

# Implementing Organizational Innovations: Enterprise Resource Planning (ERP) Systems

Byron A. Ellis

Consultant and Executive Director of The Jethro Project (TJP)

email: [ellis@jethroproject.com](mailto:ellis@jethroproject.com)

## Abstract

*The vast majority of organizational innovations, although technically sound, do not succeed. Failure often resides in organizational implementation. Often organizations introduce innovations without employees' involvement. As a result, they do not gain the employees' commitment. Many corporate initiatives do not address employees' social issues and only stress rigid top-down technical approaches as the key to organizational changes.*

Keywords: Innovations, software, commitment, involvement, behaviors.

## Introduction

Organizations are continually implementing innovations to improve competencies and competitiveness in the marketplace (Klein, Conn, & Sorra 2001; Mohrman, Tenkasi, & Mohrman, 2003). The effectiveness of the innovation is the benefits accrued to the organization (i.e., increased productivity, higher profits, better products, etc.) due to its implementation (Klein & Sorra, 1996). According to Mohrman et al., organizations intentionally change structures, work practices, technology, and human-resource practices to introduce new behaviors. Klein and Sorra believe that implementation occurs when employees within organizations become committed to using the innovation.

Organizations introduce innovations, such as total quality management (TQM), quality circles (QC), statistical process control (SPC), just-in-time (JIT) production systems, self-managing work teams (SMWT), lean six sigma (LSS), team cleaning (TC), business process redesign (BPR), manufacturing resource planning (MRP), enterprise resource planning (ERP), and others, to increase organizational competencies and competitiveness. Unfortunately, the vast majority of innovations, although technically sound, do not succeed. Many researchers believe that failure resides in the implementation of the initiative (Klein et al., 2001; Klein & Sorra, 1996; Repenning, 2002).

Recent analyses indicate that employee involvement and commitment are critical for the success of organizational initiatives (Klein et al., 2001; Nah, Lau & Kuang, 2001; Mohrman et al., 2003). Moreover, employees' participation in the adoption and definition phases of the innovation appears to improve employees' involvement, commitment, and satisfaction with the change (Kanungo & Bagchi, 2000; Kappelman, 1995; Klein & Sorra, 1996; Somers, Nelson & Karimi, 2003). However, Kanungo and Bagchi, found that because organization leaders only involve employees after deciding to implement the innovation, it lessens the inclination of employees to become involved and committed to the initiative.

## Basic ERP Functions

An enterprise resource planning (ERP)<sup>1</sup> system is an integrated software package of financial, manufacturing, distribution, logistics, quality control, and human resources modules that enables real-time access to information across organizational functions and locations (Aladwani, 2001; Dong, 2001). The primary purpose of ERP is to handle data: getting, storing, and making the data available enterprise-wide in modules of functionality. Most modules are interdependent (Markus, Petrie, & Axline, 2000). ERP systems incorporate graphical interfaces and can be multi-lingual to accommodate sites in foreign countries. These systems support best practices, such as Business Process Redesign (BPR), across several core business functions.

BPR is a pre-planning stage for ERP, a key "mapping" concept for aligning business strategies with information technology (Biazzo, 1998; Scheer & Habermann, 2000; Siriginidi, 2000; Schniederjans & Kim, 2003).

Hammer and Champy (1993) defined BPR as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance" (p. 31). ERP is a specific strategy for using information technology to institutionalize BPR's process changes (Biazzo, 1998; Keller & Teufel, 1998; Scott & Vessey, 2000; Taylor, 1998). However, the new organizational procedures emerging from BPR, and institutionalized in ERP, often pay little attention to human and social issues (Al-Mashari & Al-Mudimigh, 2003; Morgan, 1997; Taylor, 1998). BPR and ERP often preclude employees' concerns, and both are systems stressing hierarchy, top-down approaches for BPR (Biazzo; Willmott, 1995). Furthermore, profiles consisting of different authorization levels for ERP users (Little & Best, 2003), as well as employee control (mySAP™ ERP, 2003) can lead to silo domains. For instance, when employees and departments do not have equal access to information stored in an ERP database due to separation of duties (see Little & Best), they often wait for the appropriate ERP authority level to unlock the information. When they are waiting on readily available information, it often causes employee frustration and a sense of lack of trust.

Morgan, as well as Biazzo, argued that organizational process changes for innovations, such as the introduction of ERP, placed primary emphasis on the design of technical "business systems" as the key to organizational change. Because of this emphasis, these changes mobilized all kinds of social, cultural, and political resistance that reduces their effectiveness. Nonetheless, organizations continue to use ERP systems to institutionalize the design of technical "business systems."

Technical business systems assume that organizational change is a technical fact and apolitical and that human behaviors are pliable, and affected employees are passive actors (Biazzo). Reshef (1993) noted that structural contingency implies that employees have little discretion about the adoption and use of new technologies. That is, technologies, such as ERP, dictate organizational structures. ERP, however, is an enabler, and although it may institutionalize process changes, it does not drive change; instead, people propel organizational changes (Spitzer, 1996).

The advantage of ERP systems is organizational integration, the ability to standardize business processes and systems (Dong; Keller & Teufel). Dong noted that greater integration leads to

---

<sup>1</sup> Top ERP suppliers are SAP, Oracle, PeopleSoft, Baan, and J.D. Edwards.

more changes in existing systems, and the changes may be incongruent with existing business processes and employees' values. Therefore, ERP systems may trade off flexibility for standardization (Keller & Teufel). This trade-off, however, may affect the prevailing organizational climate and the perceived fit of the innovation with targeted employees' values (Klein & Sorra).

### Suppliers

ERP systems are inherently based on the perspective of the supplier who developed the system. User-based systems are based on the employees' awareness of a need for change and the internalization of the innovation in the users' repertoire (Klein & Sorra). Supplier-based ERP systems, more often than not, preclude employee participation/inputs in the decision to introduce, design, and implement the innovation. However, to "sell" the change to employees, the organization allows a selected group of employees to review the developed supplier system. This review is, often, akin to "consultative supervision," whereby after making a decision, managers ask employees for their opinions merely to provide them with a sense of participation (Kanungo & Bagchi; Reshef; Rush, 1969). The supplier-based system, if not adjusted, often changes every job and informational flow in the organization. However, if these changes adversely affect the employees, they will perceive the innovation as unfair and burdensome.

Supplier-based ERP systems often do not provide employees with a sense of process control. Studies link process control with employees' perception of fairness (Lind & Tyler, 1988; Thibaut & Walker, 1975), satisfaction, and performance (Colquitt, Noe, & Jackson, 2002). Unadjusted supplier-based ERP systems are more likely to be incongruent with employees' values and, more often than not, lead to the perception of unfair outcomes (Klein & Sorra). On the other hand, Klein and Sorra, as well as Kanungo and Bagchi, indicate that because organizational innovations affect a wide array of employees, top managers often decide to adopt supplier-based ERP systems. That is, the introduction of the supplier-based ERP system is initially less cumbersome than developing a user-based ERP system. However, diffusion or acceptance of the supplier-based ERP system may be difficult, mainly if it adversely affects employees. Efficient dissemination requires that the ERP system reflects the values and interests of targeted users and that the innovation effectively addresses relevant organizational challenges and opportunities. However, the ERP pre-planning stage seldom includes an appropriate diagnosis of the organization's needs and challenges before, or during, the implementation (Harrison & Shiron, 1999).

Few vendor-based organizational innovations are successfully diffused through the organization (Buckley, Monks & Sinnott, 1998; Brunsson & Olsen, 1993; Davenport, 1998; Goodman & Dean, 1994; Harrison & Shirom, 1999; Heckscher, Eisenstat, & Rice, 1994; Repenning, 2002; Spitzer, 1996). However, employee involvement in the implementation of supplier-based systems, such as ERP, appears to improve the adequacy and acceptance of the different business functions. Employees know their work and what tools are necessary to compress time.

### ERP Systems Implementation

The implementation of ERP systems should be driven by reengineering approaches, such as BPR, that involve changes in the work environment (Al-Mashari & Al-Mudimigh; Saxena & Fox, 1999). Effective implementations occur when employees accept the changes and consistently use the system (Dong; Klein & Sorra). The implementation of an ERP system is a transitional period, which can be as long as 24 months. During this period, targeted organizational members become skilled, consistent, and committed to using the system (Klein & Sorra).

Saxena and Fox pointed to five implementation phases. The first is the design phase, which includes "as-is analysis," "to-be flows," "gap analysis," and "prototype development and demonstrations." The first three items are necessary for the requirement definition process, and the last item ensures that the ERP system is congruent with the organization, and internal and external customers; it allows for employee feedback and for the implementation team to review solutions and modifications with employees. The second implementation phase is the construction phase, which incorporates the results of the design phase for configuration, data conversion, custom and interface development, reporting, and authorization administration. The third phase is system testing and user training; in this phase, user involvement (acceptance) and management commitment are critical. The fourth phase is "go-live," which involves a cutover plan that the implementation team may execute in stages or simultaneously across functions or locations. The challenge in this phase is to ensure a smooth transition between the legacy system(s) and the new ERP system. The final phase is the post-implementation stage. After the "go-live" phase, ERP projects require ongoing business process support, as well as application and technical assistance to the users. They also require appropriate staffing, training, change management reinforcement, and management commitment to ensure that users are comfortable with the redesigned changes and that the software performs effectively, and users consistently use it. Additionally, the new ERP system may not perform all the functions that the legacy system(s) performed. Thus, bolt-ons or workarounds may be necessary to perform some of the tasks that the legacy system(s) delivered.

Many researchers and consultants (i.e., Aladwani; Donovan, 2001; Saxena & Fox) believe that both managerial and employee commitment and involvement are necessary for successful implementation. They indicate that management must ensure appropriate requirement definition, proper selection of the ERP package, assign adequate resources to the project and provide relevant data collection and migration, as well as employees' involvement and commitment (Donovan; Rockford Consulting Group, Ltd., 1999; Saxena & Fox). In essence, management must intellectually stimulate the implementation team and potential users, broaden and elevate their interest, and articulate a realistic vision of the implementation process that can be shared with the users (den Hartog, Van Muijen, & Koopman, 1997). For instance, Aladwani believes that ERP implementation success depends on organizational, technical, and people strategies. He notes that the success of ERP initiatives is contingent on management, building a cumulative base of credibility with previous efforts, as well as minimizing users' adoption costs. Additionally, management must convince users and opinion leaders that their net outcome from adopting the new ERP system is positive. That is, the new ERP system will not adversely affect employees or change the current balance of power (Markus). Markus documented the failure of a new system that changed the balance of power in the organization.

Others, however, argue that ERP failures are due to organizations not adjusting their operations to fit the ERP framework (Al-Mashari & Al-Mudimigh, 2003; Schniederjans & Kim, 2003). Proponents of changing the organization to meet the ERP logic believe that organizations must use BPR to align their core business structure to accept the new ERP software (Taylor, 1998). However, adjusting the organization to fit ERP can increase users' adoption costs and resistance, which may lead to implementation failure (Aladwani; Rockford Consulting, Ltd., 1999).

Resistance is often due to high employee adoption costs. Such as increased workloads and effort (it takes longer to process daily work tasks) due to the new software, poorly trained employees and managers, poor package selection, or inaccuracies due to faulty data migration (Aladwani; Donovan; Rockford Consulting Group Ltd.). Donovan notes that another common

failure is management believes that the software is a tool for correcting fundamental business process flaws, instead of acknowledging that it is an organizational enabler.

Employees' shared summary perceptions of the benefits or disbenefits of ERP systems affect the implementation climate. ERP leaders can influence employees' shared summary perceptions through their ability to assess the needs, capabilities, inclination of organizational members, and to adopt and deploy an efficient ERP system that minimizes employees' adoption costs (Harrison & Shiron, 1999; Kanungo, 1998). Klein and Sorra, however, believe that implementation climate results from employees' expectations of organizational rewards and support for ERP use. Their view ignores external (global and site) forces that shape employees' overall perceptions. Global (including location) organizational climate influences the involvement and commitment of employees towards corporate initiatives (Naumann & Bennett, 2000). For instance, if employees believe that wages or benefits are unfair, their propensity to become highly involved and committed to the ERP initiative diminishes. Moreover, rewards and support for the use of a misspecified ERP system are unlikely to improve the implementation climate or increase usage. Employees' demand for an ERP system will depend on the employees' perceived or anticipated benefits (costs) of using the system (Aladwani).

Organizational global policies, as well as specific ERP implementation policies, affect employees' justice perceptions. When organizations support the employees' needs with excellent benefits, such as healthcare, tuition, etc. (Eisenberger, Huntington, Hutchinson, & Sowa, 1986); and provide opportunities for inputs and advancement. Employees are more prone to perceive the ERP initiative as fair and legitimate, worthy of their involvement and commitment. Unfortunately, many organizations associate the adoption and implementation of an ERP system with minimizing outlays. Thus, to reduce overall cost and justify the ERP acquisition, they curtail employee benefits, such as pay, job enrichment, healthcare, tuition, and aggressively reduce the workforce, instead of using attrition to reduce the workforce.

Additionally, to minimize ERP acquisition costs, they do not fully implement the "as-is analysis" intended to analyze and understand the existing organizational workflows, as well as gaps, by interviewing critical potential users. For instance, many consulting companies have tried to eliminate the "as-is analysis" phase, claiming that the ERP system is a vehicle for change, and the starting point should be the "to-be" phase of the project. Thus, they see no value in how employees currently perform tasks or in employees' inputs. Therefore, absence of the "as-is analysis," there is not a meaningful platform for employees' contributions. Employees are aware of this anomaly and often feel betrayed.

ERP packages encompass a significant degree of functionality and are difficult to configure. As a result, many organizations use consultants to guide them through the implementation process (Markus et al., 2000). However, some organizations are unwilling to allocate time and funds to reconfigure the ERP system to fit the organization's specific processes. In some instances, the software does not reflect what the organization does (Donovan, 2001), which leads to users' frustration and inconsistent use of the ERP system.

## Conclusion

The inability to resolve the paradox of potentially useful but underused ERP systems has caused organizations to spend billions of dollars implementing suppliers' prescribed best practices with little return (Repenning, 2002). It does appear that the paradox is due to an incomplete diagnosis of the organization's needs, the inability to codify the organization's unique requirements into the ERP software. Suppliers, supported by consultants, advance their generic

logic as an end and convince decision-makers that organizations should modify/adjust organizational procedures to support the suppliers' ERP configuration. However, the suppliers' configuration may not support the specific needs of the organization or employees. Supporting the needs of the organization or employees may require heavy customization, which increases the sale price of generic versions of the software (Gunson & de Blasis, 2002).

## References

- Aladwani, A. M. (2001). Change management strategies for successful ERP implementation. *Business Process Management Journal*, 7, 266-275.
- Al-Mashari, M., & Al-Mudimigh, A. (2003). ERP implementation: Lessons from a case study. *Information Technology & People*, 16, 21-33.
- Alter, S. (1978). Development patterns for a decision support system. *MIS Quarterly* (2:3), 33-42.
- Biazzo, S. (1998). A critical examination of the business process reengineering phenomenon. *International Journal of Operations and Production Management*, 18, 1000-1016.
- Brunsson, N., & Olsen, J. P. (1993). Reforming institutionalized organizations. In G. R. Hickman (Ed.). *Leading organizations: Perspective for a new era* (pp. 79-92). Thousand Oaks, CA: Sage Publications.
- Buckley, F., Monks, K., & Sinnott, A. (1998). Communication enhancement: A process dividend for the organization and the HRM department. *Human Resource Management*, 37, 221-222.
- Colquitt, J. A., Noe, R. A., & Jackson, C. L. (2002) Justice in teams: Antecedents and consequences of procedural justice climate. *Personnel Psychology*, 55, 83-109.
- Davenport, T. (1998). Putting the enterprise into the enterprise system. *Harvard Business Review*, 76, 121-131.
- Den Hartog, D. N., Van Muijen, J. P., & Koopman, P. L. (1997). Transactional versus transformational leadership: An analysis of the MLQ. *Journal of Occupational and Organizational Psychology*, 70, 19-34.
- Dong, L. (2001). Modeling top management influence on ES implementation. *Business Process Management Journal*, 7, 243-250.
- Donovan, R. M. (2001). Implementing ERP: No magic cure will fix all ERP ills. *Advanced Manufacturing*. Retrieved December 31, 2003, from <http://www.advancedmanufacturing.com/January01/implementing.htm>
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71, 500-507.
- Goodman, P. S., & Dean, Jr., J. W. (1994). Why productivity efforts fail. In W. L. Gunson, J., & de Blasis, J. P. (2002). *Implementing ERP in multinational companies: Their effects on the organization and individuals at work*. Retrieved April 12, 2005, from <http://www.crm2day.com/library/EpFIAAlukuERJZrfaE.php>.
- Hammer, M., & Champy, J. (1993). *Reengineering the corporation: A manifesto for business revolution*. London: Nicholas Brealey Publishing.
- Harrison, M. I., & Shirom, A. (1999). *Organization diagnosis and assessment: bridging theory and practice*. Thousand Oaks, CA: Sage Publication.
- Heckscher, C., Eisenstat, R. A., & Rice, T. J. (1994). Transformational processes. In C. Heckscher and A. Donnellon (Eds.), *The post-bureaucratic organization: New perspectives on organizational change* (pp. 129-177). Thousand Oaks, CA: Sage

- Publications. Kanungo, R. N. (1998). Leadership in organizations: Looking ahead to the 21st century. *Canadian Psychology*, 39, 71-82.
- Kanungo, S., & Bagchi, S. (2000). Understanding user participation and involvement in ERP use. *Journal of Management Research*, 1, 47-63.
- Kappelman, L. A. (1995). Measuring user involvement with information systems and with their development. *Journal of Computer Information Science*, XXV, 66-76.
- Keller, G., & Teufel, T. (1998). SAP R/3 process-oriented implementation. Harlow, England: Addison Wesley Longman.
- Klein, K. J., Conn, A. B., & Sorra, J. S. (2001). Implementing computerized technology: An organizational analysis. *Journal of Applied Psychology*, 86, 811-824.
- Klein, K. J., & Sorra, J. S. (1996). The challenge of innovation implementation. *The Academy of Management Review*, 21, 1055-1080.
- Lind, E. A., & Tyler, T. R. (1988). The social psychology of procedural justice. New York, NY: Plenum Press.
- Little, A., & Best, P. (2003). A framework for separation of duties in an SAP R/3 environment. *Management Auditing Journal*, 18, 419-430.
- Markus, M. (1983). Power, politics, and MIS implementation. *Communication of the ACM*, 26(6), 430-444.
- Markus, M. L., Petrie, D., & Axline, S. (2000). Bucking the trends: What the future may hold for ERP packages. *Information Systems Frontier*, 2, 181-193.
- Mohrman, S. A., Tenkasi, R. V., & Mohrman, Jr., A. M. (2003). The role of networks in fundamental organizational change: A grounded analysis. *The Journal of Applied Behavioral Science*, 39(3), 301-323.
- Morgan, G. (1997). Images of organization. Thousand Oaks, CA: Sage Publications.
- mySAP™ ERP. (2003, June). Press fact sheet, Retrieved February 21, 2004, from <http://www.sap.com/company/press/factsheets/solution/erp.asp>.
- Nah, F. F., Lau, J. L., & Kuang, J. (2001). Critical factors for successful implementation of enterprise systems. *Business Process Management Journal*, 7, 285-296.
- Naumann, S. E., & Bennett, N. (2000). A case of procedural justice climate: Development and test of a multi-level model. *Academy of Management Journal*, 43, 881-889.
- Repenning, N. P. (2002). A simulation-based approach to understanding the dynamics of innovation implementation. *Organization Science*, 13, 109-127.
- Reshef, Y. (1993). Employees, unions, and technological changes: A research agenda. *Journal of Labor Research*, 14(2), 111-129.
- Rockford Consulting Group Ltd. Retrieved December 12, 2003, from <http://rockfordconsulting.com/erp.htm>.
- Rush, H. M. F. (1969). Behavioral science: Concept and management application. New York, NY: The Conference Board, Inc.
- Saxena, A., & Fox, M. L. (1999). SAP plant maintenance implementation: The key success factors and their challenges. *1999 NPRA Refinery and Petrochemical Plant Maintenance Conference*, 111-125.
- Scott, J. E., & Vessey, I. (2000). Implementing Enterprise Resource Planning Systems: The Role of Learning from failure. *Information Systems Frontiers*, 2(2), 213-232.
- Scheer, A., & Habermann, F. (2000). Making ERP a success. *Communications of the Association for Computing Machinery*, 43(4), 57-61.
- Schniederjans, M. J., & Kim, G. C. (2003). Implementing enterprise resource planning systems with total quality control and business process reengineering: Survey results. *International Journal of Operations and Production Management*, 23, 418-429.
- Siriginidi, S. R. (2000). Enterprise resource planning in reengineering business. *Business Process Management*, 6(5), 376-391.

- Somers, T. M., Nelson, K. & Karimi, J. (2003). Confirmatory factor analysis of the end-user computing satisfaction instrument: Replication with an ERP domain. *Decision Sciences*, 34, 595- 621.
- Spitzer, Jr., Q. (1996). Managing the human side of change. Retrieved October 18, 1999, from <http://www.quality.org/tqmbbs/prin-pract/peowise.txt>.
- Taylor, J. C. (1998). Participative design: Linking BPR to SAP with an STS approach. *Journal of Organizational Change Management*, 11, 233-245.
- Thibaut, J., & Walker, L. (1975). *Procedural justice: Psychological analysis*. Hillsdale, NJ: Lawrence Erlbaum.
- Willmott, H. (1995). The odd couple? Reengineering business processes; managing human relations. *New Technology, Work and Employment*, 10(1), 89-98.

**Copyright of TJP is the property of The Jethro Project, and its contents may not be copied or emailed to multiple sites or posted to a listserver without the copyright holder's express written permission. Users, however, may print, download, or email articles for individual use.**