



Change Management: The Real Struggle for ERP Systems Practices

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ABSTRACT

Enterprise Resource Planning (ERP) systems have become an essential information systems infrastructure for large organisations. These organisations are now looking for ways to leverage their ERP investment by introducing new functionality. However no matter how many implementations these companies have undertaken the same people issues still provide barriers. This research looks at the change management practices of Australian companies and identifies the main success factors and barriers associated with implementing change management strategies. The paper presents the results of a survey of 37 major Australian organisations that have implemented an ERP system. Many of these organisations have long histories of ERP usage and multiple ERP implementations and upgrades. The main findings indicate that the respondents considered change management crucial to successful ERP implementations, yet their organisations did not perform change management very well. The main success factor to change management was provision of adequate resources with the main barrier being lack of communication up and down the organisation.

INTRODUCTION

ERP sales have represented a significant proportion of total outlays by business on information technology infrastructure. The global market for ERP software, which was \$16.6 billion in 1998, is estimated to have had 300 billion spent over the last decade (Carlino, 2000). The level of their sales and penetration reinforces the importance of these types of systems. A survey of 800 U.S. companies confirmed that almost half of these companies had installed an ERP system and that these systems were commanding 43% of the company's application budget (Carlino, 1999). While research into U.S. Fortune 1000 companies indicated that over 60% have implemented an ERP system (Stein, 1999; Piturro, 1999). The market penetration of ERP systems varies considerably from industry to industry. A report by Computer Economics Inc. stated that 76% of manufacturers, 35% of insurance and health care companies, and 24% of Federal Government agencies already have an ERP system or are in the process of installing one (Stedman, 1999). The major vendor of ERP systems is SAP with approximately 50% of the market (McBride 2003).

Table 1 Top Ten ERP Benefits (Davenport et al 2002)

Benefit
Improved management decision making
Improved financial management
Improved customer service and retention
Ease of expansion/growth and increased flexibility
Faster, more accurate transactions
Headcount reduction
Cycle time reduction
Improved inventory/asset management
Fewer physical resources/better logistics
Increased revenue

Although ERP systems have the potential to deliver a number of benefits (Table 1), initially for many companies an ERP system was a technological solution to the Y2K issue (Deloitte 1999). Companies were forced to initiate business process engineering for the purpose of "gap analysis" to determine what either had to change in their company or in the ERP to facilitate an effective implementation. Some companies initially struggled with their ERP implementation. Reasons cited included: inexperience with projects of this scope, underestimating the impact the system would have on their organization, and lacking skilled resources. For some companies these barriers have been insurmountable (Calegero, 2000).

In a worldwide CSC study (2001), 1009 IS managers identified as their main priority "optimising enterprise wide systems". Companies are revisiting their ERP implementations in an attempt to leverage their investment by attaining the purported benefits. In the landmark Deloitte's study (1999) 49% of the sample considered that an ERP implementation is a continuous process as they continue to gain value propositions from their system. This is a reasonable expectation as companies attempt to realise previously unattained benefits and additionally, as companies evolve, their ERP system must also evolve to support new business processes and information needs.

Barriers to Benefit Realisation

Recent research by Hawking and Stein (2002) identified the expected ERP benefits and level of realization of these benefits in 48 Australian companies. Their research indicated that although the companies gained a number of benefits from their ERP implementation they did not attain the expected level of benefits. The sample were asked to rate on a five point likert scale the barriers to benefit realisation of their current ERP implementation. Each barrier was categorised as per the Deloitte Consulting (1999) study: People, Process or Technology (Table 2).

Table 2. Barriers to Benefit Realisation (N=48)

Current R/3 Barrier/Obstacle	Mean	Deloitte Category
Lack of Discipline	4.4	P
Lack of Change Management	4.3	P
Inadequate Training	4.2	P
Poor Reporting Procedures	4.2	T
Inadequate Process Engineering	3.9	PR
Misplaced Benefit Ownership	3.8	P
Inadequate Internal Staff	3.3	P
Poor Prioritisation of Resources	3.0	T
Poor Software Functionality	2.9	T
Inadequate Ongoing Support	2.7	T
Poor Business Performance	2.4	PR
Under Performed Project Team	2.3	P
Poor Application Management	2.2	T
Upgrades Performed poorly	1.6	T

The respondents indicated obstacles that limited benefit attainment for their ERP implementation had little to do with lack of software functionality or major technical issues, but were predominately people related issues. Five of the top seven obstacles could be classified as people issues. It is interesting that two of the top three issues are related to change management. It is important to note that Australian companies have been working with their ERP systems for a number of years resulting in a level of maturity. However, even though they have been through a number of implementations they still consider change management issues impact on the success and benefit attainment.

Nah et al (2001) documented eleven critical success factors (CSFs) that have proved to be vital to a successful ERP implementation. Other researchers have identified similar critical success factors and have stressed the importance of change management (Somer and Nelson 2001).

CHANGE MANAGEMENT

Change management strategies vary from company to company. Change management can be defined as:

"the effort to manage people through the emotional ups and down that inevitably occur when an organisation is undergoing massive change" (Nah & Sieber, 2002).

In the context of the organisation Goff (2000) defines change management as

" a planned approach to integrating technological change. This includes formal processes for assessing the impact of the change on both the people it affects and the way they do their jobs. It also uses techniques to get users to accept a change caused by technology and to change their behaviour to take advantage of the new IT functionality".

This statement implies that Information Technology projects require change management practices in order to fundamentally change the way people work and behave within an organisation and across organisational boundaries. Other authors refer to the concept of resistance: An expression of reservation that invariably results as a response or reaction to change (Block, 1989 cited in Sohal & Waddell, 1998). Turbit (2002) goes further by describing change management in terms of setting expectations to alleviate the resistance to change by people within organisations.

Current research points to the failure of most ERP implementations as being due to resistance to change by users in the organisations (Aladwani, 2001). A fairly simplistic framework that classifies the types of user resistance to innovations like ERP implementation by source of resistance is that of Sheth (1981) cited in Aladwani (2001). The framework demonstrates that there are two fundamental sources of resistance to innovations: perceived risk and habit. Perceived risk refers to one's perception of the risk associated with the decision to adopt the innovation; that is, the decision to accept the ERP system. While habit refers to current practices that one is routinely doing. Sheth (1981) argues that in order to reduce employees' resistance to ERP implementation, top management of the organisation must analyse these sources of resistance and employ the appropriate set of strategies to counteract them. This argument implies that resistance is a negative influence on and in conflict with, the organisational strategy. Therefore it is seen as something to be managed and ultimately eliminated. Others argue however, that resistance should be recognised as something to be utilised to support a successful change management initiative (Mabin, Foreson & Green, 2001).

There are numerous prerequisites for change to be successful. The list includes a clear vision for change, communicating that vision articulately and clearly from a top down perspective; preparing a culture for change, setting strong leadership and providing an environment for participation. Developing a vision, describes a picture of the future shape of an organisation, gaining commitment to that vision and synchronisation of purpose and effort are clearly seen as important leadership qualities. This development of vision and mission clearly sets

the scene for organisational change (Hamel & Prahalad, 1994; Senge & Roberts, 1994 cited in Mabin et al, 2001). Once the direction for organisational change has been established, the next important step in the change process is influencing the culture of the organisation. Organisational culture is the shared understanding of how an organisation works, and has a major impact and influence on successful change initiatives (Schein, 1988; Handy, 1996; McAdams, 1996). A culture that has shared values and common aims is conducive to success.

Organisations should aim to have a strong corporate identity that is open and willing to change (Nah et al, 2001). Communication and strong leadership play a vital role in preparing any organisation for change and in guiding the organisation through the upheavals that result from changes. The ability to create trust by developing an environment where the people who make up an organisation feel change is required and then commit to that change process, are two of leaderships most important qualities (Carlzon, 1989; Schermerhorn, 1989; Zand, 1997). Creating trust can be achieved through the sharing and discussion of issues and ideas.

Although much has been written in regards to change management up to this date, limited research has occurred in regard to change management practices in Australian ERP implementations. Recommendations from previous research (Hawking et al 2003), which identified change management as one of the major barriers to benefit realisation, indicated that further research was required to identify successful change management practices. The SAP Australian User Group commissioned this research, which reflects relevance of the findings to Australian companies.

RESEARCH METHOD

The primary objective of the study was to survey a range of information systems professionals to seek responses regarding current and historical ERP implementation details and change management success factors and practices originating from these implementations. More specifically the research posed the following questions:

- What is importance of change management programs to ERP implementations?
- What are the change management success factors and barriers that exist in ERP systems implementations?
- What change management practices to companies employ?

Research Design and Methodology

In order to identify change management practices a survey instrument involving 30 questions covering four areas; demographics, change management metrics, success factors and change management practices was developed. Closed questions were used with Yes/No and seven point Likert scale responses. Open-ended questions sought responses from the cohort allowing for qualitative data to be collected.

The survey was distributed through the use of an email directing the respondent to a web site that incorporated a web based survey delivery platform. Several studies (Simsek, 2000; Stanton and Rogelberg, 2000; Comley, 1996; Mehta and Sivadas, 1995) have compared email and Web based survey methods versus mail information collection methods and have proposed that email surveys compare favourably with postal methods in the areas of cost, speed, quality and response rate. It was necessary to preen the email address book to remove and amend email that had bounced back.

Sample

The sample was made up of key contacts from member companies of the SAP Australian User Group. SAP is the leading vendor of ERP systems in Australia with approximately 70% of the market (McBride 2003) and the User Group is representative of approximately 65% of the SAP customer base. The original email listing contained 166 potential respondents. A number of emails were undeliverable due to members of the cohort moving positions, having incorrect email addresses, changing email addresses or automatic out-of-office responses. There were two unusable replies, leaving a total of 37 usable responses. The overall response rate once removing the undeliverable addresses was 24%.

Table 3. Position of Respondents

Position	No
SAP Manager	30
IT Manager	4
SAP Administrator	3

Table 4. Companies by Industry sector

Industry Sector	No.
Public Service	9
Energy/Natural resources	4
Financial Services	1
Health Services	2
Manufacturing	10
IT Services	3
Retail/Wholesale	6
Consumer Markets	2

Table 5. Size of Companies

Number FTEs	No.	Revenue(\$millions)	No
>1000	22	Large(>1000)	11
502-1000	6	Large-Med(750-1000)	3
101-500	8	Med-Large(500-749)	2
<100	1	Medium(250-499)	6
		Small(<250)	15

RESULTS

Demographics

Responses were received from 37 IS professionals and the data was analysed to present position, organisation type, size and procurement spend. A summary of responses are presented in Tables 3, 4 and 5. Respondents were predominantly high in the organisational structure being either an IT or SAP manager. As key contacts for the user group, their status within their companies would indicate their involvement in the decision making process with regards to any ERP implementations. Accordingly they should have an understanding as to the type of information required by the survey. The companies represented most industry sectors and were large in size from both a revenue and employee perspective.

ERP Profile

Respondents were asked to identify: when the first implementation occurred, providing information about their company's experience with an ERP system (Table 6), number of ERP users (Table 7) and the number of implementations and upgrades which the company had been involved in (Table 8).

Table 6. Year of Implementation

Year	No
<=1995	1
1996	6
1997	5
1998	10
1999	6
2000	4
2001	2
2002	3

Table 7. SAP User Numbers

SAP Users	No
21-100	7
101-250	7
251-500	10
Greater 501	13

Table 8. No. of Implementations

Upgrade/Implementations	No
0	1
1	8
2	10
3	8
4	4
5	1
>5 – 10	4
>10	1

Change Management Defined

Respondents were asked to provide a short description or definition of change management in order to assess their understanding of this concept. From an analysis of the definitions, the following keywords were obtained:

Manage/coordinate	42%	Training	16%
Communication	29%	Planning	11%
Transition	29%	Monitoring/Assessment	11%
Processes	18%		

Based on the responses an aggregated definition was developed:

Change management is defined as the process of assisting the organisation in the smooth transition from one defined state to another, by managing and coordinating changes to business processes and systems. It involves the effective communication with stakeholders regarding the scope and impact of the expected changes, to assist them to cope and adapt to the transition.

Change Management Budget Metrics

Respondents were asked to indicate what level of their total implementation budget was allocated to change management and to indicate what percentage of their change management budget was allocated to training (Table 9). The majority of respondents indicated that organisations spend less than 10% on change management practices and a significant number of organisations spend less than 20% of the change management budget on training. While at the other end of the spectrum 5 companies commit nearly their entire change management budget to training.

Respondents were required to indicate the size and makeup of their change management team (Table 10). The majority of companies used external personnel to assist with their change management strategy. Although only two companies relied solely on this resource. The change management team was usually representative of a number of stakeholders supported by external personnel. The size of the change team tends

Table 9. Change Management Budget Metrics

Change Management Budget (% of implementation budget)	#	Training Budget (% of change budget)	#
<5%	2	<20%	1
5-10%	1	21-40%	4
11-15%	5	41-60%	6
>15%	7	61-80%	6
		81-100%	5

Table 10. Change Management Team

Team Resource	#	Team Size	#
Hired external consultants as experts, facilitators, or advisors	2	<5	1
Cross-functional team	3	6-10	6
Senior executive steering committee or team	2	>10	1
Department-based team	0		2
Involved employees at many levels in the change team	1		5
Our company did not designate such a team to manage any of the change	2		
	4		

Table 11 Importance of Change Management

Importance of Change Management				
Not Important		Very Important		
1	2	3	4	5
		1	10	24

Table 12 Company's success with Change Management

Company's Ability to Implement Change				
Poor		World Class		
1	2	3	4	5
1	8	22	4	0

to indicate that the team was responsible for managing change and utilised others to implement the change program. There appeared to be no relationship between the size of the change team and the number of SAP users.

Change Management Importance and Success

Respondents were asked to rate on a five point Likert scale the degree of importance the organisation placed on the change management strategy (see Table 11) and how successful they considered their change management program (see Table 12). This provided an insight into how respondents viewed the importance of change management and how successful they considered their organisations were in implementing change management strategies.

The respondents gave an overwhelming yes when asked if change management was important to their ERP implementation, yet indicated that their organizations were nowhere near world class in change management operations.

Change Management Success Factors and Barriers

Respondents were asked to rank (from 1 to 5) the top five change management success factors and barriers for their organisational ERP implementations. The results are displayed in Table 13 and 14. Whilst adequate resources was rated as the top success factor, communication based factors were ranked in three of the next 6 factors.

Lack of communication was considered the main barrier, with employee resistance, management support and resources the next three barriers.

Table 13. Change Management Critical Success Factors

Critical Success Factor	Rating
Adequate resources given for the change	2.3
A well-communicated, shared understanding of this need for change	2.2
Open and consistent communications at all levels of the organization	2.1
Participation and support by all management levels within the organization	1.7
Visible and continuous executive sponsorship	1.4
Being in touch with those affected by the change	1.4
Sufficient pre-implementation training of those who will deliver the change	1.1
Structured approach to managing change	1.1
Recognizing employees for contributions to the change initiative	0.9
A compelling need for change that is critical for the organization's success	0.8
Clear channels of safe feedback	0.5
Training to prepare change team members	0.3
Personnel changes to support the new organization	0.2
Offering small gifts to employees for contributions to the change initiative	0.0
Offering salary bonuses or promotions to employees at key milestones	0.0
Offering some savings to employees for success in cost-saving changes	0.0

Table 14 Barriers for Change Management

Barrier	Rating
Lack of communication and channels for feedback	2.7
Employee resistance to change	2.3
Not all management levels were engaged in the change	2.1
Inadequate resources or budget	2.0
Shifting focus or changing priorities too soon	1.6
Executives out of touch with those affected by the change	1.6
Executives sending out inconsistent signals	1.5
Management behaviours are not supportive of the change	1.3
Executives not directly involved with project	1.2

Table 15. Practices To Lessen Employee Resistance

Practice	Rating
Direct face to face communications about the behaviour	25
Question and answer sessions and open discussions at meetings	23
Team communication meetings and performance reviews	20
Re-communication of goals and needs for change	19
Immediate team or sponsor intervention	18
Open, safe communications channels for feedback	18
Focus on goals and what needs to happen to meet the goals	18
Coaching for performance	10
Development of personal progress plans	6

Employee Resistance

As employee resistance was identified as being an important factor for the successful implementation of an ERP system (Aladwani, 2001), respondents were asked to identify practices used to help lessen this resistance. The results (Table 15) reinforce the importance of communication and a personalised approach.

DISCUSSION

Change management success factors and barriers

The respondents, in many cases decision makers in their organizations, considered change management was important yet signaled that overall performance in implementing a change management program was not world class. There was little evidence of a link between the success in implementing change and the level of budget allocation yet the number one success factor was adequate resources. It is also interesting to note that many of the companies involved in the survey were onto their 4th or 5th ERP implementation or upgrade but were still struggling with the change process.

The respondents to a large extent indicated that the success factors and barriers were mirror images of each other. Communications and management support dominated the success factors. Two-way communications and a need to "be in touch" with those affected by change all signal the feedback nature of implementations. A number of the respondents commented on the lack of management support and understanding.

The practices, which were identified as strategies to address employee resistance, specify many of the successful communication practices. It is interesting to note that the offering of various rewards or incentives was not seemed to be important for implementing change.

Researchers have identified that programs which establish positive attitudes towards the introduction of information systems are critical success factors to their successful implementation (Aladwani 2001). This has led to companies placing increasing emphasis on change management strategies. Hammer (1999) refers to this process as "organisational reengineering" and argues that an essential precedent to any change management strategy is the fostering of a culture for change. SAP's ASAP implementation methodology places considerable emphasis on change management strategies and includes a number of resources to assist this process. However even though companies have access to this methodology the question remains, why are companies still signalling change problems? It may be that the very maturity of the organisation may impact on change strategies. Further research is required into the complex issues involved in change management and the evaluation of resources and tools provided to assist in the change process.

REFERENCES

- Aladwani, A. M. (2001). Change Management Strategies for Successful ERP Implementation *Business Process Management Journal*, 7(3).
- Calegero, B. (2000). *Who is to blame for ERP failure?* SunSaver, June, 2000.
- Carlino, J. (2000). AMR Research Predicts Enterprise Application Market will Reach \$78 Billion by 2004, 2000, Located at www.amrresearch.com/press/files/ Accessed August 2002.
- Carlzon, J. (1989). *Moments of Truth*. Harper and Row: New York.
- Comley, P. (1996). *The Use of the Internet as a Data Collection Method*, Media Futures Report. Henley Centre: London.

- CSC, (2001). Critical Issues of Information Systems Management. Located at http://www.csc.com/aboutus/uploads/CI_Report.pdf accessed November 2002.
- Davenport, T. (2000). *Mission Critical: Realizing the Promise of Enterprise Systems*, Harvard Business School Press, Boston, Massachusetts.
- Deloitte, (1999). ERPs second wave, Deloitte Consulting.
- Goff, L.J. (2000). Change Management, 2000, Located at <http://www.computerworld.com/news/2000/story/0,11280,41308,00.html> Accessed September 2002.
- Handy, C. (1986). The gods of management. *Executive Book Summaries*, 18(2), 1-8.
- Hammer, M. (1999). How Process Enterprises Really Work, *Harvard Business Review*, Nov./Dec. 1999
- Mabin, V. J. Foreson, S. and L. Green (2001). Harnessing resistance: using the theory of constraints to assist change management, *Journal of European Industrial Training*, 168-191.
- McAdams, J. (1996). *The Reward Plan Advantage*. Jossey-Bass: San Francisco.
- McBride G., (2003) SAP Partner Kick Off Presentation, Sydney.
- Mehta, R. and E. Sivadas (1995). Comparing response rates and response content in mail versus electronic mail surveys. *Journal of the Market Research Society*, 37, 429-439.
- Nah, F. Lee-Shang, L.J. and J. Kuang (2001). Critical factors for successful implementation of enterprise systems, *Business Processes Management Journal*, 7(3), 285-296.
- Nah, F.H. and M. Sieber (2001). A recurring improvisational methodology for change management in ERP Implementation, Located at <http://www.ait.unl.edu/fnah/sieberandNah.pdf>
- Piturro, M. How Midsize Companies Are Buying ERP, *Journal of Accountancy*, September 1999, 1883, 41-47.
- SAP, (2002). SAP Corporate Profile, Located http://www.sap.com/company/profile_long.htm Accessed July 2002.
- Schein, E. (1988). *Defining Organisational Culture*. Jossey-Bass: London.
- Schermerhorn, J. (1998). *Management for Productivity*. John Wiley & Sons: New York.
- Sheth, J. (1981). Psychology of innovation resistance, *Research in Marketing*, 1981, 4, 273-282.
- Sohal, A. S and D. Waddell (1998). Resistance: a constructive tool for change management, *Management Decision*. MCB University Press, 543-535.
- Somer, T. and K. Nelson (2001). The impact of Critical Success Factors across the Stages of Enterprise Resource Planning Systems Implementations, proceedings of the 34th Hawaii International Conference on System Sciences, 2001, HICSS.
- Stanton, J. and S. Rogelberg (2000). Using Internet/Intranet Web Pages to Collect Organizational Research Data. *Organisational Research Methods*, Vol. 4, No. 3, 199-216
- Stein, A., and P. Hawking (2002) Continuous Business Improvement and ERP Systems: An Australian Survey, Industry Report Commissioned by the SAP Australian User Group.
- Sumner, M. (1999). Critical Success Factors in Enterprise Wide Information Management Systems Projects, Americas Conference on Information Systems, Milwaukee Wisconsin, August 13-15.
- Turbit, N. (2002). ERP Implementation – The Trap, Located at, http://www.projectperfect.com.au/info_erp_imp.htm
- Zand, D. (1997). The leadership triad, *Soundview Executive Book Summaries*, 19(6), Part 1, 1-8.

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