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# Are ERP Implementations Qualitatively Different from Other Large Systems Implementations?

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## Abstract

There is currently much interest in tracking ERP implementations as over 60% of Fortune 500 companies have gone down this path, seeking to replace legacy systems with an integrated comprehensive Enterprise Wide Information System. During the process of ERP adoption, it appears that much of the learning gained in large system development projects seems to have been forgotten. In particular, the means of engaging the users in the development process, the need for and processes involved in change management practices, and the involvement of project sponsors and champions are areas in which we believe that there has been significant departure from the lessons of the past. The authors report on the design of a qualitative research project that seeks to determine if ERP Implementations are qualitatively different from other large system implementations.

## Background

With the advent of new information technologies and Enterprise Resource Planning Systems have been adopted by over 60% of Fortune 500 companies in the USA. This trend has affected the public sector as well. In Australia, state and federal government agencies have adopted ERPs, with SAP R/3, Peoplesoft and a local product Mincom's MIMs being most successful. Of these competitors, SAP R/3 has secured the majority of sites.

The implementation processes, however, appear to be undertaken in a manner quite distinct from the accepted means of developing large systems in-house. In addition, the decision to adopt an ERP system becomes mandated by some central authority, changing the involvement of the users, business units, and the executive managers and senior managers within the business units.

These observed departures have led us to pose the question: Are ERP Implementations Qualitatively Different from other large systems development projects? The answer to this question shows the tension between buying packaged solutions versus building bespoke systems. We label these approaches as Buy versus Build.

We commence addressing this issue by undertaking a literature review, seeking to define the lessons learnt over

thirty years of building systems. We contrast these approaches with accepted ERP selection and implementation methodologies. We finally pose a research design in which we will assess what has been happening in the implementation of state government agency implementations. We close by recounting observations to date about the system build process.

## Prior Research into Building Bespoke Software

Information systems had begun to be used in organizations to automate business functions (Zuboff, 1988) that previously required many people to perform repetitive tasks. Software development was sequestered inside organizations willing to take a risk and prepared to innovate new ways of doing business. Unfortunately, early software development was focussed on working around the inherent unreliability of hardware (Dijkstra, 1984). This put a technical focus on the development of information systems. (Gane & Sarson, 1979; Finkelstein, 1989). Frederick Brooks Jr alerted us to the inherent complexity in software (Brooks, 1975) and that the very things that software sought to achieve for business (simplification, repeatability) could not be achieved without a disciplined process of software development. At the time, the provocative title of his tome "The mythical man month" started research into project management practices that would assist in the delivery of information systems on time and on budget. Tom Gilb (1988) speculated that any system could be delivered on time and on budget if the quality of the system was not specified.

The Structured System Design Method was developed in the United Kingdom as a result of a competition run by the CCTA. It was delivered with the Prompt project management methodology. Project management received a lot of lip service from IS organizations in the 70s and 80s. Project managers were appointed from technical staff (Weinberg, 1988) who had not been trained to be leaders nor supported in their new role by an organization concerned to develop a project culture (Sauer, 1993). Meanwhile, Watts Humphrey identified the best practice processes that software vendors used to deliver software to the USA's Department of Defense (Watts Humphrey, 1995). These

processes included specification, analysis, design, construction, testing and deployment as well as management of the processes themselves. This meta-knowledge of software development practices (capability maturity model) would itself become the basis for competitive advantage for IS organizations in their dealings with their clients. Process improvement had been legitimized in the arena of software development.

Henry Lucas Jr saw information systems development beginning with a designer, user dialogue (Lucas, 1981). This dialogue was necessary since the designer was unlikely to understand the intimate details of the user's business process. User involvement in the development of a software solution for a business problem is critical for several reasons. First, the user must accept and use the product provided. Providing a system that the users don't care about because it does not address their needs or makes getting at their required information simply through a few essential functions more difficult than it needs to be, will not realize any benefits for the organization. Further, without following the user's task, project teams may introduce new processes without a change management program. Early user involvement in developing specifications and a continuing active role in developing test cases while code is being written is highly recommended (McConnell, 1998; Lounsbury, 1998).

Reporting on the continuing Standish Group International. Inc study of some 23,000 in house IT projects since 1994, Kathleen Melymuka points out that project success is inversely proportional to project size. Size is measured in terms of budget, team sizes and time to implement. Among projects studied, those costing less than \$750,000 succeeded 55% of the time; those in the \$1 million to \$2 million range had an 18% success rate; and those in the \$5 million to \$10 million range had only a 7% chance of success. Other factors that contributed to success included:- user involvement, executive support, experienced project management, clear business objectives and good communication. (Melymuka 1998, Bicknell 1998, Shillingford 1998, Collins 1999).

Jim Johnson, Standish's president, argues for reducing functionality and hence project size and complexity as a means of ensuring success. A key practice is to design projects in small, sparse, iterative chunks, leaving out as many features and functions as possible. Features can be added in later iterations. Staged implementations have been recommended in both the practitioner literature (Gilb 1988, McConnell 1998) and the academic literature (Feeny et al 1997). Feeny states that most IT projects are conceived of as whales with a large time frame and a single deliverable at the end of them. Dolphins deliver functionality sooner with more user involvement in the stages.

Other authors believe that Information System implementation is a process of organization change

(Keen&Scott Morton 1978, Davis & Olson 1985). Taking account of the human side of implementation, describing the organizational and people issues in terms that lead to workable solutions has been the focus of many authors including Mumford, Pinto, and Checkland. A difficulty with people issues is that the "solutions" are not transferable. Implementation strategies therefore must be tailored to reflect the difficulties an organization faces in both its internal and external environments.

## Research into ERP Implementations

ERP implementations are similar to classic IS implementations in this matter. Research in the field shows that many projects undertaken to transform an organisation have come apart, not because of the technical issues, but because the people issues were ignored. Coulson-Thomas (1994), Kotter and Heskett (1994). Since Hammer (1990) coined the term re-engineering to refer to a radical rethinking of business processes, much has been claimed for this approach Hammer & Champy (1993), Davenport & Short (1990), Venkatraman(1994). Significantly, in Europe, the term has undergone a culturalisation to ensure that people issues are considered within the framework of any re-engineering effort Talwar(1994), Holtham(1994), Coulson-Thomas(1994). Bancroft (1998) warns that a company must understand its culture in terms of both readiness and capability for change and communicate with all levels of the organization about the implementation where communication can flow up as easily as down. if an ERP is to be implemented successfully.

This concern with vision, communication and business process means that an Enterprise Resource Planning implementation is sufficiently different from the classic IS BUILD project, which was typically focused on a single organizational unit, to warrant some attention to ensure that the lessons of the past are being applied to the current problem situation in an appropriate manner. The key differences are its scale, level of user involvement , that configuration of application software is being undertaken rather than modification of application software and the fact that it is usually championed and managed by business identities rather than technical managers.

An ERP will effect the whole organisation. That means that its users will have a wider range of experience of IT, expectations about IT and ways of valuing of IT. Classic IS implementations have tended to be departmental in character and so have tended to effect a more homogeneous population of users and managers.

Second, user involvement with an ERP comes a long time after the design stage of the ERP product itself. User involvement consists of fitting the system into the organisation (or fitting the organisation into the system perhaps). There may be a double learning curve for the

users at this stage if business processes are changing in addition to the need to learn just what the software is capable of achieving.

Since many organizations have opted out of software development and are concentrating on core business competencies, the desire to avoid modifying software has been met by the ability to configure the operation of an ERP through manipulation of parameters and switches. While this activity presupposes an intimate knowledge of the ERP software, it also demands an intimate knowledge of the business process being automated. The software knowledge will most likely reside in a contracted consultancy while the knowledge of the business should come from an internal member of the project team.

Finally, an ERP is usually a business led initiative. It may pan out that way because IS management is managing IS successfully and general management can see further scope for enabling better business practice with it. However, it may also mean that general management is dissatisfied with the results of previous effort from the IS department and prefers to run their own show.

## Proposed Research Project

In this research, successful implementation strategies that coordinated technology, processes, and people will be identified from Build, Buy and ERP perspectives. Technology and process considerations can be broken down into manageable elements which can be resolved individually. But people and corporate culture are more difficult to deal with. By looking for qualitative differences in the interaction of Build, Buy and ERP implementations with an organization, these issues will be better understood.

The target organisations are in unique positions. They have rolled out large BUILDS which were developed as one-off special industry applications. These systems are perceived as successful. Simultaneously, they have deployed the ERP system, SAP R/3 which we denote as ERP. The core support functions of finance and materials management have usually been adopted.

## Key Benefits of the Research

It is anticipated that this research will lead to an improvement or at least a modification of the best practices offered by ERP vendors. By comparing and contrasting, the variations in implementation strategies between an IS BUILD implementation and an ERP implementation (ERP), a model of the uniqueness of each implementation situation will be identified. These variations may point to critical steps in the implementation of an ERP that require more attention than others to ensure implementation success.

## Progress to date

A detailed research plan has been developed. Interviews are being scheduled with Project Sponsors, Project Directors, Project Managers and Business Unit managers to determine their view of the central question: Are ERP Implementations Qualitatively Different from other Large System Implementations? In particular, interviewees will be asked:

- How has the users role changed?
- Have the change management programs varied?
- How has the scope of the ERP project differed to the scope of large system builds that you have experienced?
- How has the role of the consultant (implementation partner) differed from that of external consultants used in system builds?
- What are the perceived benefits of such an implementation?

## Conclusion

There has been relatively little research conducted into the differences between an ERP implementation and a large system build. We believe that key differences include user involvement, the use of champions and the purpose and practice of change management programs. These differences are exacerbated, when one considers the scope of such projects, the effects that such ERP systems have on organisational structure, business work flows and process design and people.

The proposed research will use a multiple-method approach, including case studies and quantitative analysis.

The results from this study will benefit

- 1). Organisations seeking to achieve business benefit from ERP Implementations,
- 2). consultants seeking to work on these projects,
- 3) ERP vendors in positioning their products for adoption in SMEs, and
- 4) researchers seeking to understand some of the barriers to successful ERP implementation, and subsequent exploitation of such systems.

## References

- Bancroft, N. H. "Implementing SAP R/3: How to introduce a large system into a large organisation," 2<sup>nd</sup> ed., Manning/Prentice Hall, London, 1998
- Bicknell, David "Clark Kents hold keys to project success," *Computer Weekly* July 9, 1998 p14(1)

- Brooks, F P "The mythical man-month : essays on software engineering," Addison-Wesley Pub. Co, Reading, Mass, 1975
- Checkland, P "Systems theory and management thinking," Fourth International Conference of the United Kingdom Systems Society: *Critical issues in systems theory and practice*, Plenum Press, Hull ,1995
- Collins, Tony "Ten ways to make your project a success," *Computer Weekly* April 8, 1999 p42(1)
- Coulson-Thomas, C ed "Business process re-engineering : myth and reality," Kogan Page, London , 1994
- Davenport, T. E. and J. E. Short "The New Industrial Engineering: Re-engineering Work through Information Technology," Harvard Business School Press, Boston, Ma, 1990
- Davis, G B, Olson M "Management information systems : conceptual foundations, structure, and Development," McGraw-Hill New York, 1985
- Dijkstra, E "The problem with computer science," *Burroughs World* Dec 18 1984
- Feeny, D F, Willcocks, Islei, G "Managing IT as a strategic resource," McGraw Hill, London, 1997
- Finkelstein, C "An introduction to information engineering : from strategic planning to information Systems," Addison-Wesley, Sydney, 1989
- Gane C and Sarson T "Structured systems analysis : tools & techniques," Improved System Technologies, New York, 1979
- Gaudin, S "System migration? Don't forget to consider users," *Computerworld* Oct 26, 1998 p24(1)
- Gilb, T "Principles of Software Engineering Management," Addison Wesley, Wokingham, 1988
- Hammer, M "Reengineering Work: Don't Automate, Obliterate," *Harvard Business Review*, July-August 1990, pp. 104, 107
- Hammer, M. and Champy., J. "Re-engineering the Corporation: A Manifesto for Business Revolution," Nicholas Brealey Publishing, London, 1993
- Holtham, Clive Business Process Re-engineering - Contrasting what it is with what it is not, In *Business Process Re-engineering : myth & reality* (ed Coulson-Thomas, Colin) London Kogan Page, 1994
- Keen, P. G. W. and M. S. Scott Morton "Decision support systems : an organizational perspective," Addison-Wesley Pub. Co, Reading, Mass, 1978
- Kotter, J. and J. Heskett "Corporate culture and performance," The Free Press, New York, 1994
- Lounsbury, Al "Figure in people factor before purchasing apps," *Computing Canada* Dec 7, 1998 p13(1)
- Lucas Jr, H "Implementation : the key to successful information systems," Guildford, New York, 1981
- McConnell, S "Software Project Survival Guide," Microsoft Press, Redmond, 1998
- Melymuka, K. "Keep that project simple," *Computerworld* July 6, 1998 v32 n27 p55(1)
- Mumford,E "Designing human systems for new technology : the ETHICS method," Manchester Business School, Manchester , 1983
- Pinto, J.K. "Successful Information System Implementation: The Human Side," Project Management Institute, Upper Darby , 1994
- Sauer, C. and Australian Graduate School of Management. . "Support and support management in information systems projects : building a conceptual framework," ., Australian Graduate School of Management, Kensington, N.S.W 1993
- Shillingford, Jola "USA discovers key to successful projects," *Computer Weekly* June 25, 1998 p18(1)
- Talwar, Rohit "Re-engineering - a wonder drug for the 90's?," In *Business Process Re-engineering : myth & reality* (ed Coulson-Thomas, Colin), Kogan Page , London ,1994
- Venkatraman, N. "IT-Enabled Business Transformation: From Automation to Business Scope Redefinition," *Sloan Management Review* Winter 1994, pp. 73-86
- Watts Humphrey "A discipline of programming." Addison Wesley Longman, New York, 1995
- Weinberg, G M "On becoming a technical leader," Dorset House, New York, 1988
- Zuboff, S. "In the Age of the Smart Machine : the future of work and power," Heinemann Professional, Oxford, 1988