

2008

Understanding the Use of Technology in Organisations: A Structural Approach

Acklesh Prasad

UQ Business School The University of Queensland Queensland 4072, Australia, a.prasad@business.uq.edu.au

Jon Heales

UQ Business School The University of Queensland Queensland 4072, Australia, j.heales@business.uq.edu.au

Follow this and additional works at: <http://aisel.aisnet.org/acis2008>

Recommended Citation

Prasad, Acklesh and Heales, Jon, "Understanding the Use of Technology in Organisations: A Structural Approach" (2008). *ACIS 2008 Proceedings*. 38.

<http://aisel.aisnet.org/acis2008/38>

This material is brought to you by the Australasian (ACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ACIS 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Understanding the Use of Technology in Organisations: A Structural Approach

Acklesh Prasad
UQ Business School
The University of Queensland
Queensland 4072, Australia
a.prasad@business.uq.edu.au

Jon Heales
UQ Business School
The University of Queensland
Queensland 4072, Australia
j.heales@business.uq.edu.au

Abstract

Information Technology and its relationship to organisational performance has long been the interest of researchers. While there is concurrence that IT does contribute to performance, and we are efficiently expanding our knowledge on what factors cause better leveraging of IT resources in organisations, we have done little to understand how these factors interact with technology that results in improved performance. Using a structural lens that recognises the recursive interaction between technology and people in the presence of social practices, and the norms that inform their ongoing practices, we propose an ethnographic approach to understanding the interaction between technology and resources, aiming to provide richer insight on the nature of the environment that promotes better use of IT resources. Such insights could provide the IT users with at least an initial conception of the IT usage platform that they could promote in their organisations to leverage the most from their IT resources.

Keywords

IT Resources, Structuration, Ethnography, Performance, Capable Resources.

INTRODUCTION

Information Technology [IT] and its relationship to organisations' structures, processes, and outcomes has long been interest to researchers. Over the years, one such relationship, technology and organisational performance, has been explored using different research perspectives, for example the production function (Banker and Kemerer 1989; Brynjolfsson 1994; Dewan and Michael 1998; Dewan and Min 1997), process oriented approach (Green and Hevner 2000; Steers 1976), and the complementarity approach (Harrison et al. 2001; Subramani 2004; Zhu 2004). Today it is argued that technology on its own may not be able to achieve much for businesses; rather it is seen as an important tool to achieve competitive advantage (Porter 2001a; 2001b). Thus, researchers are exploring this conception using the resource-based view of the firm to postulate that it is how the organisations leverage the IT resources, through unique organisational capabilities, that determine the nature of organisational outcomes.

Understanding and identifying the factors that may have a synergy with IT resources, or factors that have the unique capability to leverage IT resources, is important for users of technology as it could form the basis for shaping their IT usage environment. Insights into these factors also help organisations realise their resource base and make them aware of their potential in making better use of their IT resources. Thus, while research has and continues to broaden our knowledge of the factors in organisations that may lead to better leveraging of IT, an important piece of information, little has been done to move forward to the next stage in this area. Specifically, our knowledge of how these resources are utilised in organisations is at its infancy. Such an initiative is important as it may provide IT investors with potential capable resources practical insights and at least an initial conception of the IT usage platform that they could promote in their organisations to leverage the most from their IT resources.

The aim of this research is to understand how technology is leveraged in organisations using a structuration perspective. The rest of the paper is organised as follows. The next section provides an overview of the current IT and business performance research followed by a discussion on the theoretical framework. In the final section, we present our research design and the proposed output that we anticipate presenting at the ACIS 2008 conference.

INFORMATION TECHNOLOGY AND ORGANISATIONAL PERFORMANCE – AN OVERVIEW

Prior research has investigated ITs contribution to business performance since the early days of IT deployment. This research had an unconvincing start largely due to issues of measuring the contribution of IT investments, and these problems are well noted in prior IS literature (Barua and Mukhopadhyay 2000). Further, researchers are also aware of the fact that IT creates value in organisations indirectly but this has been difficult to segregate from other factors that create value in organisations.

Nevertheless, despite being aware of these challenges, owing to our improved conceptualisation of the nature of IT resources and by seeking assistance from management and marketing theories (Melville et al. 2004), we have significantly broadened our knowledge of the relationship between IT and organisational performance. Early research had difficulty in finding the relationship between IT and performance (see for example, Baily 1986; Baily and Chakrabarti 1988; Cron and Sobol 1983; Franke 1987 ; Roach 1987), and coined the term “productivity paradox”¹. Subsequent alternative methodological considerations have provided convincing arguments that IT does indeed contribute to organisational performance. In these considerations, the importance of the relationship between IT and other factors of organisation is well recognised and current research continues to identify idiosyncratic firm characteristics that could enable IT to contribute more towards business performance. The current stream of IT business performance research has shifted away from a direct mapping of IT investments to performance, largely at firm level, to the important conception that IT is an enabler, and that there is a need to understand what factors and what surrounding environmental factors could best enable IT resources to contribute to organisational wellbeing.

The Business Value Complementarity Theory (BVC) for example, suggests that organisations have activity patterns and the factors within these activity patterns should be complementary (Edgeworth 1881; Milgrom and Roberts 1990). The BVC perspective advocates that increasing one factor will increase the benefits when other components are moved in the same direction. Thus, under the BVC perspective, objects, processes, people, and technology have a value synergy amongst themselves (Barua et al. 1995). The BVC perspective is helping researchers recognise other factors that help IT contribute to business performance. Prior research has identified factors like workforce skills, decision rights, investment in human capital (Hitt and Brynjolfsson 1997), and have concluded that “organisational practices are important determinants of IT productivity”, while other studies have considered factors like customisation and task modularity (Grenci et al. 1998). Current studies continue to explore this important dimension in IT performance research by exploring factors like IT governance, organisational design and reward systems, suggesting that an appropriate IT usage platform could be strong determinants of IT performance (for example, Prasad and Heales 2008).

Recently, IS researchers have sought guidance from strategic management theory, and using the resource-based view of the firm [RBV] argue that organisations possess resources, and a subset of it helps them achieve competitive advantage [capable resources]. The resource based view of the firm argues that IT resources on its own may not be able to contribute to business performance because they could be easily replicated or acquired by others. Rather, it is the way the capable resources leverage the IT resources that determine the level of contribution of IT to performance. The inference in this argument is that capable resources are rare, heterogeneous, immobile and non-substitutable, thus provides a cushion and limits competition. This resource based argument is well conceptualised in IS research and researchers are now exploring the capable resources that may help leverage IT’s contribution to performance. For example prior research has considered managing external relationships (Feeny and Willcocks 1998), market responsiveness (Bharadwaj et al. 2000; Ross et al. 1996), IS-business partnerships (Bharadwaj et al. 2000; Powell and Dent-Micallef 1997), IS planning and change management (Feeny and Willcocks 1998; Marchand et al. 2000), and IS infrastructure (Benjamin and Levinson 1993; Ray et al. 2005). Recently, studies are attempting to explore how IT resources contribute to performance by complementing the complementary and resource based arguments (Prasad and Heales 2008).

These theoretical perspectives continue to provide us with strong indications on the importance of the synergy between IT resources and the other organisational factors, the fact that it is how IT resources are uniquely used within the organisations that determine the level of ITs contribution to performance. While such research continues to broaden our knowledge on the types of resources that could help leverage ITs contribution, for competitive advantage or otherwise, this does not provide researchers and IT users with the knowledge of how such resources are used in organisations to leverage the most from their IT resources. While it is envisaged that organisations will eventually obtain insights of how to better leverage their IT resources through learning, such an initiative is an important forward-step in IT performance related research as it provides IT users with initial insights of the dynamics involved in achieving the most out of their IT investments. One of the ways to

¹ Productivity Paradox is a term that relates to a situation where no association is found between IT investments and business performance. In relation to this Roach (Roach 1987) stated: “*we can see computers everywhere but in the productivity statistics.*”

understand how organisations ‘use’ IT, and subsequently contribute to performance is to be part of the phenomena of IT use in organisations and explore the relationship between the resources and the users of the resources in a natural setting. We propose a structuration approach in exploring the relationship between IT and other organisational resources that we present next.

A STRUCTURATION PERSPECTIVE ON UNDERSTANDING HOW IT IS LEVERAGED IN ORGANISATIONS

The inherent opposition in the social sciences between subjective and objective dimensions of social reality, and its implications on understanding a phenomena, has been the focus of social theorists (for example, Giddens 1976; 1984) and philosophers of science (for example, Bernstein 1983). The result was an alternative meta-theory that incorporates both the objective and subjective dimensions. One such theory is the Giddens’ Structuration Theory (Giddens 1976; 1979; 1984) that allows researchers to embrace both the subjective and objective conceptions of organisations. Giddens (1984) proposes the notion of structure as a set of enacted rules and resources that mediate social actions through facilities, norms and interpretive schemes. Actors, in their recurrent social practices, draw on their knowledge (prior action and situation on hand), the facilities, and their norms and apply these to structure their current action, and in doing so, they recursively instantiate and thus reconstitute the rules and resources that structure their social action (Orlikowski 2000).

Technology in organisations is a structure (in Giddens’ terms), and thus the same recursive constitution applies. People draw on their skills, power, knowledge, assumption, and expectations about the technology and its use (Orlikowski and Gash 1994). Users also draw on their knowledge of and experiences with the institutional contexts in which they live and work, and the social and cultural conventions associated with participating in such contexts (Orlikowski 2000). As such, people’s use of technology becomes structured by these experiences, knowledge, meanings, habits, power relations, norms, and the technological artifacts at hand (Orlikowski 2000). Recursively, they embody a distinct technology-in-practice – one that is a product of their capabilities. Using this structuration lens we have seen the development of a number of structuration models of technology in the past, providing us with insights on the role of technology in organisations (for example, Jones and Karsten 2008 for a meta analysis of the use of Structuration Theory in IS Research; Orlikowski and Robey 1991; Poole and DeSanctis 1990).

These models argue that technology as an embodying structure which is then appropriated by users during their use of technology (Orlikowski 2000). These models relay the significance of human interaction, and since a structural perspective is inherently dynamic and grounded in on-going human interaction, it has the potential to explain emergence and change in technologies and use (Orlikowski 2000). Such conjecture could be expanded to understand the interaction of capable resources, complementary resources, and technology in organisations. The structuration approach has been explored in the analysis of organisational processes in information systems (see for example Barley and Tolbert 1997; DeSanctis and Poole 1994; Jones and Orlikowski 2004; Orlikowski 1992; 2000; 2002), and in other disciplines (for example, Sandberg 2000).

Structuration is posited as a social process that involves the reciprocal interaction of human actors and structural features of organizations (Orlikowski 1992). It recognizes that human actions are enabled in the organisational structures, yet these structures are the result of previous actions. The role of human actors in reaffirming structural properties is highlighted so as to avoid reification (Giddens 1984) . In the context of use of information technology in organisations, from structuration lens, human actions create and change technology, yet humans also use it to accomplish some action. This recursive notion of technology is what Orlikowski calls duality of technology (Orlikowski 1992).

Technology is seen as the product of human action (what they would like to achieve), while it also assumes structural properties. That is, technology is physically constructed by actors working in a given social context, and technology is socially constructed by actors through the different meanings they attach to it and the various features they emphasize and use (Orlikowski 1992). Understanding the extent to which this technology contributes to performance in organisations depends upon ones ability to understand the meaning the actors (management and employees) attach to technology and how they use it. This interaction is knowledgeable and reflexive. Respectively, one may not understand IT’s contribution in business by ignoring this notion of interactivity between technology and actors. We propose to explore this interactivity to understand the use and development of capable resources using an interpretive methodology which we present next.

METHOD

We propose to adopt an ethnographic approach, in order to provide the most in-depth analysis of the phenomena. Ethnography allows one to see what people are doing as well as what they say they are doing, thus obtaining a deep understanding of the people, their motivations, the organisation, and the broader context within which they work. Ethnographers immerse themselves in the life of people they study (Lewis 1985) and seek to

place the phenomena studied in their social and cultural context. Given that understanding how IT contributes to performance focuses on the social and organizational contexts of IT usage, ethnographic research is an important means of studying these contexts and offers a rigorous approach to the analysis of how organisations use IT with the notion of context being one of the social construction of meaning frameworks. Ethnographic research is thus well suited to providing rich insights into the human, social, and organizational aspects IT usage, and posits as the most suitable approach to obtaining insights on how organisations use IT using the structuration lens.

Organisational (Site) Selection

We will begin with some general criteria for site selection. Since the aim is to search for generic themes in IT use, we would focus on sites that represent IT usage diversity, and that could provide access to different levels of organisation. We also want to include employees and managers at different hierarchy in the organisation at a site where the groups (divisions) have had experienced fundamental IT investments, and groups that may have just reengineered their processes. Importantly, we would like to study organisation that are known to be in the forefront of IT usage, as the themes that emerge from these organisations would most likely to characterise a wide range of organisations.

The ethnographic research process is field intensive and longitudinal. This will require a considerable amount of organisational assistance in permitting us to access over a long period of time, and to a wide range of people. We will hold preliminary meetings with organisations that show interest, to ensure that there is a trade off, and they stand to learn something from the new to-be-produced knowledge.

To facilitate site selection, using theoretical sampling, we will select a number of organisations in the forefront of IT usage at different levels. Then, we will send an expression of interest, explaining the nature and the purpose of the study. Upon receipt of a favourable response, we will consider the tradeoffs issue, and will select an organisation that provides the best environment for a deep understanding of the interaction between IT and other organisational resources. This research will be conducted by a team of three researchers, and we expect to complete our data gathering within a period of eighteen months.

Sampling

The goal of this research is to understand the living meaning of a collective situation of the use of IT in organisations. However, much of the data gathered will focus on the individuals. As a result, we will use triangulation, a process where there is continual concurrence and comparison of data obtained from different sources that attempts to describe the same phenomena. A negative approach may be useful, where we will decide who and what not to study, and will use a big net (Fetterman 1998), and at first, mingle with whoever we can. We will strongly adopt an informal strategy, where, wherever we can, will try to “slip a foot in the door”, and mix it up with judgemental sampling to target units and people than can best help us answer our research question.

The focus of this research will be on workers and management who use technology, and we will conduct interviews and discussions with all those who are directly involved, in addition to observing them. We will also explore the views and experiences of mid and senior level managers, and the members of the IT department (the technical teams). These sampling techniques (individual or group meetings) will depend upon the constraints imposed by the chosen site. For example, in a production environment, access to individuals will be at the manufacturing floor, so we will spend more time at the manufacturing floor to meet the individuals and related managers. There needs to be a good mix between independence and soliciting support. For an ethnographer, it is difficult to penetrate into the “culture of the workforce”, and we will attempt to find somebody to introduce us to the organisation, preferably a senior member. Once we achieve acceptance into organisation, the next level of data gathering will commence.

Data Gathering

We will employ a number of ethnographic techniques such as observations of users and managers of IT, documentation review, social contact and being part of the workforce, and structured and unstructured interviews to collect the data. In the first phase of the research, we will gather historical data from in-house published materials and with senior managers on the company, its core business processes, and the use of technology. We propose to conduct small group discussions, and we will invite the outspoken individuals for a more probing discussion. We plan to tape-record these discussions, but will give the informants the opportunity to decide.

We will also try to attend management meetings, hoping to observe the discussion, and to ask questions. We will also observe the participants, a process of living in the site and spending time observing and/or working side-by-side with employees. An ethnographer may get the richest data in an informal setting (Fetterman 1998). We will

try to accompany them to coffee and lunches, and hopefully to after-work social gatherings. This will be useful in building the trust that will allow them to explore their experiences with us. We will start with the basics in participation observation, with simple questions – “What is this?” As we get involved in the actual process of use of IT, we will record our observations of our own learning and discovery process. A specified time will be spend at each core process, and will include observation, interviewing the users in their daily interaction with the IT within the processes. Participation in the interview and other aspects of data gathering will be voluntary, and any invitations for participation will be our sole initiative. If needed, we will seek other key stakeholders (customers, system developers) from outside the company.

One of the keys to ensuring rich data collection is to set a friendly atmosphere of interaction. We will pursue a non-judgemental form of listening to solicit people’s experiences that are still implicit. If they will have a problem expressing their implicit thoughts, we will encourage them to draw pictures or some other way to express themselves. We will try our best not to constrain the informants in anyway. These interviews will be as informal as possible.

At this stage, we should be able to identify few “key actors”. They will provide us with a rich set insights, and up-to-date cultural information. We will try to establish a bond of trust with my key actors, and try to spend more time with them. However, we will ensure that we are not over relying on them and will continue to target multiple resources.

Data Analysis

We will adopt an inductive approach to analysis the data, treating data like the informants – listening to what the data is saying without any preconceived judgement. The ability to think is crucial in ethnographic data analysis. We will start with simple perceptions, spending time identifying the patterns, allowing them to contradict. We will focus on the key elements of IT investments, business resources, and their contribution to performance (Eisenhardt 1989; Glaser and Strauss 1967; Orlikowski 2002), but remaining alert to emerging ideas. Data analysis will include multiple readings of interview transcripts, and other documentation.

As with data collection, triangulation is basic in data analysis (Fetterman 1998), and is the heart of ethnographic validity. We will make every attempt to improve the quality of our data, thus improving on the accuracy of our findings. For every piece of important information, we will revisit an alternative source to confirm it. We hope that all will share a few critical points on some aspect of the use of IT that brings business value. This will provide us with a good grasp of fundamental ideas of IT usage, and should help us in understanding the “IT resource usage communities” values of IT usage and performance.

Once we establish a basic understanding of the community culture (IT usage), then we will look for patterns of thought and behaviour that repeat with various situations and various players. The patterns an thoughts are the key form of ethnographic reliability (Hammersley 1992; Hammersley and Atkinson 1989). From the undifferentiated ideas, we will collect pieces of information, compare, contrast, and sort gross techniques and minutiae until we can identify discernible thought and behaviour on IT usage and benefits. We will then use this thought and behaviour and will listen and learn, and compare. With further sorting, sorting and shifting, we should expect to see some themes appearing. This will continue in an iterative form, and we will move up to build a broader understanding.

We will also analyse any key event that we have come across (which we will record) (for example introduction of technology) hoping to derive some social activity, or embedded meaning. We will also use flow charts, organisational charts to evaluate the chain of communication, and decision rights. Any written or electronic data not considered earlier will be content analysed, and where necessary, will help triangulate information within these documents to ensure they are consistent. Meeting minutes, budgets, and policy statements may provide important insights into management philosophy on IT investment and use. Practices are engaged in by individuals as part of the ongoing structuring processes through which institutions and organisations are produced and reproduced (Orlikowski 2002). At this stage, we expect to see some similarities, and hopefully some counterintuitive conceptions of the nature of use of IT that contributes to performance. This will allow us to crystallise our thoughts to come up some insights on how IT is used and contribute to performance.

CONCLUSION

The level of IT spending in organisations is growing rapidly. Technology has penetrated significantly into business processes, and is, directly controlling these key processes, or their introduction has resulted in a radical change in those business processes. The recent arguments in the resource based logic has highlighted that it is not IT itself that generates value; rather it is how IT is used that contributes to organisational performance.

Our approach to understanding ITs contribution is will provide a richer understanding on how IT contributes to business performance. Gidden’s Structuration Theory tames the subjective-objective conception of organisations

that posits a reciprocal interaction of human actors and the structural features of organisations, and provides an ideal framework to understanding how resources and technology interact in organisations with an ethnographic approach.

As this will be a rather lengthy study, we will present our findings-to-date at ACIS 2008. We look forward to receiving valuable feedback from the conference that will help us further our study and help us in identifying the patterns and themes that would broaden our knowledge of the nature of the interaction between resources and IT that contributes to performance.

REFERENCES

- Baily, M.N. 1986. "What Has Happened to Productivity Growth?," *Science* (234:4775), pp 443-451.
- Baily, M.N., and Chakrabarti, A. 1988. *Electronics in White Collar Productivity*. Washington DC:
- Banker, R.D., and Kemerer, C.F. 1989. "Scale Economies in New Software Development," *IEEE Transactions on Software Engineering* (15:10), Oct, p 1199.
- Barley, S.R., and Tolbert, P.S. 1997. "Institutionalization and structuration: studying the links between action and institution," *Organization Studies* (18), pp 93-117.
- Barua, A., Kriebel, C.H., and Mukhopadhyay, T. 1995. "Information Technologies and Business Value: An Analytic and Empirical Investigation," *Information Systems Research* (6), pp 3-23.
- Barua, A., and Mukhopadhyay, T. 2000. "Information Technology and Business Performance: Past, Present, and Future," in: *Framing the Domains of IT Management* R. Zmud (ed.). Cincinnati, OH: Pinnaflex Inc, pp. 65-84.
- Benjamin, R.I., and Levinson, E. 1993. "A Framework for Managing IT-Enabled Change," *Sloan Management Review*, pp 23-33.
- Bernstein, R.J. 1983. *Beyond Objectivism and Relativism*. Pennsylvania: University of Pennsylvania Press.
- Bharadwaj, A.S., Bharadwaj, S.G., and Konsynski, B.R. 2000. "A Resource Based Perspective of IT Capability and Firm Performance: An Empirical Investigation," *MIS Quarterly* (24:1), pp 169-196.
- Brynjolfsson, E. 1994. "Information Assets, Technology, and Organization," *Management Science* (40:12), pp 1645-1662.
- Cron, W.L., and Sobol, M.G. 1983. "The relationship between computerization and performance: A strategy for maximizing the economic benefits of computerization," *Information and Management* (6), pp 171-181.
- DeSanctis, G., and Poole, M.S. 1994. "Capturing the complexity in advanced technology use: Adaptive structuration theory," *Organization Science* (5:2), May, p 121.
- Dewan, S., and Michael, S.C. 1998. "Firm Characteristics and Investments in Information Technology: Scale and Scope Effects," *Information Systems Research* (9:3), Sep98, p 219.
- Dewan, S., and Min, C.K. 1997. "The substitution of information technology for other factors of production: A firm level analysis," *Management Science* (43:12), pp 1660-1675.
- Edgeworth, F.Y. 1881. *Mathematical Physics*. London: Kegan Paul.
- Eisenhardt, K. 1989. "Building Theories from Case Study Research," *Academy of Management Review* (14:4), pp 532-551.
- Feeny, D.F., and Willcocks, L.P. 1998. "Core IS Capabilities for Exploiting Information Technology," *Sloan Management Review* (39), pp 9-21.
- Fetterman, D.M. 1998. *Ethnography: Step by step*, (2nd ed.). Newbury Park: Sage Publications.
- Franke, R.H. 1987 "Technological Revolution and Productivity Decline: Computer Introduction and the Financial Industry," *Technological Forecasting and Social Change* (31).
- Giddens, A. 1976. *New Rules for Sociological Methods*. New York: Basic Books
- Giddens, A. 1979. *Central Problems in Social Theory: Action, Structure, and Contradiction in Social Analysis* Berkeley, CA: University of California Press.
- Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structure*. Berkeley, CA: University of California Press.

- Glaser, B., and Strauss, A. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine Publishing Company.
- Green, G.C., and Hevner, A.R. 2000. "The Successful Diffusion of Innovations: Guidance for Software Development Organizations," *IEEE Software* (17 Issue 6), Nov, p 96.
- Grenci, R.T., Barua, A., and Whinston, A. 1998. "A Theory of Impact of Technology-Enabled Customization," *Working Paper, The University of Texas at Austin*.
- Hammersley, M. 1992. *What's wrong with ethnography? Methodological explorations*. London: Routledge.
- Hammersley, M., and Atkinson, P. 1989. *Ethnography: Principles and Practices*. London: Routledge.
- Harrison, J.S., Hitt, M.A., Hoskisson, R.E., and Ireland, R.D. 2001. "Resource complementarity in business combinations: Extending the logic to organizational alliances," *Journal of Management* (27), pp 679-690.
- Hitt, L.M., and Brynjolfsson, E. 1997. "Information Technology and Internal Firm Organization: An Exploratory Analysis," *Journal of Management Information Systems* (14), pp 81-101.
- Jones, M., and Orlikowski, W. 2004. "Structuration Theory and Information Systems: A critical Reappraisal," in: *Social Theory and Philosophy for Information Systems*, J. Mingers and L. Willcocks (eds.). UK: Wiley, Chichester, pp. 297-328
- Jones, M.R., and Karsten, H. 2008. "Giddens's Structuration Theory and Information Systems Research," *MIS Quarterly* (32:1), pp 127-157.
- Lewis, I.M. 1985. *Social Anthropology in Perspective*. Cambridge: Cambridge University Press.
- Marchand, D.A., Kettinger, W.J., and Rollins, J.D. 2000. "Information Orientation: People, Technology and the Bottom Line," *Sloan Management Review* (41), pp 69-80.
- Melville, N., Kraemer, K., and Gurbaxani, V. 2004. "Information Technology and Organizational Performance: An Integrative Model of IT Business Value," *MIS Quarterly* (28:2), pp 283-321
- Milgrom, P., and Roberts, J. 1990. "The economics of modern manufacturing: Technology, strategy, and organization," *American Economic Review* (80), pp 511-528.
- Orlikowski, W. 1992. "The duality of technology: Rethinking the concept of technology in organizations," *Organization Science* (3:3), pp 398-427.
- Orlikowski, W., and Robey, D. 1991. "Information Technology and the Structuring of Organizations," *Information Systems Research* (2:2), Jun91, p 143.
- Orlikowski, W.J. 2000. "Using technology and constituting structures: A practice lens for studying technology in organizations," *Organization Science* (11:4), Jul/Aug, p 404.
- Orlikowski, W.J. 2002. "Knowing in practice: Enacting a collective capability in distributed organizing," *Organization Science* (13:3), May/Jun, p 249.
- Orlikowski, W.J., and Gash, D.C. 1994. "Technological Frames: Making Sense of Information Technology in Organizations," *ACM Transactions on Information Systems* (12:2), April, pp 669-702.
- Poole, M.S., and DeSanctis, G. (eds.). 1990. *Understanding the use of Group Decision Support Systems: The Theory of Adaptive Structuration*. Newbury Park, CA: Sage Publications.
- Porter, M.E. 2001a. *Clusters of Innovation Initiative*. Washington, DC: Council on Competitiveness.
- Porter, M.E. 2001b. "Strategy and the Internet," *Harvard Business Review* (79:3), Mar, p 63.
- Powell, T.C., and Dent-Micallef, A. 1997. "Information Technology as Competitive Advantage: The Role of Human, Business, and Technology Resources," *Strategic Management Journal* (1986-1998) (18:5), May, pp 375-405.
- Prasad, A., and Heales, J. 2008. "Information Technology and Business Value: How Complementary IT Usage Platform and Capable Resources Explain IT Business Value Variation," *14th Americas Conference on Information Systems*, I. Benbasat and A.R. Montazemi (eds.), Toronto, Canada.
- Ray, G., Muhamma, W.A., and Barney, J.B. 2005. "Information Technology and the Performance of Customer Service Process: A Resource-Based Analysis," *MIS Quarterly* (29:4), pp 625-653.
- Roach, S. 1987. "America's Technology Dilemma: A Profile of the Information Economy," *Special Economic Study, Morgan Stanley*.

- Ross, J.W., Beath, C.M., and Goodhue, D.L. 1996. "Develop Long-Term Competitiveness Through IT Assets," *Sloan Management Review* (38:1), Fall, p 31.
- Sandberg, J. 2000. "Understanding human competence at work: An interpretative approach," *Academy of Management Journal* (43), pp 9-25.
- Steers, R.M. 1976. "When Is an Organization Effective - a Process Approach to Understanding Effectiveness," *Organizational Dynamics* (5:2), pp 50-63.
- Subramani, M. 2004. "How do Suppliers Benefit from Information Technology Use in Supply Chain Relationships?," *MIS Quarterly* (28:1), 2004/03 pp 45-73.
- Zhu, K. 2004. "The Complementarity of Information Technology Infrastructure and E-Commerce Capability: A Resource-Based Assessment of Their Business Value," *Journal of Management Information Systems* (21:1), pp 167-202.

COPYRIGHT

Acklesh Prasad and Jon Heales © 2008. The authors assign to ACIS and educational and non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The authors also grant a non-exclusive licence to ACIS to publish this document in full in the Conference Papers and Proceedings. Those documents may be published on the World Wide Web, CD-ROM, in printed form, and on mirror sites on the World Wide Web. Any other usage is prohibited without the express permission of the authors.