developers was the major source of conflict identified. The majority of respondents spoke about unmotivated and untrained consultants. The research shows that organizations rely heavily on consultants and developers during ERP implementations. However, their experience levels were less than desired. In particular, the interviewees felt that consultants and developers do not see the impact on business processes of their actions, do not pass on their knowledge, try to run the project, communicate badly and work to their own agenda.

9.3 Managing Consultants

The study of consultants shows that it makes sense to use consultants who have experience in implementing ERP systems rather than 're-inventing the wheel', but it is vital that over-use of consultants does not mean that the company loses ownership of the project. Their knowledge and skills can come at a high cost to the business. It is critical to have strategies and agreements in place to manage the consultants.

9.4 Cultural and Business Process Changes

Conclusions 8.3 and 8.4 confirm well known difficulties encountered in the management of major change programmes. However, the combined effects of cultural and process changes in ERP projects can produce serious detrimental effects on staff attitudes. Consider Figure 2 which shows the BPR and ERP inspired transition from a function oriented to a process oriented view.

The authors believe that one of the reasons for ERP problems lies in the fact that staff are more likely to be uncomfortable with the process perspective, as it does not provide the familiarity and togetherness of working in a traditional functional departmental environment. This feature together with the rigid standardization applied to processes must be carefully addressed when planning ERP projects.
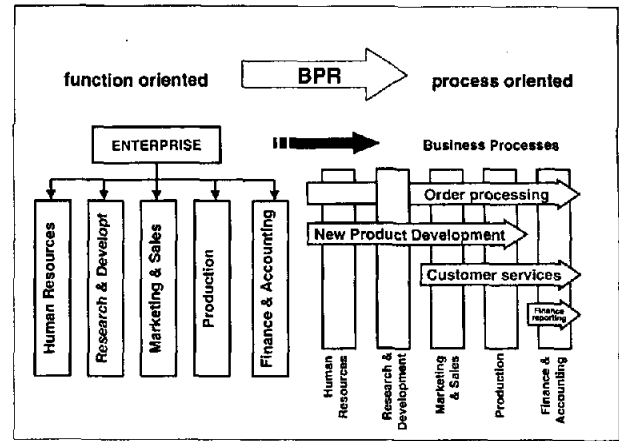

Figure 2. Function vs. Process View of an Enterprise

9.5 Further Research

This exploratory study has provided some insights into the different perspectives of the four major stakeholder groups in an ERP project. This work can be extended by a further study that would consider organizations emanating from the same business sector in order to measure different success rates of using what is effectively the same software product in similar competitive business environments.

10. REFERENCES

[1] Bancroft, N. H., Sep, H., and Sprengel, A (1998 2nd ed.) Implementing SAP R/3. Manning Publications. Greenwich. USA.

[2] Checkland, P. B., and Scholes, J (1990) Soft Systems Methodology in Action. Wiley. Chichester.

[3] Davenport, T. H. (2000) Mission Critical: Realizing the Promise of Enterprise Systems. Harvard Business School Press.

[4] Ezingeard, J., and Chandler-Wilde, R (1999) Evaluating how ERP can provide Competitive Advantage: Basis for a Research Framework. In: Proceedings of Sixth European Conference on IT Evaluation. Brunel University. 4-5 November. 307-313.

[5] Hirt, S and Swanson, E. B. (1999) Adopting SAP at Siemens Power Corporation. Journal of Information Technology. 14. 243-251.

[6] Hunter, R (1999) Is ERP Delivery so bad? Gartner Group Report.

[7] Lewin, K (1951) Field Theory in Social Science. Harper and Row.

[8] Myers, M. (1998) Interpretive Research in Information Systems. Chapter in: Mingers, M., and Stowell, F. (eds) (1998) Information Systems: An Emerging Discipline? McGraw-Hill. Maidenhead.

[9] Skok, W., and Hackney, R. (1999) Managing the Integration of IT within the Business: reflections on organizational, educational and international issues. Journal of Failures and lessons Learned in IT Management. 3. 2. August.

[10] Walsham, G. (1995) The Emergence of Interpretivism in IS Research. Information Systems Research. 6. 4. 376-394.

[11] Wynekoop, J. L., and Russo, N. L. (1997) Studying system development methodologies: an examination of research methods. Information Systems Journal. 7. 47-6.