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Achieving Social Integration to Implement ERP Systems

Amany R. Elbanna
London School of Economics and Political Science, a.r.el-banna@lase.ac.uk

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Amany R. Elbanna
Department of Information Systems
The London School of Economics and Political Science
London WC2A 2AR
Tel.: +44 (0) 20 7955 7385, Fax.: +44 (0) 20 7955 7385
a.r.el-banna@lse.ac.uk

Abstract

This paper explores some of the social and organisational obstacles that face the implementation of an integrated organisation-wide ERP system. In particular, it focuses on the social and organisational aspects related to the system notion of integration. Drawing on empirical evidences from an international organisation, it suggests that social integration is needed in order to enable the technical integration capabilities of the system. The paper applies ANT notion of translation and introduces a concept of 'organisational othering' as a vehicle to conceptualise one of the problems that faces implementing such a system and the management successful practice to achieve social integration. Implications for research and practice are then discussed.

Keywords

ERP, Actor Network Theory, Systems Implementation, Organisational othering.

1. Introduction

The implementation of Enterprise Resource Planning (ERP) systems gained increasing attention over the last few years. Companies invest substantially to implement such systems in what is believed to be one of the largest single IT investment in the history of many organisations. In many industries ERP has turned out to be one of the prerequisites for doing business (Davenport, 1998) and the de-facto standard for the replacement of legacy systems in large, and particularly multi-national companies (Parr & Shanks, 2000). There is extensive evidence that companies experience considerable problems, particularly during the actual implementation project (Parr et al., 1999), in what is perceived to be a critical mission (Davenport, 2000). ERP implementation is affected by both technical, and social and organisational aspects (Krumbholz et al., 2000; Markus & Tanis, 2000; Holland et al., 1999), yet academics and practitioners come to agree that the major 'hurdle' of ERP implementation is social and organisational (Markus et al., 2000a; Mendel, 1999; Norris, 1998).

ERP systems are complex packaged software composed of several modules, such as human resources, sales, finance and production that are interconnected in order to provide cross-organization integration of data and business processes (Esteves & Pastor, 2001). *Organisational integration* is the key capability of the ERP system. The notion of integration lies in the heart of ERP as it "defines integration as the major issue of corporate governance" (Kallinikos, 2002). The system is designed to integrate organisational functions and to provide cross-functional information that crosses the traditional functional barrier within the organisation. It enables organisations to streamline business processes and coordinate across geographically dispersed locations (Davenport, 1998). In other words, it redefines the previously known organisational boundaries (Foremski, 1998; Brehm et al., 2001) and treats

the organisation as a monolithic integrated business entity. This is particularly relevant in the global implementation of ERP that cross countries' boundaries (Clemmons & Simon, 2001).

There is interesting research on the problematic integration character of the system from a technical view that focuses on the integration between ERP and other disparate systems that coexist with it (Themistocleous et al., 2001). Moreover, researchers sensitively observed that organisations, in many cases, reach a country specific customisation of the system within the ERP framework (Markus et al., 2000b) and that organisation-wide integration is not always feasible and could be problematic.

One of the problematic areas that previous research also pointed at is the project team, since organisations, in their attempt to materialise the integration function of the system, develop project teams comprised of staff from the different departments, business units, and subsidiaries affected by the system along with external consultants. Together these people lead the decision making concerning how the organisation's processes will be mapped or reconfigured to take advantage of the integrative functionality embedded in the ERP system (Sawyer, 2001). These teams tend to be large, heterogeneous and span organisational boundaries which make them complex entities to manage (Kay, 1996; Ward & Peppard, 1996).

This paper explores another social and organisational aspect that affects the implementation of ERP and in particular its main capability of integration. Through the application of the Actor Network Theory (ANT) notion of translation and the introduction of the concept of 'organisation othering', it aims to unravel one of the social risks involved in materialising the integration function of ERP systems and the constant efforts required to resolve the contradiction and tension between the package inscribed notion of integration and the organisation 'social logic'. The paper draws on the successful case of a multinational ERP implementation in a large international organisation.

The remainder of this paper is structured as follows. Section two outlines the research's informed theory and concepts. It briefly reviews ANT and in particular the notion of translation in addition to developing and introducing the new concept of 'organisational othering'. Section three reports on the research setting and methodology. Section four introduces the case study, followed by an analytical reading of its details. Section six presents the conclusion and the implications of the findings.

2. Theoretical Background

2.1 Actor Network Theory

Actor-network theory (ANT) was developed over the years in the field of science and technology studies (STS) through the collaborative work of many scholars (Latour, 1987; Law, 1992; Bijker & Law, 1997). ANT is occupied with unravelling the way societies come to accomplish certain goals (Latour, 1988). It maintains a distinct view of society since it views it as a network of human and non-human actors. And since the social is nothing but chains of associations between human and non-human actors, the theory keeps an analytically symmetrical view of both of the social constituents (human and non-human). It gained considerable attention in the IS field, and many IS scholars have applied it in their work (Walsham, 2001; Monteiro, 2000; Bloomfield et al., 1997). ANT views technology as a product of active negotiation and network building where society actively inscribes on the technology certain "programme of actions" (Monterio, 2000). It also views technology as what holds society together and renders it durable and relatively irreversible (Latour, 1991).

Translation is the dynamic by which an actor recruits others into its project. It is a continuous process and "never a complete accomplishment" (Callon, 1986). By and large it describes how actors are bent, enrolled, enlisted, mobilised in any of the others' plots (Latour, 1999). The word itself keeps its linguistic sense, it means that one version translates every other (Latour, 1987, pg.121). It does not mean a shift from one vocabulary to another but "it means displacement, drift, invention, mediation, the creation of a link that did not exist before and that to some degree modifies two elements or agents" (Latour, 1999, pg.179). It also has a "geometric meaning" that is moving from one place to the other. Translating interests means at once offering new interpretations of these interests and channelling people in different directions (Latour, 1987, pg.117). The translation or recruitment of entities towards a certain network could take place through implementing several strategies. All would lead the actors whatever they do and whatever they are interested in to help the network builders to pursue their interests.

Each network consists of more actors and intermediaries. At the same time a network could be collapse to represent a node in a wider network. An actor hence is not only a member of his own network 'local network' but also his network is part of a wider 'global' network. 'intermediaries' define the relationship between the local and global network.

ANT do not expect the network to hold forever since it has no inertia. The network holds only as long as the network builders involved invest their efforts to lock actors in a certain translation and prevent them from any other competing ones. It is irreversible if its translation is able to suppress any other competitive translation. On the other hand, a network could *reverse* in front of a stronger competitive translation that pull the actors away from the previous one (Callon, 1991).

2.2 Organisational Othering

The notion of 'othering' is adopted from anthropology and politics and is argued to be embedded in the ANT framework. The attempts to translate and recruit actors in a certain network are accompanied by attempts to distance or weaken the relationship between these actors and other networks. This is part of the competition between networks and in order to create sustainable boundary, space, and distance between the actors and other networks and hence defines 'them' and 'us'.

Othering and differing serves as a tool by which the identity of a group is assured against other groups. So by differing and focusing on the differences between 'us' and 'them', a group stresses their identity. they create "symbolic boundaries" around them to keep them pure and keep away intruders, foreigners, and 'others' (Bhabha, 1986)(Hall, 1997). Thus others are identified and outsided as they are different from 'oneself'. Hall argues that from many different directions and within many different disciplines, the question of difference and 'otherness' plays an increasingly important role. He explains that difference is ambivalent; it can play both a positive and a negative role. It is important for the production of meaning, the formation of language and culture, social identities, and a subjective sense of the self. Yet at the same time, it is threatening, a site of danger, of negative feelings, of splitting, hostility and aggression towards the 'other'.

'Organisation othering' is about the way in which some groups are perceived, categorised, and stereotyped by others. It is an organisational mechanism to differentiate and to facilitate acting upon others. This labelling and stereotyping of others, that is employed by a relatively powerful group as a mean of defining other less powerful communities, is carved and institutionalised over time. It stresses the identity of a group over 'others' (Beall, 1997). In organisations, some units, departments, or subsidiaries are stereotyped and 'othered'. Where each is perceived to constitute a different entity than 'us'; an entity that is from the outside is perceived to be a network of its own, with its own logic, norms, and business practices. This raises the question of how this othering could be possibly overcome in implementing ERP systems since the ERP systems logic is more about integration, transparency, and coordination.

3. Research setting and methodology

This research belongs to the qualitative school of research in information systems (Kaplan & Maxwell, 1994). It adopts an interpretive case study approach (Orlikowski & Baroudi, 1991; Walsham, 1995; Klein & Myers, 1998) since it explores the social aspects related to the ERP logic of integration. Interpretive case studies, by and large, are believed to be an appropriate approach for enquiries aimed at exploring the nature of phenomena .

Data collection took place between September 2000 and March 2001 in an international food and drinks organisation, anonymously 'Drinko' as part of a larger research project to study the implementation of ERP in various organisations. The system implementation project lasted for three years and consisted of implementing five modules of SAP in two major companies of the group in two different European countries. The researcher was allowed access to the prestigious organisation in the final phase of the project. The data, comprised of interviews and documents review, were collected from the two different countries, and members from the project team from each subsidiary were interviewed. The interviews varied between semi-structured and un-structured according to the informants' openness and willingness to talk freely. Twenty three members were interviewed including the project director, project manager, module managers, change managers and different project members from all the implemented modules in addition to members from the external consultancy team involved. Each interview lasted one hour to three hours and some members were either interviewed more than once or contacted via e-mail or telephone to follow up the progress of certain issues. Since the company keeps a strict confidentiality policy, tape recording was not allowed and the researcher took notes and wrote observations during the interview and extended and elaborated them and wrote more notes and observations directly after each interview.

4. The case study

Drinko is a global food and drinks group producing in around 50 countries and selling its products in more than 150 countries with employees about 12,500 people around the world. Drinko owns many production, packaging, and sales sites, each of which represents a company or group of companies that operates locally. Drinko's major production operation is in the UK and another European Country (disguised as EUB). The case will focus only on the business units of the UK group and the EUB group. This includes over 25 Business Units (BUs). In 1998, Drinko announced the initiation of a "major Drinko-wide initiative unprecedented in scale and cost" (CEO in the project inauguration speech) to implement a single system based on SAP technology. The project lasted for over three years with overall cost over £40 million. After some initial confusion concerning the project scope, the project

was narrowed down to focus on two major groups, namely the UK group and the EUB group in addition to the corporate centre and world-wide operational centres located in the UK. EUB is a relatively small European country. The EUB group had a long history of rejecting any sort of control coming from either the UK group and corporate centre. They were -in general- sensitive towards whatever comes from the UK.

5. Analysis of the Case Study

5.1 Othering vs. integration

EUB was for long 'othered' within Drinko. It is portrayed and stereotyped as "old fashioned", lazy people, using the same procedures and concepts for "over twenty years", complacent staff who have been, typically, working for the company for 15 years and more, and who do not have any intention to change, advance or modernise their "historic style" (as literally expressed by many UK interviewees). Through this othering mechanism UK BUs asserted their identity and perceived their staff as dynamic, modern, "capable of doing things", and able to face the aggressive competition in the market successfully, in contrast to EUB.

UK used to perceive EUB as resistant and stubborn staff who always reject any sort of ideas coming from the UK. Yet since EUB group was making "huge profits", and although they were believed to be far behind the UK in terms of business practices, structure, communication, and management style, the UK company was running this "love-hate relationship" on the basis that they were left alone to run themselves by themselves as long as they were "bringing the cash back" (interviews with executive manager, change manager, MD). UK accepted for long this distant relationship with EUB that allow EUB to be apart, distanced and separate as long as they are "bringing the cash back".

EUB, in return, believed that the UK unreasonably want to dominate, rule, and control EUB. They did not find a reason for the UK's perceived superiority and on every occasion tried to assert their identity and the fact that they were the powerful part that provides the cash for the company and without their hard work this company would have collapsed. EUB felt that although they provided a valuable intermediary for the UK network, they were not rightly positioned within the organisation. Hence they liked to stress the fact that they were the supporters of the whole network.

5.2 Translation

In 1996, the corporate top management became concerned with the flowing cash, the intermediary in ANT terms, that EUB provided and feared that the increased competition may shake and reduce it overtime. They felt the need to interfere on the 'cash cow' internal network and change it to be more efficient and capable of meeting the increasing competition. Yet they knew that EUB would be very sensitive towards whatever came from the UK and no change programme would be accepted there. This was the case until the notion of having an integrated system had been raised in the UK and coincided with EUB serious concern about the Y2K issues and their sheer number of legacy systems. The corporate top management, then, found this a good opportunity to align EUB to UK. They found that facing Y2K and its compatibility issues would provide a convincing excuse to implement the integrated system and interfere in EUB and connect it operationally to the UK.

For this reason, the system was presented to EUB top management as a way to solve the threatening situation and the danger of systems collapsing due to Y2K compatibility issues.

Hence, they problematised the system for EUB top management as a 'survival solution'. They also cut off the way in front of any other IT solution to that problem, as they convinced EUB that any other solution would not only be costly but also risky considering the large number of legacy systems in place in EUB. In doing so they set the integrated system (SAP) as an 'obligatory passage point' if EUB were to overcome their Y2K crises.

They were concerned that this would not be enough to pull the EUB internal network towards UK due to the "typically suspicious" EUB. They were sure that the 'invisible' network that the EUB top management represent would render itself visible and problematic as the project effectively commences. Hence they decided to go on and recruit more actors from the EUB network. They recruited the "others'" location of EUB and adopted it as the location of the project. In doing so and by expressing publicly that the choice of location offers "significant resources" (CEO speech) because of the size of Drinko operations in EUB and the "available capabilities" (project director speech) that EUB could provide and that UK team members would all fly and work from EUB, they appeared to follow EUB explicit interests in bending the whole UK network towards them. EUB welcomed the declaration and assigned two buildings for the project's teams.

5.3 Network reverse

UK people felt that they were enrolled in EUB internal network and that EUB was dominating the project, which they could not bear. They first complained of the building and continued to reflect their othering notion on everything in EUB network. The buildings were complained of as being "old… like all the buildings [in EUB]". However in practice, and as the researcher saw them, the buildings were not old or "historic" but only have different interiors than UK buildings where the UK BUs had open plan interior while the EUB buildings had corridors and closed offices.

They found that the closed offices and long corridors constituted part of the EUB associations and network and hence part of their identity which they strongly opposed, othered, and were not willing to cross-dress[1]. According to them the buildings' internal layout reflected a hierarchical, slow, and un-dynamic way of working "which [was] a common practice in EUB" (interviews with a module manager, a change manager, and different team members). Refusing to be enrolled in the EUB network, teams members from the UK were sharing rooms together and tried to translate the buildings their way or as expressed by different interviewees "Whenever we found a large room, we fitted more than one person together to allow for informal ways of working". Although the buildings of EUB were criticised of enforcing formal hierarchical relationship, the EUB business processes were later criticised to be personal and informal, which reflects the UK contradictions and opposition regarding EUB.

As the project manager was from EUB, the UK staff did not "see a point" to be recruited in his network and exchange the agreed upon intermediary, namely schedules, milestones, and progress against targets. For this reason, the project office lost track of some teams and had outdated information at all times of their progress. The project manager internal network that was invisible became visible as his aligned technical tools for project management such as project management software and Gantt charts were not allowed to operate because the data they had was out of touch with what was happening on the ground.

[1] Means not willing to pretend that they are like the "others".

The UK complained several times to the CEO of the uncooperativeness of EUB and accused it of being the reason for any future delays and also a potential threat to the system integration capabilities. In doing so, they tried to translate the corporate top management interests and channelled it towards streamlining the teams and enhancing their cooperation. The corporate top management commissioned a consultant company (an independent one and not involved in the implementation) to investigate the issue. Their report was confidentially submitted to the CEO. It stated that both EUB dominated teams and the project office preferred to share the same building while UK teams chose from the start to be in the other building. It also revealed that "the two buildings are taking on individual characters and alignment which might result in gaps appearing in the overall solution". This claim was strongly supported by the UK processes' owners who claimed to find it difficult to "conquer the in-built prejudices and impact of their location in designing and communicating a shared vision with the [EUB]". They preferred to work from their UK offices and kept blaming EUB for not cooperating and overcoming "prejudices"!

The corporate top management decided to change the project management structure. A little detour for EUB staff was needed to go away with their direct involvement in the project teams, yet to keep them broadly locked into the project network. Since pulling out the location was quite risky as it represented EUB actorship in the project, it was strongly associated with all the actors in EUB network and if it was pushed away, its associated network probably would have joined and withdrew from the project network. Hence the UK group found that to marginalize EUB, they needed to create invisible detours that took them away from the centre to the periphery of the project without feeling or realising the displacement. Hence they asked the consultants company to give their input in the issue.

After long discussions with the consultants, a report was compiled to deceive EUB and justify the change. It explained the need to change the project structure from a "programme push" which was taking place to a "business pull" and justified the change by mentioning that "it is not unusual to change during a programme" and that the change was a matter of forwarding the programme (consultants' report and different presentations, a change manager interview, a consultant interview). The actual changes made sure to marginalize EUB actors but continued to lock them into the project network. For example the programme new structure moved the managing director of EUB from the active post of sponsoring the sales and operations planning team to a more ceremonial post of being a member of the steering committee. The sponsors of the new teams were all located in the UK. To ensure locking the EUB business units, a new release owner post was created where each module had several owners to represent each company in the project scope. This ensured that EUB release owner will be responsible only for the businesses processes in EUB and the rest was left for UK release owners.

These changes guaranteed that EUB would not effectively be in a powerful position yet continued to have ceremonial actors in the network- in many cases- that ensured its loyalty to the project. Most of the newly appointed actors were working from their UK offices without any official announcement of a location change for the programme. Besides the programme office, which had little power, was still to be located in EUB. Hence, effectively, the project returned back to the UK after the UK people overwhelming feeling that it was dominated by EUB in terms of people and location.

5.4 The Solution: two shared services

The long othering of EUB was reflected in the system configuration. For example, SAP recommends and supports having one service centre for the whole organisation, which is

considered to be a source of cost cuts and efficiency. Accordingly, Drinko attempted to configure the system in a way that realises this benefit yet the question of its location turned out to be problematic. UK people believed that it has to be in the UK. They problematised the issue for the corporate top management that EUB do not have the competences to operate a shared service centre and that the only people who know how to operate it are in the UK and hence any single shared services centre should be located in the UK and not EUB.

Because of the sensitivity of the UK-EUB relationship and the UK full realisation that their othering of EUB is well known to the EUB side, the corporate top management had to take extra precautions. They did not want any explicit manifestation of otherness and marginalisation at this point, so they did not want to "take away everything" from EUB "territory that would jeopardise the whole thing in such a critical time" of the configuration. Thus they decided to compromise the system and configured it to have awkwardly two shared services, one in EUB and the other in the UK in order to assure the sovereignty of EUB and that this system while integrated won't affect their credentials and their rights to be left alone as before.

Yet at the same time the organisation made it clear that this is a temporary solution and that they intend to move to a single shared services centre somewhere else in the future but the time and location will be determined later after the implementation. By the end of 2001, and after the implementation, the company decided to undo this "odd structure" and take away the two shared services from the two countries and amalgamate them in one shared service located in a third European country. In doing so they hoped to avoid any controversy concerning who will boss whom.

6. Conclusion and Implications

The paper highlights one of the social and organisational issues that could hinder an essential function of the ERP system, namely the integration function. The organisational integration is one of the key aims of the organisations implementing ERP and is usually taken for granted as a technical capability of the system. The paper sheds light on the importance of considering the social logic that dominates the organisation and the practice of achieving the social integration required for implementing such technically integrated systems. It asserts that the social integration should not be taken for granted, and yet it requires constant monitoring and action.

Through the notion of 'organisational othering', the paper reveals the historical and long standing social logic of 'othering' embedded in business units relationships of Drinko and shown the negative effects that could have happened to the system implemented, namely isolated modules and isolated business units. It also shows one of the implications, namely the actual split of service centres. This split reveals that the othering could -in principle- be reproduced and inscribed in the system resulting in country customisation, and unusual and more expensive configuration. The corporate top management strategically allowed it to take place since they felt that a complete 'unothering' of EUB to achieve an integrated system is not possible. Hence they accepted it with views to rectify it but long after going live.

The paper then suggests that the social prejudices and fixed notions embedded in the organisation would be, in return, manifested in the project teams and would possibly be inscribed on the system implemented unless active 'programme of actions' is in place. It revealed how organisational othering could be inscribed into the system resulting in odd and more expensive organisational configuration of the system. This was manifested in the

creation of two service centres which is a more expensive and unnecessary from the ERP system view.

In practice, the findings provide insight into project management practices in information systems at large. Yet it is specifically important for ERP since it asserts that its essential character of technical integration cannot be materialised without social integration, and that organisational othering needs to be accounted for and managed in ERP implementations.

7. References

Beall J. (1997) Valuing Difference and Working with Diversity. In *A City For All: Valuing difference and working with diversity* (Beall J., Ed), pp 2-37, Zed Books Ltd., London and New Jersey.

Bhabha H.K. (1986) The Other Question: Difference, discrimination and the discourse of colonialism. In *Literature, Politics and Theory* (Barker F., Hulme P., Iversen M. and Loxley D., Eds), pp 148-172, Methuen & Co. Ltd.

Bijker W.E. and Law J. (Eds.) (1997) *Shaping Technology/Building Society: studies in sociotechnical change.* The MIT Press, Cambridge, Massachusetts.

Bloomfield B.P., Coombs R., Knights D. and Littler D. (Eds.) (1997) *Information Technology and Organizations: Strategies, Networks, and Integration.* Oxford University Press.

Brehm L., Heinzl A. and Markus L.M. (2001) Tailoring ERP Systems: A spectrum of Choices and their implications. In *34th Hawaii Conference on Systems Sciences*, Hawaii.

Callon M. (1986) Some Elements of a Sociology of Translation. In *Power, Action and Belief.* (Law J., Ed), pp 196-233, Routledge and Kegan Paul, London.

Callon M. (1991) Techno-economic network and irreversibility. In *A Sociology of Monsters: Essays on Power, Technology, and Domination,* (Law J., Ed), pp 132-161, Routledge, London.

Clemmons S. and Simon S.J. (2001) Control and Coordination in Global ERP Configuration. *Business Process Management Journal* 7(3), 205 -- 215.

Davenport T.H. (1998) Putting the Enterprise into the Enterprise System. *Harvard Business Review* (July-August), 121-131.

Davenport T.H. (2000) *Mission Critical: Realizing the promise of enterprise systems.* Harvard Business School Press, Boston.

Esteves J. and Pastor J. (2001) Enterprise Resource Planning Systems Research: An annotated bibliography. *Communication of the Association for Information Systems* 7(8),

Foremski T. (1998) Enterprise Resource Planning: A way to open up new areas of business. *Financial Times*, p 6.

Hall S. (Ed.) (1997) *Representation: Cultural representations and Signifying Practices.* Sage Publications.

Holland C.P., Light B. and Gibson N. (1999) A Critical Success Factors Model For Enterprise Resource Planning Implementation. In *7th European Conference on Information Systems*, pp 273-287, Copenhagen.

Kallinikos J. (2002) Re-opening the Black Box of Technology: Artifacts and human agency. In *23rd Annual International Conference on Information Systems (ICIS)*, Barcelona.

Kaplan B. and Maxwell J.A. (1994) Qualitative Research Methods for Evaluating Computer Information Systems. In *Evaluating Health Care Information Systems: Methods and Applications* (Jay S.J., Ed), pp 45-68, Sage, Thousand Oaks, CA.

Kay E. (1996) Desperately Seeking SAP Support. *Datamation*, pp 42-45.

Klein H.K. and Myers M.D. (1998) A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems.

Krumbholz M., Galliers J., Coulianos N. and Maiden N.A.M. (2000) Implementing Enterprise Resource Planning Packages in Different Corporate and National Cultures. *Journal of Information Technology* 15, 267-279.

Latour B. (1987) *Science in Action.* Harvard University Press, Cambridge, Massachusetts.

Latour B. (1988) *The Pasteurization of France.* Harvard University Press.

Latour B. (1991) Technology is Society Made Durable. In *Sociology of Monsters.* (Law J., Ed), pp 103-131, Routledge, London.

Latour B. (1999) *Pandora's Hope.* Harvard University Press, Cambridge, MA.

Law J. (1992) Notes on the Theory of the Actor-Network: Ordering, Strategy, and Heterogeneity. *Systems Practice* 5(4), 379-393.

Markus L.M., Axline S., Petrie D. and Tanis C. (2000a) Learning from adopters' experiences with ERP. *Journal of Information Technology* 15, 245-265.

Markus M.L. and Tanis C. (2000) The Enterprise System Experience. In *Framing the Domains of IT Research* (Zmud R.W., Ed), Pinnaflex Educational Resources, Inc., Cincinnati, OH.

Markus M.L., Tanis C. and Fenema P.C.v. (2000b) Multisite ERP Implementations. *Communications of the ACM* 43(4), 42-46.

Mendel B. (1999) Overcoming ERP Projects Hurdels. *InfoWorld* 21(29),

Monteiro E. (2000) Monsters: From Systems to actor-networks. In *Planet Internet* (Braa K., Sorensen C. and Dahlbom B., Eds), Studentlitteratur, Lund, Sweden.

Monterio E. (2000) Actor- Network Theory and Information Infrastructure. In *From Control to Drift* (Ciborra C.U.E.A., Ed), pp 71-83, Oxford University Press, New York.

Norris G. (1998) *SAP: an executive's comprehensive guide.* J.Wiley, New York.

Orlikowski W.J. and Baroudi J.J. (1991) Studying Information Technology in Organizations: Research Approaches and Assumptions. *Information Systems Research* 2(1), 1-28.

Parr A. and Shanks G. (2000) A Model of ERP Project Implementation. *Journal of Information Technology* 15, 289-303.

Parr A., Shanks G. and Darke P. (1999) The Identification of Necessary Factors for Successful Implementation of ERP Systems. In *IFIP Working Group 8.2 Conference*, pp 99-120.

Sawyer S. (2001) Socio-Technical Structures in Enterprise Information Systems Implementation. In *IEEE EMS International Engineering Management Conference*, pp 172-178, Albany, NY.

Themistocleous M., Irani Z. and O'Keefe R.M. (2001) ERP and Application Integration: Exploratory Survey. *Business Process Management Journal* 7(3), 195 -- 204.

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

Walsham G. (2001) *Making a World of Difference: IT in a Global Context.* John Wiley & Sons, Ltd.

Ward J. and Peppard J. (1996) Reconciling the IT/Business Relationship: a troubled marriage in need of guidance. *Journal of Strategic Information Systems* 5, 37-65.