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Evaluating Information Systems by Consultation and Negotiation

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Abstract

Despite the emphasis on the importance of evaluation and the plethora of recommended methods, evaluation continues to be an *ad hoc* rather than a systematic practice. Recommendations for evaluation methodologies have not accommodated the evolving perceptions of the nature and the value of information systems. In this paper we argue that current professional evaluation practices are particularly inadequate for systems that have strategic issues at stake and intense political behaviour in the evaluation context. We therefore suggest an approach to determine the value of proposed or implemented information systems by means of informed group consultation and negotiation processes. We then propose two possible ways to implement the suggested approach.

Introduction

The discipline of information systems has devoted considerable effort in establishing sound and responsible professional practices for the development and management of computer-based systems for information handling and communication. The systems development practices have evolved with on-going research on the nature of information systems. As information systems development became more sophisticated, the place of the various existing methods within systems development, their biases, and shortcomings, have become clearer, and totally new methods have been devised.

However, the task of evaluation still remains particularly problematic, despite the plethora of methods that have been proposed to support it. While the significance attributed to information systems is increasing, judgements on their value are usually *ad hoc*, rather than formal and systematic. Research indicates that formal evaluation is seldom done. When it is done, it is usually incomplete, assessing only some of the effects that are expected from or related to a system under evaluation, and ignoring others. Systems evaluation is one of the weakest tasks of professional systems development practice.

In this paper we argue that in many cases it is unrealistic to expect information systems experts (either consultants or IT department staff) to be able to determine the value of information systems objectively and methodically, as the literature generally suggests. Evaluation by professional 'experts' contradicts the increasing recognition that the process of information systems development involves

political behaviour, and ignores that increasingly information systems become a subject of strategic decision making processes.

We suggest a more realistic role for information systems professionals, not as evaluators, but as organisers and technical supporters of an informed negotiation process with protagonists the managers who have to make systems decisions, and all other agents that are affected by information systems changes. We suggest a dialectic process involving the various stakeholders, and outline two different ways of implementing it. The first draws from the general literature on evaluation and is appropriate for systems with controversial impact in highly political contexts. The second is based on Peter Checkland's Soft Systems Methodology (SSM), and is more appropriate for information systems with far reaching but difficult to specify effects, as is often the case with strategic information systems.

The nature of information systems evaluation

Evaluation as investment appraisal

In the 1970s, when the cost of information technology was high and the benefits relatively straightforward operational cost savings, it was argued that computer applications should be considered as any other investment and therefore appraised *vis a vis* any other investment proposal^{1,2}. Along with analysis and design, methodical assessment of the economic feasibility of proposed systems was one of the first efforts in establishing the professional credibility of systems analysts.

With more advanced applications of computers and the pursuit of intangible objectives, their financial appraisal became less straightforward. The pay off is difficult to calculate, as also is the estimation of performance improvement when a manager can obtain 'better' information^{3,4}. Yet, as organisations continue to allocate considerable proportions of their revenue to information systems, it is considered essential to measure their economic value, even if measurement involves subjective estimates⁵.

Evaluation as a political process

Meanwhile, information systems research has continued to explore the nature of information systems. Theoretical and empirical research established that the effectiveness of information activities is not determined solely by the performance of the technical means employed⁶⁻⁹.

The development and use of information systems is now considered to be a process involving both rational and political behaviour, with structural and subjective elements¹⁰. Employees' expectations for a satisfactory work environment, uncertainties about power change, and career aspirations are seen as significant factors for the success of a system. Moreover, it is understood that 'success' is seen differently by different actors in an organisation. Phenomena such as 'resistance to change'¹¹ highlight the significance of subjective judgement of information systems changes. Evaluation is, to a large extent, a political activity depending on the particular interests of the stakeholders, their personal values, and judgements. As the importance of human resources in information intensive organisations is increasingly

recognised¹², the opinions of the various participants regarding change in their work environment is acquiring greater significance .

Evaluation as part of strategic management

In the 1980s information technology acquired strategic significance in many industrial sectors. Information systems are expected to contribute to the realisation of change such as re-organising business functions; altering a firm's competitive position; and even entering new business areas¹³⁻¹⁵. In non-competitive sectors, such as government administration, information systems projects have far reaching impact, affecting, among others, the quality of government services, the structure of institutions, the rationality prevailing in government administration, policy making, and national economic growth¹⁶.

The emerging role of IT is one of enabling other actions of strategic change, such as re-structuring the production process in an enterprise. The results of such changes depend on the successful implementation of information systems as much as they depend on marshalling other kinds of organisational change, such as changing the combination of employee skills, towards the desirable ends of a strategy. Evaluation of information systems cannot be separated from the evaluation of the other organisational changes involved in the organisation's strategy. For example, most major information systems projects in the public sector of European countries in the 1980s have been part of broader 'modernisation' efforts. Observed changes in work conditions, service quality, or the cost of administration are the result of a combination of Government initiatives, such as introducing a managerial ethos, not only the implementation of information systems changes.

Moreover, the strategic value of information systems is related to external conditions, such as trends in the industry, emerging new demands and public attitude, national and international economic changes. Strategic decisions often involve high risk and may require the decision makers to weigh the significance of intangible factors and discernible trends. Thus, to the extent that information systems proposals are included in strategic plans, their evaluation is part of a much wider planning process.

A conceptual framework of evaluation

Symons¹⁷ did a particularly interesting analysis of the nature of information systems evaluation. Following Pettigrew's ideas on management of change¹⁸, she suggested that evaluation of information systems should be considered as part of organisational change, defined in terms of its contents, context, and process.

Content refers to the criteria used to assess a proposed or an implemented change of information systems. Efficiency and effectiveness measures have been the most frequently applied criteria, although not the only ones. Other criteria include systems utilisation, user satisfaction, and strategic value.

Context refers to the organisational and broader socio-economic environment ; it includes aspects such as the history of the organisation, infrastructure, management procedures, business goals or organisational mission, and its social structure.

Process refers to the actions, reactions and interactions of interested parties involved in the information systems evaluation. The evaluation process is part of systems planning and implementation. It is also part of the on-going process of organisational learning. Thus, the evaluation process can only be partly formal. People evaluate information systems changes informally, and their opinions affect the success of systems changes and future plans.

IS evaluation methods and practice

There is a plethora of methods and techniques, the appropriateness and effectiveness of which have been analysed in many ways^{4,19,5}. Dichotomies have been drawn such as between quantitative and qualitative, and between objective and subjective methods. The suitability of the most established general methods of cost benefit appraisal for the case of information systems, their limitations and arbitrary assumptions have been extensively discussed since the 1960's. The application of such methods is faced with two main difficulties. First, intangible objectives play a decisive role in many projects. These are seldom reducible to numbers. Second, the effects of IT which organisations are mostly interested in assessing, such as on productivity, profit, or savings, depend on behavioural and structural characteristics, which are themselves subject to change because of the system implementation.

More sophisticated methods involve quantification of non-tangible factors, albeit in an arbitrary way^{20,4}. There are far fewer subjective methods, which attempt to assess the value of qualitative changes, such as user attitudes; these too tend to quantify the aspects they monitor^{19,21,22}.

However, surveys and case studies reveal that evaluation is rarely practised in a systematic way. In the UK, Blackler and Brown's²³ survey in the mid 1980's found that formal evaluation for the justification of information systems projects tended to be limited to assessing conventional cost-effectiveness aspects of a proposed system. Such assessment, was found to be only a part of a project justification effort, with 'political tactics' and 'acts of faith' being present in cases where 'value added' rather than short term cost-benefit effects were at stake. There is also substantial evidence that decisions to launch major information systems projects in the public sector are often justified on political grounds, making no attempts to assess

the attainability of ambitious objectives that such projects often have, such as 'modernisation of administration', and 'improvement of service quality'^{24,25}. Similarly, more recent studies conducted in the early 1990's, described in Farbey *et al*⁵, demonstrate an *ad hoc* way for deciding information systems investments. Methodical evaluation was found to be part of more general tactics to secure organisational commitment to desired systems, rather than genuinely to forecast and estimate the costs, risks and benefits of the proposed systems.

Ex-post evaluation seems to take place even more rarely. In Britain, Blacker and Brown's survey found that only government funded demonstration projects were evaluated after implementation. Despite continuing emphasis on the significance of evaluation for organisational learning, it seems that organisations do not find it worth while making the effort to evaluate changes of information systems. Kumar's survey²⁶ of post implementation evaluation practices in the US suggests that formal evaluation is restricted to formalising the completion of a development project rather than assessing the impact of a system or its effectiveness, or educating the personnel of the organisation. The same study observes that evaluation criteria are in most cases determined by those who have designed the system and tend to be limited to aspects of information quality, while organisational and social impacts tend to be ignored.

However, interpretative research in public administration organisations suggests that the real battle to establish the value of information systems that are expected to have significant organisational impact is played among managers and politicians. Information systems professionals play insignificant role in determining expected results and evaluating the impact of the systems that they are responsible to develop^{16,27}. Launching of information systems projects is often based on hidden expectations or involves strategic targets, the validity of which is not clear to the development team. Furthermore, monitoring of the resulted value and decisions for future systems rely on legitimisation processes from which information systems experts are usually excluded.

An alternative approach to IS evaluation

The above brief review of the state of information systems evaluation practice indicates that despite the emphasis on the importance of evaluation and the plethora of recommended methods, information systems practitioners have not acquired the capacity for an effective professional role in this area. In organisations which introduce IT with strategic rather than support objectives, the process and the content of evaluation extends far beyond the conventional professional capacity of information systems experts. As the stakes are getting higher and decisions on the value of new information systems take place at the management and political level, the methodical practice of information systems experts for determining the value of a system is too limited or irrelevant.

It is more realistic for professionals, such as information systems managers and consultants, to undertake to organise evaluation processes which are predominantly interpretative and political, and to support them with relevant information and measurement techniques.

To that end, we suggest a dialectic approach with the following main principles:

- The task of the 'evaluator' is to organise and support a dialectic evaluation process, to assess methodically aspects of the system under evaluation as seen appropriate by stakeholders, and to inform about issues which, although significant according to the information systems literature, might have been ignored by the participants.
- The evaluation process is participative, allowing all stakeholders to express their views and supporting them to defend their position.
- The criteria of evaluation are determined by the context and include all the concerns of the stakeholders.
- The objective is to reach consensus decisions about future systems developments, either by accepting and possibly modifying plans and proposals for new systems (*ex ante* evaluation), or by learning the lessons of past experience (*ex post* evaluation).

This approach seeks to elicit the value of information systems changes from the concerns and views of stakeholders. Methodical assessment, such as quantification of perceived costs, benefits and other effects, does certainly have a place within this approach, as it can provide useful information for the evaluation process. However, the role of such methods should be seen as supportive to negotiations rather than determining the value of information systems.

Several different practices may be compatible with such an approach and may be chosen to implement it. To clarify the principles of the proposed approach, we outline below Guba and Lincoln's 'fourth generation evaluation'²⁸ from the general evaluation literature, and Checkland's 'Soft Systems Methodology' (SSM), which is widely known among information systems' academics and practitioners as a way of understanding information systems requirements²⁹.

Fourth generation evaluation for information systems

Guba and Lincoln²⁸, drawing mainly on the experience of education evaluation, have written extensively about an evaluation process which seeks out the views of the various stakeholder groups, and through informed negotiations aims at an analysis of the situation under evaluation which leads to decisions about actions to be taken. The same authors presented also the ontological and epistemological arguments for a shift from the scientific mode of seeking objective truths, that has characterised the practice of evaluation in education, to a mode seeking understanding by exploring different views. Thus, the premises of the fourth generation evaluation are:

- Social reality is made up of 'constructions' of the mind devised by individuals as they attempt to make sense of their experiences. Constructions are usually shared and 'truths' are defined as the most informed and sophisticated constructions on which there is consensus among individuals.

- Understanding of social reality cannot be achieved without acknowledging the values both of the inquirer and the individuals involved. Therefore, evaluation should be hermeneutic, responding to the constructions of the respondents and trying to develop joint constructions through a dialectic process.

Following these premises, the organiser of an effective negotiation process should aim at presenting the various constructions involved, resolving some of the conflict and informing all groups of stakeholders about the kind of changes introduced by a new system and how they are valued.

Specifically, the methodology proposed by Guba and Lincoln comprises the following steps, although the authors warn against following these steps in a linear manner.

(1) Identify the full array of stakeholders. Efforts must be made to contact not only those who actively voice their views but also those weak agents not in a position to take initiatives and safeguard their interests. Also, the organiser should elicit opinions about issues which, although they may not appear to have caused concern to any particular stakeholder group, research suggests that they are potentially significant. The literature on IS impact provides valuable guidance for this effect.

(2) Elicit from each stakeholder group their constructions, and concerns about the evaluand and the range of claims, concerns, and issues they wish to raise in relation to it.

(3) Within each stakeholder group try to understand and resolve conflicting views, concerns, and issues. The aim is to reach decisions about which claims, concerns and issues should be pursued further.

(4) Test and enlarge within-group constructions with additional information from the literature or past experience, and by cross-fertilising each group with the constructions, claims, concerns, and issues arising from other groups so that those items are confronted and dealt with. If consensus within groups and between groups is achieved with respect to an item, it can be eliminated from further consideration, although further action regarding this item may be agreed to be taken.

(5) Prepare an agenda for negotiation on items about which there is no, or incomplete, consensus.

(6) Collect and provide the information called for in the agenda for negotiation. It is expected that new information at this step will increase sophistication to deal with the unresolved claims, issues and concerns.

(7) Establish and mediate a forum of stakeholder representatives to carry out negotiation.

At this stage unresolved differences are reviewed in light of the new information and appropriate action is discussed. Some items may remain unresolved. Nevertheless, the negotiations at this step sets the stage for a later round of evaluation activity.

(8) Communicate to each stakeholder group any consensus and resolutions reached and issues that have been raised.

(9) Recycle the evaluation once again. The aim is to take up still unresolved claims, concerns, and issues and to deal with new aspects that are expected to have emerged as a result of changes made on the basis of the first round evaluation.

This methodology has emerged out of a critique of the experience of evaluating education programmes in the USA. It may be found appropriate for the evaluation of information systems in cases which are likely to have (or have, indeed, in *ex post* evaluation) disputable impact within an organisation and its environment. For example, it may be appropriate for the evaluation of information systems in government administration which in most cases cause intense concern to a number of stakeholder groups. In contrast, the methodology may be totally inappropriate within some organisational cultures or when there is no manifestation of major conflicting interests and values among stakeholder views regarding an information system under evaluation. In addition, Guba and Lincoln point out conditions that should be met for a successful fourth generation evaluation process:

- commitment from all parties for genuine participation in an evaluation process which will explore their claims and aim at reaching consensus, and willingness to devote necessary time and effort to that end;
- a certain degree of competence of all parties to communicate and negotiate concerns and claims;
- willingness of all parties to share power;
- willingness of all parties to reconsider their value positions and to commit themselves to changes decided by the process.

Soft Systems Methodology for evaluation.

SSM²⁹ guides analysts to intervene in an organisation, to understand a problematic situation and to reach decisions on actions by involving all interested agents. The basic argument of the methodology is that scientific and engineering methods are not appropriate for understanding and working out changes in organisations. A more effective approach for the introduction of information systems in organisations is to conceptualise them as human activity systems.

SSM uses concepts from systems theory to assist analysts to describe and model a problem situation. Moreover SSM adopts a problem solving philosophy which aims at assisting participants of an organisation to reach decisions about actions which are not only desirable according to a systems model relevant to the problem situation, but also feasible within the social context of the particular organisation.

Particularly significant within the philosophy of SSM are the concepts of *Weltanschauung*, and consensus. By using the concept *Weltanschauung* Checkland directs the attention of an analyst to the existence of different perceptions and different interests regarding a situation under investigation in a social system. The notion of consensus is fundamental in this approach, with the aim to reach decisions on feasible actions. Plans of action should be derived with the agreement of all parts concerned. Thus, the tasks of the analyst are:

- to understand such different views and to build alternative models relevant to the situation which incorporate them,
- to use these models to diagnose a situation, and
- to facilitate participants of the organisation concerned to agree on a course of actions which meets some systemic requirement for change.

Because SSM contains a substantial element of diagnosis, it can be used for evaluating information systems. Specific directions for the application of this approach in the form of a seven steps methodology have been provided by Checkland as well as other authors^{29,30,31}. For the purposes of this paper it suffices to outline features that can be built in SSM for systems evaluation.

SSM guides the analyst to form the richest possible picture of the organisation under study, making an effort to capture both its formal and informal aspects, and the various different *Weltanschauungen* from which a proposed information system can be perceived. The analyst becomes sensitised to the various concerns about the potential effects or impact of the proposed system.

The analyst uses what has been discovered in the initial investigation to define notional human activity systems which seem relevant to the context of the proposed system, the so called root definitions. For evaluation purposes, a root definition should contain also the criteria for assessing the proposed information system which capture the concerns about the system related with the *Weltanschauung* expressed in the definition.

After forming human activity models for the root definitions, as SSM suggests, the analyst can apply the criteria of the relevant root definition to identify and estimate potential effects of the proposed information system which appear to be of interest to participants of the organisation. For example, a human activity model can be used to forecast the productivity gains that may result from the new information system, or to visualise more complex effects, such as how employees will respond to a new

information system. The analyst can use any evaluation methods that are relevant to the effects under examination.

Comparison of the outcomes of the evaluations according to the various relevant root definitions with the intended effects of the proposed information system can reveal how realistic expected benefits are and what problems might inhibit their realisation. Such findings can then become subject to a debate about the value of the proposed information system and the perceived risks associated with it. The objective is to find whether the initially specified benefits of the system are achievable and whether the system is implementable within the culture of the organisation. In general, the debate may lead to three kinds of decisions:

- to confirm the attainability of the value of proposed systems and secure agreement on their development, and to determine other changes that are needed to be pursued in the organisation for the attainment of the expected value of the information systems;
- to modify intended benefits and acknowledge related risks, and to specify actions which need to be taken to secure the attainment of the system's value;
- to abandon the development of a proposed system.

The same process can be followed for *ex post* evaluation aiming at deciding on actions to increase the value of existing information systems, or to new systems development projects.

The SSM may prove particularly useful for the evaluation of information systems plans which affect many different activities of an organisation and whose multiple effects cannot be determined with precision by those proposing the system. Also, SSM can lead an organisation to understand the value achieved and the problems it faced with past information systems projects before committing itself to further information systems changes. SSM too requires an organisational culture which seeks commitment of its participants for working out decisions on actions about its future, can sustain an intervention exploring different points of view, and accepts decision making by consensus.

Conclusions: the nature of the proposed consultation and negotiation approach for evaluation

The proposed approach determines the content of evaluation (what aspects to evaluate and what criteria to apply) according to its context (what matters for the participants of an organisation). The criteria used to evaluate an information system emerge from investigating its organisational context, and from understanding the concerns of the stakeholder groups. The main feature of the process of evaluation is engagement of stakeholders in an informed exchange of concerns, claims and views. Evaluation methods, either quantitative or qualitative, are applied as needed to clarify or support arguments of the stakeholder groups.

The main aim pursued with this evaluation approach is to achieve understanding of the information system's case under evaluation which will inform and legitimate decisions for further actions. The proposed approach is an educative process which provides information support to participants and a dialectic environment to argue the validity of their claims.

Another feature of this approach is the establishment of collective responsibility for information systems changes with far reaching impact. It assumes that the actions of many different agents, often both inside and outside the organisational borders hosting an information systems project, contribute to the perceived changes, even if they are not directly involved in the development project activities. More importantly, this evaluation process is not confined to the implementation of a particular information systems project. It questions the validity of its initial objectives.

This approach assigns a different role to the 'evaluator' from the one generally assumed in the information systems literature. The evaluator is responsible for preparing and supporting an effective negotiation process by securing participation of the agents found during investigations to be interested in issues of the information system under evaluation. It will be necessary to support the negotiations by seeking and providing relevant information as the analysis of the issues involved requires. The evaluator is an organiser and facilitator of the evaluation process, rather than an objective assessor, capable to calculate or to prove the merits and the pitfalls of an information system.

By undertaking such a role information systems professionals can claim a decisive part in the arena of decision making regarding the systems they are responsible for. The importance of assigning a significant role in the evaluation process to information systems professionals is not only a matter of holding their power - which undoubtedly it is. Most importantly, it provides them with possibilities for learning and developing their capacity to satisfy essential organisational requirements.

While we have validated the main principles of the suggested approach in two cases involving evaluation of information systems strategies, further research is required to establish their appropriateness under particular circumstances and to work out effective logistics. Already, two main difficulties for the acceptance of the proposed evaluation approach are anticipated. The first difficulty stems from the still widespread perspective that information systems development is a predominantly technical task. This perspective limits the terms of reference of those responsible for the development of information systems to technical issues only. In effect, this perspective precludes systematic attention to the broader impact of

new technology and does not accommodate learning from social processes. Although information systems theory recognises the socio-technical nature of information systems changes and the need to bridge the gap between information systems experts and managers, few organisations practice socio-technical approaches and relate systematically information systems with organisational issues.

The second difficulty stems from the incompatibility of the 'democratic' attitude of the suggested approach to the culture of many organisations. An organisation may not accept an interventionist approach and may not allow truly open debate. Such difficulties may come either from management or from employees. The management style may value authority rather than consensus. Managers may feel threatened and avoid to invite the expression of concerns about systems they plan to develop or systems they authorised and paid for. Employees may not be used to be consulted, even less to take part in decisions about the organisation they work in. They may feel that they lack necessary knowledge about the systems under evaluation, or expertise for negotiations.

Nevertheless, as the strategic value of information systems and the significance of human resources for the organisations of the 1990's are increasingly emphasised, organisations cannot afford to continue to separate the technical from the organisational and keep their personnel un-involved in major decisions. The suggested evaluation approach provides a way for effective participation of all stakeholders and assigns a realistic role for 'an evaluator', responsible to organise and support the evaluation process.

References

1. Ahituv, N. and Neumann, S. (1990). *Principles of Information Systems for Management*, (3rd edition), W.C. Brown, Dubuque, Iowa.
2. Gildersleeve, T. R. (1978) *Successful Data Processing Systems Analysis*, Prentice Hall, Englewood Cliffs.
3. Emery, J. (1971) *Cost/Benefit Analysis of Information Systems*, The Society for Management Information Systems.
4. Parker, M. M., Benson, R. J. and Trainor, H. D. (1988) *Information Economics - linking business performance to information technology*. Prentice-Hall International .
5. Farbey, B., Land, F. F., Targett D. (1993) *IT Investment - A study of methods and practice*, Butterworth-Heinemann, Oxford.
6. Kling, R. (1987) Computerization as an ongoing social and political process. In Bjerknes G., Ehn, P. and Kyng, M. (eds) *Computers and Democracy: A Scandinavian Challenge*, Avebury, Aldershot.
7. Markus, M. L. (1983) Power Politics and Management Information Systems Implementation, *Communications of the ACM*, Vol 26, No 6 pp430-444.
8. Kraemer, K. L. (1980) Computers, Information and Power in Local Government: a Stage Theory. In Mowshowitz, A. (ed) *Human Choice and Computers*, 2. North-Holland, Amsterdam .
9. Lyytinen, K., Klein, H. and Hirsceim, R. (1991) The effectiveness of office information systemsä social action perspective *Journal of Information Systems*, vol 1, pp 41-60.9.

10. Wallsham, G. (1993) *Interpreting Information Systems in Organizations*, John Wiley, Chichester .
11. Keen, P. G.W. (1981) Information Systems and Organisational Change, *Communications of the ACM*, 24.
12. Osterman, P. (1991) The Impact of IT on Jobs and Skills In Scott Morton, S. (ed) *The Corporation of the 1990s: Information Technology and Organisational Transformation*, Oxford University Press, New York.
13. Earl, M. J. (ed) (1988)*Information Management: The strategic Dimension*, Oxford University Press, Oxford.
14. Hammer, M. (1990) Reengineering Work: Don't Automate, Obliterate, in *Harvard Business Review* (July-August) pp 104-112.
15. Scott Morton, S. (ed) (1991)*The Corporation of the 1990s: Information Technology and Organisational Transformation*, Oxford University Press, New York.
16. Avgerou, C. (1989) Information systems in social administration: factors affecting their success. Unpublished Ph.D. thesis, London School of Economics
17. Symons, V. (1991) A review of information systems evaluation: content, context and process. *European Journal of Information Systems* 1 pp205-212
18. Pettigrew, A. M. (1985) Contextualist Research and the Study of Organisational Change Processes, In Mumford, E., Hirschheim, R., Fitzgerald, G. and Wood-Harper, A. T.(eds) *Research Methods in Information Systems*, North Holland.
19. Powell, P. (1992) Information Technology Evaluation: Is it Different?, in *Journal of the Operational Research Society*, Vol 43, No 1) pp. 29-42
20. Strassmann, P. (1990) *The business Value of Computers - An executives guide*, Information Economics Press, Connecticut .
21. Land, F. (1978) Evaluation of systems goals in determining a strategy for a computer-based Information System, *Computer Journal*, vol 19, no 4, pp 290-294 .
22. Hawgood, J. and Land, F. F. (1988) A multivalent approach to information systems assessment. In Bjorn-Andersen, N. and Davis, G. B. (eds) *Information Systems Assessment: issues and challenges* North Holland, Amsterdam .
23. Blacker, .F and Brown, C. (1988) Theory and practice in evaluation: the case of the new information technologies. In Bjorn-Andersen, N. and Davis, G. B. (eds) *Information Systems Assessment: issues and challenges* North Holland, Amsterdam.
24. Wiese Schartum, D. (1987) *The Introduction of Computers in the Norwegian Local Insurance Offices - Corepoints and Context*, Norwegian Research Centre for Computers and Law, Norwegian University Press.
25. Land, F. F. Piachaud, D., Avgerou, C., Cornford, A. and Farbey, B. (1987) *Work process, service quality and information technology in social welfare institutions*. Unpublished report, Information Systems Department, London School of Economics.
26. Kumar, K. (1990) Post Implementation Evaluation of Computer-Based Information Systems: Current Practices, *Communications of the ACM* Vol 33, No 2., pp 203-212

27. Margetts, H. (1991) The Computerization of Social Security: The way forward or a step backwards?
Public Administration 69 pp 325-343
28. Guba, E. G. and Lincoln, Y. S. (1989) *Fourth Generation Evaluation..* Sage publications, California.
29. Checkland, P. B. (1981) *Systems Thinking, Systems Practice.*Wiley , Chichester.
30. Checkland, P. and Scholes, J. (1990) *Soft Systems Methodology in Action* Wiley, Chichester.
31. Wilson, B. (1984) *Systems: Concepts, Methodologies and Applications,* Wiley, Chichester.