



Outsourcing in e-Governance: A Multi Criteria Decision Making Approach

Debendra Kumar Mahalik¹

Abstract:

E-governance is an IT enabled service offered by different government organizations for improving their service effectiveness. Often these services are being outsourced, without sufficiently analysing the decision making of to what extent an organization outsource its IT services. Often these Government departments go for total outsourcing and this outsourcing sometimes leads to failure. In this paper an attempt has been made through a case analysis, with the help of the AHP, to find out an optimum level of outsourcing and suggested a balance strategy between in house and external agency, which in turn helps to reduce the failure rates in e-governance projects.

Key word: E-governance, AHP, Outsourcing, decision making

¹ Senior lecturer at the Post Graduate Department of Business Administration, Sambalpur University, Orissa, India. Email: debendra_mahalik@hotmail.com

Introduction

Application of information technology (IT) helps organizations in becoming more competitive and is an essential ingredient for business survival, and government agencies are no exception to this. ICT (information and communication technology) application has made governance better for both government and public. E-governance is the use of ICT by the government, civil society, and political institutions to engage citizens through dialogue and feedback to promote their greater participation in the process of governance of these institutions (Bhatnagar, 2004). For some time there has been widespread acknowledgement that IT has become the engine that drives the modern organization. E-Governance permits new ways for the participation of citizens and communities for debating (Taylor and Williams, 1994; Rogers and Shukla, 2001; Gupta et al., 2004; Heeks and Nicholson, 2004).

Early applications were focused on building management information system for planning and monitoring. Many large projects have been undertaken and there have prominent failures. These failures are either total or partial failures. In some case system never being implemented or is implemented but immediately abandoned; or the implementation is done but results in partial failure (Heeks, 2006). Only a minority of the projects can be properly called successful (Heeks, 2003; Fulton, 2003; UNDESA, 2003). The point is that the government system can no longer go on making mistakes as it uses resources like money, time, resources etc., if the processes and projects and systems of e-government were managed better, failure and waste would be rarer (Brown, 2000; Gupta et al., 2004).

Over the last decade, one of the more widespread developments in meeting an organization's IT needs is the growth in the practice of outsourcing (Dibbern, 2004). Technologically e-governance consists of both hardware and software. Software developments and installation of hardware and maintain the same are bit complicated and requires highly skilled human resources. It is often seen that government organizations do not poses the necessary skilled manpower and the technological knowhow, which leads to outsourcing of the entire e-governance project. Often this outsourcing is also blamed for e-governance failure, as the decision is taken without sufficiently analysing the decision making ofto what extent an organization outsource its IT services. As the outsourcing agency are new to the organization fails to cope of with the working environment of the government set up, leads to poor communication and lack of communication in every aspect, leads to failure. So there is need for a better balance strategy between in-house and outsourcing of different activity. This balance strategy is a multi criteria decision making process, which requires input from the decision maker, cannot be generalise. In this paper an attempt has been made through a case analysis, with the help of the AHP, to find out an optimum level of outsourcing and suggested a balance strategy between in house and external agency, which in turn helps to reduce the failure rates in e-governance projects.

Literature Survey

Despite the numerous success stories illustrating the advantages of bringing information technology into organisations, it is broadly accepted that the processes of designing, developing and implementing are cumbersome and not straightforward. Recent and older reports show that IS projects frequently fail (Devos et al, 2008).The broad and elaborate research on IS failures has been conducted for more than four decennia (Ackoff, 1967, Lucas,

1975; Lyytinen & Hirschheim, 1987; Sauer, 1993; Keil, 1995; Beynon-Davies, 1999; Schmidt et al, 2001; Ewushi-Mensah, 2003; Iacovou & Dexter, 2005; Avison et al, 2006). As per literature there is an extra dimension to information system failures i.e the outsourced information system failure (OISF). An OISF is a failure that occurs during an IS project in an outsourced environment. We use the taxonomy of Lacity and Hirschheim (Dibbern et al., 2004) of outsourcing options and focus on Project Management. Some academics have already pointed out that outsourcing increase risks leading to IS failures (Natovich, 2003; Aubert et al, 2003). For decisions of whether a task can be outsourced, different approaches and criteria have been developed or have been worked out in the literature, irrespective of the potential of IT (Savas, 1987, Young, 2007, Farneti and Young, 2008, National Research Council Committee on Outsourcing Design and Construction-related Management Services for Federal Facilities and National Research Council Board on Infrastructure and the Constructed Environment and the National Research Council Commission on Engineering and Technical Systems, 2000, Preker et al., 2000). New institutional economics and in particular, the transaction cost theory have gained importance in efficiency-oriented and costs-oriented decision processes about outsourcing (Lane, 2000, Savas, 1987, Reichard 2002). Some of the reason for outsourcing are: do not have sufficient expertise in developing solutions in terms of manpower and knowhow and it is cost saving in long run; internal people do not take active participation; less risk - better control; not core competency; less time taking and faster delivery. The benefits of outsourcing are many some of them are more efficient; focus on core work; more easy to work with the professional etc. There are also some critics to outsourcing some of them are: risk of data/information for misutilization; lack of competent agency; fear of lack of support, fear of failure; vendor driven policy.

The term "outsourcing", although not specific to IS (information systems) in that it reflects the use of external agents to perform one or more organizational activities (e.g., purchasing of a good or service), is now in vogue in the IS domain and applies to everything from use of contract programmers to third party facilities management. It has variously been defined in the IS literature as follows:"... turning over to a vendor some or all of the IS functions..." (Apte et al., 1997), "...the contracting of various information systems' sub-functions by user firms to outside information systems vendors" (Chaudhuryetal., 1995)

In fact, when Eastman Kodak announced that it was outsourcing its IS function in 1989 to IBM, DEC and Businessland it created quite a stir in the information technology industry. Never before had such a well-known organization, where IS was considered to be a strategic asset, turned it over to third party providers (Applegate & Montealegre, 1991). Since then both large and small companies have found it acceptable, indeed fashionable, to transfer their IS assets, leases and staff to outsourcing vendors (Arnett & Jones, 1994). Kodak appears to have legitimized outsourcing, leading to what some have called "the Kodak effect" (Caldwell, 1994). Senior executives at well known companies in the U.S. and abroad have followed Kodak's example and signed long term contracts worth hundreds of millions of dollars with outsourcing "partners". A number of high-profile multi-billion dollar "mega-deals" have been signed which has raised awareness even more. A Dataquest report (2000) notes that since 1989 there have been over 100 of these mega-deals (Young, 2000).

In addition to these definitions of outsourcing, many authors also describe various outsourcing arrangements or options. For example, Lacity and Hirschheim (1995) given sourcing decision options as 'total outsourcing and selective sourcing'. Millar (1994) defines

four basic types of outsourcing arrangements: General outsourcing, Transitional outsourcing, Business process outsourcing, Business benefit contracting. General outsourcing, which encompasses three alternatives: selective outsourcing, value-added outsourcing, cooperative outsourcing. Transitional outsourcing involves the migration from one technological platform to another. Such transitional outsourcing has three phases: management of the legacy systems; transition to the new technology/system; and stabilization and management of the new platform. Any one or all of these three phases could be turned over to a third party provider. Business process outsourcing is a relatively new outsourcing arrangement. It refers to an outsourcing relationship where a third party provider is responsible for performing an entire business function for the client organization. According to Millar, a number of industries are considering business processing outsourcing; in particular, government, financial services (banks and insurance companies), health care, transportation, and logistics. Targeted services include hotlines, help desks, call-centres, claims management, and document processing. Business benefit contracting is also a relatively recent phenomenon. It refers to a "contractual agreement that defines the vendor's contribution to the client in terms of specific benefits to the business and defines the payment the customer will make based upon the vendor's ability to deliver those benefits. The goal is to match actual costs with actual benefits and to share the risks. Outsourcing options have also been discussed by Wibbelsman and Maiero (1994). For them, the key issue facing organizations is not "should we outsource" but "how should we source". They refer to the sourcing question in terms of "multi-sourcing", i.e. the multiple sourcing of IS services. More specifically, they see multi-sourcing as a continuum. Willcocks and Lacity (1998) discussed emerging sourcing arrangements i.e. value-added outsourcing.

The success of E-governance depends upon not only hardware and software, but many other related activities. Some of the major steps of software development are: feasibility study, requirement analysis, software design, software development, testing, implementation, training, and maintenance. Hardware consists of mainly computer and network related equipments and also contributes towards the success of e-governance system. Looking at these factors it required to find out the optimum level or selective outsourcing for success.

Methodology

The decision strategy i.e. selective or optimum level of outsourcing is a multi criteria problem. In such situation taking decision is not easy, as it depends upon several view points from different decision maker through numbers of variable. As per the literature survey different technique like data envelopment analysis (DEA), analytic hierarchy process (AHP), Grey Analysis (GA) etc. are available. Out of the several multi criteria decision making, AHP can handle qualitative data. Our decision making on outsourcing is more of qualitative data as depends upon the feedback from several decision maker prompted us to use AHP.

Analytic Hierarchy Process (AHP)

The analytic hierarchy process (AHP) deals with complex systems for a choice among several alternatives. At the same time it provides a comparison of the considered options (Saaty, 1980). The decision contains many social and economic factors, which needs to be evaluated by linguistics variables and it has been found that AHP has been applied in various types of problems (Paulson, 1993). The method is based on the subdivision of the problem in a

hierarchical form and helps the analysts to organize the critical aspects of a problem into a hierarchical structure similar to a family tree. The method reduces complex decisions to a series of simple comparisons and rankings, then synthesizing the results. By doing so, the AHP not only helps the analysts to arrive at the best decision, but also provides a clear rationale for the choices made. The objective of using an analytic hierarchy process (AHP) is to identify the preferred alternative and also determine a ranking of the alternatives when all the decision criteria are considered simultaneously (Saaty, 1980). Recently there is an increase use of AHP in different area of management like SCM; one such application was done by (Min, 2007). Others (Jing 2006; Milind 2007; Jukka 2001; Felix <http://www.informaworld.com/smpp/title~content=t713696255~db=all~tab=issueslist~branches=46 - v46> 2008; Jing-yuan 2006) also applied AHP in supply chain evaluation.

The detailed step wise procedure of using AHP is as follows:

1. Define decision criteria in the form of a hierarchy of objectives. The hierarchy is structured on different levels: from the top (i.e. the goal) through intermediate levels (criteria and sub-criteria on which subsequent levels depend) to the lowest level (i.e. the alternatives);
2. Weigh the criteria, sub-criteria and alternatives as a function of their importance for the corresponding element of the higher level. For this purpose, AHP uses simple pair wise comparisons to determine weights and ratings so that the analyst can concentrate on just two factors at one time.
3. After a judgment matrix has been developed, a priority vector to weight the elements of the matrix is calculated.

This is the normalized eigenvector of the matrix. The use of AHP instead of another multi-criteria technique is due to the following reasons:

1. Quantitative and qualitative criteria can be included in the decision making.
2. A large quantity of criteria can be considered
3. A flexible hierarchy can be constructed according to the problem. After getting all the relevant data in different table AHP analysis has been used to priorities these computerization projects.

Case Analysis

A university is generally a centre of education, delivering the education needs of the society. Making a good link with the public is essential for universities. According to Goddard et al. (2006), universities have played a strategic role in the economic and social development of the country and regions where they are located. These universities are, in due course, trying to increase their efficiency in both academic and research matters. They felt the need for an improvement in the process using ICT application. This of course leads to an e-governance implementation in universities. An ideal model of e-governance can be executed by the implementation of four main dimensions (Leitner, 2003) these are Adaptation and coordination of the public policies; Participatory democracy (of the most representative players in what concerns to the services supply); Creation of cooperative networks (for the implementation of public policies for development); Access to clear and open informative

systems of governance. Despite the tremendous efforts in e-governance, provision by the various governments of both the developing and developed countries have envisaged problems of technological and of organizational nature (Heeks, 2003; Holliday, 2002; Pacific Council on International Policy, 2002; Strejeek & Theil, 2002; Wescott, 2001). These problems are related to people, process, culture, and technology. Over a period of time government felt the need for outsourcing these services to have success.

This paper considers a state owned university named XYZ which is operating in Orissa, India providing higher education to citizens. In order to improve efficiencies and to make process simpler an integrated system of computerization was initiated by the Orissa Government by implementing an e-governance system. This implementation of services were outsource from a third party due to non availability of competent manpower in house. But after completion of development and implementation of the project, the success was partial. This result temped for a research to find out reasons for partial success. The inside investigation shows that outsourcing is one of the reason for partial success. The aim of the research is to find out the optimum level of outsourcing. Initially the reasons for outsourcing are taken as cost saving (C1), time saving (C2), ease of operation (C3), meeting requirements (C4) and better control (C5). Further for analysis purpose these primary factors are further sub divided into sub components represented in Table-1, to find out optimum level of outsourcing. For analysis, we prepare a questionnaire and interacted with three experts. These experts are asked to rate against each factor and with respect to the three alternatives i.e. outsourcing (O1), existing staff (O2), and hired staff (O3), as the university was having three option to carry out the implementation. The option O1 refers to outsourcing in totality. The O2 refers to use of the existing staff for the implementation of the project and the option O4 refers to hiring of special staff exclusive for the project. For rating we have used a Likert scale ranging from 1 to 9. The consensus relative importance of different variables by the experts is represented in Table-2. Similarly the sub factors of different criteria represented with different options O1, O2, and O3, represented in Table-2. This data are taken as input for AHP analysis, with the help of Expert Choice 4.0 software. The result of the analysis gives the relative importance of variables. The consistence ratio is less than .01 refers the consistency of the data.

Table 1. Primary factors and sub components

Cost (c1)	Time (c2)	Easy (C3)	Meeting requirement (C4)	Control (C5)
Salary cost (S1)	Development Time (S4)			Training (S6)
Development cost (S2)	Implementation time (S5)			Customization (S7)
Maintenance cost (S3)				Bug Removal (S8)

Table-2. Analysis of sub factors of different criteria

	C1	C2	C3	C4	C5	AHP Result
C1	1	5	6	7	6	.581
C2	1/5	1	2	2	3	.165
C3	1/6	1/2	1	1	3	.109
C4	1/7	1/2	1	1	1	.081
C5	1/6	1/3	1/3	1	1	.064

Consistency: 0.04

After getting relative feedback from the experts, these data are processed using Expert Choice for AHP analysis, the results i.e. O1=.562, O2=.181 and O3=.258 shows that outsourcing (O1) option has higher value. This decision of outsourcing whole of the project was right decision. Due to partial success and looking at the risk of outsourcing and failure, we have further analyse taking e-governance component i.e. software and hardware separately. To proceed further, we have again sub divided the different activity of software as Feasibility study (S11), requirement analysis (S12), design and development (S13), testing (S14), installation (S15) and maintenance (S16). Similarly hardware requirement analysis (H1), design (H2), testing (H3) and maintenance (H4). These components are further divided into different subcomponents represented in Table-3. Using the variable, we have framed a questionnaire and three experts feedback are taken using Likert scale with respect to three options O1, O2, O3. These feedbacks are further process using Expert Choice software. The relative importance of different variables for hardware and software along with AHP results are represented in Table-4 and Table-5.

Table 3. Subcomponents

Feasibility study			Require ment Analysis (S12)	S Design and develop (S13)	Sware Testing (S14)	Implementation			Maintenance (S15)
Operation (P1)	Technical (P2)	Finance (P3)				Train (Q1)	Control (Q2)	Bug (Q3)	

Table 4. AHP results - Importance of hardware with its sub factors

Hardware	H1	H2	H3	H4	Result
H1	1	2	2	1/4	.184
H2	1/2	1	3	1/5	.140
H3	1/2	1/3	1	1/6	.076
H4	4	5	6	1	.600

Consistency: 0.06

Table-5. AHP results - importance of factors for software development

	S11	S12	S13	S14	S15	S16	Result
S11	1	1/6	1/3	1/4	1/5	1	.060
S12	6	1	3	1	3	1	.282
S13	3	1/3	1	1/3	1/2	1	.107
S14	4	1	3	1	2	1	.239
S15	5	1/3	2	1/2	1	1	.160
S16	1	1	1	1	1	1	.154

Consistency: 0.08

Table 6. Feedback from experts regarding hardware

	H1	H2	H3	H4
O1	.188	.634	.088	.105
O2	.731	.192	.243	.637
O3	.081	.174	.669	.258

Table 7. Feedback from experts regarding software components and sub components

	P1	P2	P3	S12	S13	S14	Q1	Q2	Q3	S16
O1	.188	.547	.218	.188	.550	.088	.122	.097	.595	.105
O2	.731	.109	.691	.731	.210	.243	.558	.570	.128	.637
O3	.081	.345	.091	.081	.240	.699	.320	.333	.276	.258

Table 8. Outsourcing strategy for Hardware

Requirement analysis (H1)	Design (H2)	Testing (H3)	Implementation and Maintenance (H4)
O2 (Existing Staff)	O1 (Outsource)	O3 (Hired Staff)	O2 (Outsource)

Table 9. Outsourcing strategy for software

Feasibility study (S11)			Require Analysis (S12)	Sware Design & develop (S13)	Sware Testing (S14)	Implementation (S15)			Maintain (S16)
Op (P1)	Tech (P2)	Finan (P3)				Train (Q1)	Control (Q2)	Bug (Q3)	
O2	O1	O2	O1	O1	O2	O2	O2	O1	O2

The results in Table 4 show that in the case of hardware, maintenance of equipment is more important than all other factors. Similarly the result represented in Table 5 shows that requirement analysis (S12) is more important factor compare with others. The feedback from the experts with respect to hardware is further processed using AHP software resulted in Table 6. The score obtained shows the outsourcing strategy for hardware component. Similarly the feedback was also taken for software components and sub components with respect to three options. This feedback was further process using AHP software and represented in Table 7. The value in Table 7 shows different outsourcing strategy for software components. The above results (i.e. Outsourcing strategy for hardware [Table 8] and software [Table 9]) show different selective strategy for different components of the e-governance projects. The result shows that instead of outsourcing whole of the projects, for success selective outsourcing will bring success and reduce risk of failure.

Conclusion

E-governance project has many components and are generally outsource without verifying the need for outsourcing total or selective. Total outsourcing of the e-governance projects has resulted in poor involvement of the parent organization and imposes more on the outsourcing agency. This shifting of responsibility does not work well in the implementation and maintenance stage, as this stage needs more involvement from the uses end. The uses at the end of the project does not involve because of the poor involvement during initial period and poor information of the project in totality. Even though training is conducted, involvements of the people are not much. This has resulted in more risk for failure. Sometime other factor such as poor commitment of the top authority, frequent changing of vision also contributes towards failure and partial success. In this case analysis, we can conclude that instead of outsourcing on the whole of the e-governance projects, a selective strategy solutions where certain areas only needs to be outsource and the other components needs to be performed by a special group and user themself, depending upon the criticality of the process. This mixed strategy will reduce or minimize the rate of failure and improve the success rate. So the organization, especially government organizations, should not go for total outsourcing instead they should adopt a mixed strategy.

Reference

- Ackoff, R.L. 1967. Management misinformation systems, *Management Science*, 14 (4), pp. 147-156.
- Applegate, L., and R. Montealegre 1991. Eastman Kodak Company: Managing Information Systems through Strategic Alliances, *Harvard Business School Case 9-192-030*, Harvard Business School, Boston, MA.
- Apte, U. M., Sobol, M. G., Hanaoka, S., Shimada, T., Saarinen, T., Salmela, T. and Vepsalainen, A. P. J. 1997. IS Outsourcing Practices in the USA, Japan and Finland: A Comparative Study, *Journal of Information Technology*, 12, 289-304.

Aubert, B.A., Patry, M. and Rivard, S. 2003. A tale of two outsourcing contracts - An agency-theoretical perspective, *Wirtschaftsinformatik*, 45 (2) p. 181-190.

Avison, D., Gregor, S. and Wilson, M. 2006, 'Managerial IT Unconsciousness', *Communications of the ACM*, 49 (7), pp. 89-93.

Beynon-Davies, P. 1995. Information systems 'failure': The case of the London ambulance service's computer aided dispatch project, *European Journal of information Systems*, 4 (3), pp. 171-184.

Bhatnagar, S. 2004. *E-government Vision to Implementation*, Sage Publication, New Delhi.

Caldwell, B. 1994. Farming Out Client-Server, *InformationWeek*, 510, 5. Available at <http://www.informationweek.com/510/05mtcs.html>

Chaudhury, A., Nam, K. and Rao, H. R. 1995. Management of Information Systems Outsourcing: A Bidding Perspective, *Journal of Management Information Systems*, 12, 2, 131-159.

Devos, J. Van Landeghem, H., and Deschoolmeester, D. 2008. Outsourced Information Systems Failures in SMEs: a Multiple Case Study, *The Electronic Journal Information Systems Evaluation*, 11 (2), pp. 73 - 82, available online at www.ejise.com

Dibbern, J. 2004. The Sourcing of Application Software Services: Empirical Evidence of Cultural, Industry and Functional Differences, *Physika-Verlag, Reihe, Information Age Economy*, Berlin.

Dibbern, J., Goles, T. and Hirschheim, R. 2004. Information Systems Outsourcing: A Survey and Analysis of the Literature, *Database for Advances In Information Systems*, 35(4), pp. 6-102.

Farneti, F. and Young, D. 2008. A contingency approach to managing outsourcing risk in municipalities, *Public Management Review*, 10:1 pp89-99.

Goddard, J.; Etkowitz, H.; Puukka, J.; Virtanen, I. 2006. Supporting the Contribution of Higher Education Institutions to Regional Development, Peer Review Report, The Jyväskylä Region of Finland.

Gupta, M.P., Prabhat Kumar and Jaijit Bhattacharya. 2004. New Paradigms and Value Propositions in e-Governance. In M.P. Gupta, Prabhat Kumar and Jaijit Bhattacharya (edit) *Government Online: Opportunities and Challenges*, New-Delhi, India: Tata McGraw Hill.

Heeks, R. 2003. Most e-government-for-development projects fail: how can risks be reduced? paper no. 14, *i-Government Working Paper Series*, Institute for Development Policy and Management, University of Manchester, Manchester.

Heeks R. 2006, *Implementing and Managing eGovernment, An International Text*, Vistaar Publication, New Delhi

Heeks, R. and B Nicholson. 2004. Software Export Success Factors and Strategies in 'Follower' Nations. *Competition and Change*, 8(3), 267-303.

Holliday, I. 2002. Building e-government in East and Southeast Asia: Regional rhetoric and national (in) action. *Public Administration and Development* 22, (4): 323

Iacovou, C.L. and Dexter, A.S., 2005. 'Surviving IT Project Cancellations', *Communications of the ACM*, 48 (4), pp. 83-86.

Keil, M. 1995, Pulling the Plug: Software Project Management and the Problem of Project Escalation, *MIS Quarterly*, 19 (4), pp. 421-431.

Lacity, M. C. and Hirschheim, R. A. 1995. *Beyond the Information Systems Outsourcing Bandwagon, The Insourcing Response*, Chichester; New York: Wiley.

Lane, J.-E. 2000. *New Public Management*, London, New York: Routledge.

Leitner, C. (Ed.) 2003. *e-Government in Europe: The State of Affairs*, European Institute of Public Administration, Maastricht, Holandsko.

Lyytinen, K. and Hirschheim, R. 1987, 'Information systems failures - a survey and classification of the empirical literature', In P.I. Zorkoczy (ed.), *Oxford Surveys in Information Technology* - Oxford University Press, 4 (1987), pp. 257-309.

Millar, V. 1994. Outsourcing Trends, *Proceedings of the Outsourcing, Cosourcing and Insourcing Conference*, University of California - Berkeley.

Natovich, J. 2003. Vendor Related Risks in IT Development: A Chronology of an Outsourced Project Failure, *Technology Analysis and Strategic Management*, 15 (4), pp. 409-419.

Pacific Council on International Policy. 2002. Roadmap for e-government in the developing world: 10 questions e-government leaders should ask themselves, *Working Group on E-Government in the Developing World*, Los Angeles, CA, available at: www.pacificcouncil.org, accessed 7 May 2005. pp. 257-309.

Preker, A. S., Harding, A. and Travis, P. 2000. Make or buy decisions in the production of health care goods and services: new insights from institutional economics and organizational theory. *Bulletin of the World Health Organization*, 78 pp779-790.

Reichard, C. 1994. *Umdenken im Rathaus: neue Steuerungsmodelle in der deutschen Kommunalverwaltung*, Berlin: edition sigma.

Rogers, E. and P. Shukla. 2001. The Role of Telecentres in Development and the Digital Divide, *Journal of Development Communication*, 12(2): 26-31.

Saaty T.L. 1980. T. L. *The Analytic Hierarchy Process*. McGraw-Hill, New York.

Sauer, C., 1993, 'Why Information Systems Fail: A Case Study Approach', Henley-on-Thames: Alfred Wailer.

Savas, E. S. 1987. *Privatization: the key to better government*, Chatham, NJ: Chatham House, Publishers.

Schmidt, R., Lyytinen, K., Keil, M. and Cule, P. 2001. Identifying Software Project Risks: An International Delphi Study, *Journal of Management Information Systems*, 17 (4), pp. 5-36.

Strejeek, G., and M. Theil 2002. Technology push, legislation pull? E-government in the European Union. *Decision Support Systems*, 34, pp.305-313.

Taylor, J.A. and Williams H. 1994. The Transformation Game, *Information Systems and Process Innovations in Organisations, New Technology, Work and Employment* 9: 54-65.

Wescott, C.G. 2001. E-government in the Asia Pacific region. Available at: www.adb.org/Documents/Papers/E-Government/default.asp

Wibbelsman, D., and Maiero, T. 1994. Cosourcing, Paper presented at the Outsourcing, Cosourcing and Insourcing Conference at University of California, Berkeley.

Willcocks, L. P., and Kern, T. 1998. IT outsourcing as strategic partnering: The case of the UK inland revenue, *European Journal of Information Systems*, 7(1), 29-45.

Willcocks, L., and Lacity, M. C. 1998. *Strategic Sourcing of Information Systems*, Chichester: Wiley.

Young, S. 2000. Outsourcing: lessons from the literature, *Labour and industry*, 10 (3), 97-118.

Young, S. 2007. Outsourcing: Uncovering the Complexity of the Decision. *International Public Management Journal*, 10:3 pp307-325.