Issues in Achieving Value of IT Investments - A Case Study of the Swedish Fire Rescue Services

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Abstract. To actually gain value from investments in Information technology (IT) is a widely known problem that many businesses today struggle with. This paper presents an interpretative case study of the Swedish Fire Rescue Services where problematic issues are identified concerning perceived value of IT-investments among different stakeholders groups. We discuss what implications these findings will have on the concept value of IT and evaluation of IT.

Key words: IT investments, IT value, IT management, Public sector.

Introduction

To actually gain value from investments in Information technology (IT) is a widely known problem that many businesses today struggle with. To judge the value of an IT-investment is still a complicated and ambiguous task, and no silver bullet in the form of a new successful IT evaluation method is in sight. An enquiry in Sweden 2006, answered by 307 IT managers within private and public sector concluded that 82% of all IT projects fail in delivering expected value, in 2005 the result was 72% (IT management, 2006).

This problem of achieving value of IT has in prior research been framed as the productivity paradox, originating from studies during the 1980s that found no connection between IT investments and the productivity. The productivity paradox was originally stated by Solow (1987) and further developed and discussed by Brynjolfsson (1993). Lately, empirical evidence for the productivity paradox has

been questioned, since there is also evidence that IT in fact provides positive impact on productivity (Dedrick et al. 2003). Willcocks and Lester (1996) argued when reviewing the debate on the IT productivity paradox, that much of the uncertainty concerning the IT pay-off relates to weaknesses in measurement and evaluation in practice.

In this paper we report on an interpretative case study of the Swedish Fire Rescue Services where problematic issues are identified concerning perceived value of IT-investments among different stakeholders groups. We discuss what implications these findings will have on the concept value of IT and evaluation of IT. Thus, two questions are raised:

- What kind of issues are perceived in achieving value of new IT investments?
- What implications will these issues have on the concept value and IT evaluation?

IT investment in this paper is related to both hardware, and software. Further IT investments can be defined as annual spending or fixed assets. The findings are based on interviews and a workshop in three different organizations related to the Fire Rescue Service.

The paper starts with a discussion of the concept of value and how it can be described and evaluated. Then the research approach is outlined, followed by findings from the interviews. The findings are then used to further discuss the raised questions and finally a conclusion is given.

The Value of IT and the Evaluation of IT-Investments

Since IT´s role initially, during the 1960s, was primarily to increase efficiency it is not strange that early evaluation methods (Hamilton and Chervany, 1981a, 1981b) were mainly focused on measurable quantitative economic effects. Avgerou (2000) notes that since IT´s role has changed, the value of IT has also changed. The early computerization projects that substituted computer data processing for manual data processing had more or less clear efficiency objectives and they were not intended to cause significant organizational change. These projects were assessed by using a cost-benefit analysis, and the value was related to an economic perspective. In the 1990s the value of IT was linked with the perception of IT as an enabler of organizational transformation, and assessing value of IT by a benefit-cost analysis seemed too limited (Symons 1991). Instead interpretative IT evaluation approaches have been advocated (Walsham 1999, Symons 1992, Jones and Huges 2001, Stockdale and Standing, 2006; Ward and Daniels 2006) Thus, the value of IT has moved from purely efficiency to an effectiveness enabler. This enables management to use IT in the process of administering and coordinating resources effectively and efficiently in an effort to achieve the goals of the organization.

Value of IT as increased efficiency and effectiveness

Efficiency is described as using the fewest inputs (people, material and money) to generate a given output and *effectiveness* concerns the degree to which goals are archived (Lewis et al. 2007). Further Fitzgerald (1998) describes efficiency as doing things right and effectiveness as doing the right things.

Productivity is a related concept that has been widely discussed. According to Lewis et al. (2007) productivity is a measure of the efficiency with which the firm transforms inputs into goods and services.

Effectiveness is a concept that is well discussed. Common for the different explanations is that effectiveness is related to the fulfillment of goals (Lewis et al. 2007). These goals can be related to formal goals that have been stated in strategy documents, plans etc. (Modell and Grönlund 2006) One problem with this definition is that many organizations can survive long periods despite the fact that formal goals are not achieved. Within public organizations one common way to define effectiveness is whether formal goals are fulfilled or not. For a commercial organization, effectiveness may be judged by profitability, but for a public organization it would rather be judged by the fulfillment of it's mission and goals.

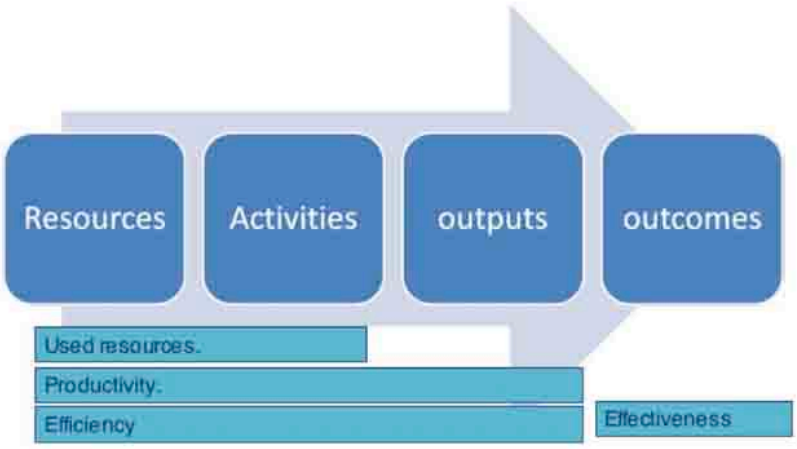

Figure 1. Effectiveness in the public sector (Free after, Modell and Grönlund, 2006).

Value of IT as multi-dimensional

Bannister (2001) argues that IT value is multi-dimensional in its nature, encompassing economic, psychological, cultural and political aspects of value. According to Bannister (2001) we could distinguish three different concepts related to IT-value: Values (with capital "V"), value and benefit. Values are norms or modes of behavior that individuals, groups or organizations hold are right. They are visible in different cultural manifestations, in attitudes and beliefs, and in behavior. "Value" is then a "quality applied to a good, service or outcome which supports, meets or conforms with one or more of an individual or group's Values" (Bannister 2001, p. 3). A corporation whose primary Value is to keep costs down and work in an efficient way, would value an IT-system that reduces head count. An organization like a fire rescue service, whose Value is to save life and land, may also value an IT-system supporting the operational work of fire fighters, i.e. increased quality. Benefits then can be seen as an operationalisation of the values. *"Value is what we perceive, benefit is what we receive"* (ibid.). Also, Guba and Lincoln (1999) and Cronk and Fitzgerald (1999) describe value as pluralistic since different value will be considered from different stakeholders' perspectives.

Given this brief discussion of value, it becomes evident, that different stakeholder groups related to one organization will have different views on value. Berghout and Remenyi (2005) note that the interpretative IT evaluation approach, considering different stakeholders views, has received the widest attention in the IT evaluation research field. However, in practice the economic approach is still the most popular (Ward and Daniel 2006; Frisk and Plantén 2004).

Value of IT as economic or pluralistic

The most frequently used IT evaluation approach in practice, is an economic approach, the Business Case including Return on Investments (ROI) (Ward and Daniel, 2006). The economic approach takes a natural science or objectivist perspective, i.e. one presumes that there exists an objective reality, and that there is a subject-object dualism that implies that the observer can distance himself from the phenomenon studied (Serafeimides, 2001; Cuba and Lincoln, 1990). Thus, multiple interpretations of value, ambiguity, or other than economical dimensions cannot be addressed. Value in the economic approach can consider efficiency in terms of reduced cost but also effectiveness in terms of profitability. This implies that both efficiency and effectiveness can be considered but only from an economic perspective. These methods are summative i.e. they are not reiterative. In prior research the economic approach has received a lot of critique. Serafeimidis (2001) argues that the economic stream suffers a number of deficiencies such as limited consideration of organizational context and neglect of human aspects of evaluation.

Jones and Huges (2001) are of the opinion that evaluation is a complex, multifaceted, difficult, continuous and social process. Further, evaluation methods have not kept pace with the shift in use of IS (Symons, 1991). Instead the interpretative IT evaluation approach has been put forward (Jones and Huges, 2001; Symons, 1991; Stockdale and Standing, 2006).

The interpretative IT evaluation approach has been applied to IT evaluation by several authors in varying shapes and names: interpretive evaluation (Walsham, 1999), situated hermeneutic evaluation (Jones and Huges, 2001), CCP (concept, context and process) frameworks (Symons 1991; Stockdale and Standing, 2006), Benefit management (Ward and Daniel, 2006; Bennington and Baccarini 2004 Ashurst and Doherty 2003; Thorp 2001; Remenyi and Sherwood-Smith 1999) critical approach to evaluation (Klecun and Conford, 2005), to mention a few. In contrast to the economic approach, these IT evaluation approaches seem to have been sparsely adopted by practitioners (Serafeimidis, 2001). The starting point of interpretative IT evaluation approaches is different stakeholders' perception of reality (Walsham, 1995; Guba and Lincoln, 1990; Symons, 1991; Stockdale and Standing, 2006). This approach considers IT evaluation as a social process (Jones and Hughes, 2001) and value as an output from different stakeholders' perceptions. Thus, an important point is that value is value-pluralistic, it is highly dependent on the presence of different stakeholder-groups such as users, IT-people, managers, etc. This implies that different views on value, may include different dimensions, as well as being contradictory. The CCP frameworks consider the context of the IT investments it´s influence on the organization and it´s environment and evaluation as a process (Stockdale and Standing 2006). The Benefit management approach also put forward the importance of considering benefits from a strategic context. This approach is reiterative.

Research Approach

This is an interpretative case study (Walsham 1995) and data collection is done by semi-structured interviews and a workshop. The purpose is to give rich insight as to why achieving value of IT investments is perceived to be difficult and what implications these findings will have on IT evaluation (Walsham 1995). Three organizations within the Fire Rescue Services in Sweden are involved. The study is based on the respondents' perceptions and then described by the interpretation of the researcher (Klein and Myers, 1999).

In order to be sure to get the accessibility to respondents from different levels within the organizations the selection of respondents was done in collaboration with a contact person in each organization. Then, over a period of five months, eighteen persons, from different organizations, levels and with different roles, were interviewed. See table 1. Also for three days one of the researchers was participating

with a team who is working with turnout for fires. During these days the researcher was talking and interviewing the team members, approximately 20 persons.

	Organization A	Organization B	Organization C
Strategic responsible	Development-responsible IT-responsible	Chief officer IT-strategist	Responsible for operational work
Functional responsible	Department- responsible Projects-responsible	Department-responsible	Department- responsible IT-responsible
Operational responsible	Front-line responsible Co-workers Firemen	Front-line responsible Co-workers	Front-line responsible Co-workers

Table 1. Different roles of the respondents participating in the interviews.

Each interview lasted for approximately two hours. The questions concerned their perceptions on value of IT investments, how evaluation of IT investments is managed, why value of IT investments is not achieved and how IT evaluation of IT investments might be improved. The interviews were recorded, transcribed, and finally analyzed.

The analysis was performed by analyzing different statements and then clusters the respondents' statements into different categorization in accordance to the different headings in the interview forms. Then within each cluster different statements where categorized into similar perspectives as if the statement concerned strategy, co-ordinations, costs etc. No coding tool has been used. Walsham (2006) notes that using a coding tool can take too much attention itself so it is not always a necessary tool. Then the result was reported back to each organization in the form of text reports and a workshop. The purpose with the workshop was to secure that the results were correctly interpreted. The respondents agreed on the results.

Organizational Setting: The Fire Rescue Services

On the national level the Swedish Rescue Services Agency (SRSA) is a government authority with expertise in different fields, including fire prevention. SRSA´s aim is to decrease the amount of accidents, and to create a safer society, by promoting practices that improve emergency prevention and emergency response. On the municipal level, the Fire Rescue Service is responsible for providing the population with tasks as prevention, preparation, and response. The Fire Rescue Service is structured either as a Fire Rescue Service (FRS) or as a Fire Rescue Alliance (FRA). The main difference between FRS and FRA is that the latter consists of several municipal FRS but is structured and acts as its own municipal community, while a FRS acts in alliance with the municipality where the FRS is located.
According to a theoretical vision the national vision breaks down from SRSA to FRS/FRA by:

1. The Legislated National Vision: ”There must be fewer deaths, fewer injuries and less destroyed properties (10 years)
2. Political Priority, plan of action for the municipalities: Strategies for Prevention, to prepare, to carry out and to follow up (4 years)
3. Balance Scorecard, The Fire Rescue Services, Indicators within the four perspectives (year of plan)

The economic pre-condition for FRA is given by the confederation (Förbundsdirektion) in the municipality, which also acts as a sounding board. The confederation is composed of politicians from one or several municipalities.

The organizations involved in this case study differ in several aspects, see table 2. Also, organization C has outsourced the operation of IT to the municipality.

Organization	Type	Employees	Fire Stations
A, FRA	Alliance with five municipalities’	1000	9
B, FRS	Large city	650	9
C, FRS	Middle sized municipality	150	3

Table 2. Characteristics of the involved organizations

It is difficult to classify the degree of IT maturity since the use of IT deviate both between the levels within one organization but also between the organizations. IT investments can be initiated from both inside and outside the organization. Internal initiative comes most frequently from those who are departmental responsible, but also elsewhere in the organization. External initiatives could be a new law or a new system offered by NRSA. Decisions are mostly taken on the departmental level but if the costs exceeded a specific amount, the decisions are taken by the executive group, or by the officer of the Fire Rescue Service. If the IT costs exceeded regular budget restrictions, it became a political issue and the decision has to be supported by the local government committee, appointed by the local municipality. No specific formal evaluation methods are in use, only individual informal approaches.

The Case: Issues in Achieving Value from IT

IT value perceived by different organizational levels

The perception of value of IT seems to differ between different organizational levels. On a strategic management level, IT is described as a cost rather than delivering value:

“*…even if you try to rationalize with IT, some other costs pop up and you do not get the expected value”*.

On a tactical level, IT is described as a valuable tool that gives information for better analyses. On an operational level, some respondents have difficulties in seeing the value of IT and one opinion is:

"you don't extinguish fire by computers".

However, several respondents also emphasize the importance of seeing value of IT from an organizational point of view and also related to the citizens. Today the perceptions were that IT value too often is seen from an individual point of view.

Narrow perspective on value of IT

If IT investments are assessed from mainly a cost and a technical perspective and not from an organizational perspective, the risk is increasing that decisions on IT investments are based on poor facts. It was considered important to pay attention to how the IT investment will affect the organization. Further, a "citizen perspective" is considered to be important in order to avoid only the internal focus, since most of the initiatives seem to have a cost, technical and/or a "gadget" focus:

"It is important to assess IT-projects initially if the IT-investment should benefit the organization and not only some individuals."

"The internal discussion often concerns techniques, technical platforms and systems, but questions should be raised such as, what needs should be fulfilled, what do we want to achieve, and how should we proceed?"

"When we talk about IT we should talk about what we really would like to achieve in the public sector and not only technique."

Lack of co-ordination on national level

NRSA do not give imperative guidelines to the Swedish Fire Rescue Service on what kind of IT, or how IT should be used in order to achieve legislation, national visions, or organizational goals. Instead each FRS/FRA is responsible for its own choice of IT solution. This has been criticized in the interviews since the perceptions are that each FRS/FRA has their own "*joiner workshop*" and this is both expensive and ineffective. Some collaboration exists but it could, according to the respondents, be room for more.

Lack of co-ordination on municipality level

Also decisions on departmental level are taken without any organizational co-ordination. This has contributed to an ad-hoc development of IT systems since the same problem or possibility can be solved by different technical solutions. One opinion is:

"Unfortunately we give priority to individual desires instead of the total picture. We can't, for example, agree on one brand for digital cameras or digital calendars".

Also, historically, the FRS/FRA´s are not so constrained by money. This has contributed to an ad-hoc development of IT since there are limited demands to show the benefits and costs of IT-investments. The respondents' perceptions are that decisions on new IT investments are in favor of: "*those who shout the loudest"*. This brought about a culture that permits individuals to demand IT investments for their own interests, resulting in limited co-ordination and no alignment with the need of the organization.

Lack of strategy

Respondents from all organizations perceived that their organizations are lacking an evident strategy for both the organization and also for IT. According to the respondents this was one important cause for not achieving value from IT investments. Instead they suggested that organizational goals should direct the choice and decisions of new IT investments. One respondent stated that:

"We don't know the plans for the coming two years, which means that the persons who are most anxious for new information systems or information technology get their requests approved."

The respondents are of the opinion that the lack of strategies for the organization and IT have also contributed to an ad-hoc development of IT. This in turn has lead to a very difficult situation for the IT-department, they need to be experts on several systems. Also, the costs for IT operations are increasing fast. In order to secure an appropriate development of IT within the organization one respondent said that*:*

"It is important to create time for long-term planning and environmental studies".

Using IT mainly for efficiency

Several of the respondents claimed that IT should contribute more to the organizational development by considering IT as a strategic resource. Today IT´s main function is to rationalize and to improve the information flow. One respondent said:

"An IT investment could be described as successful when it has created an agreement on what to accomplish and you receive a platform for developing your tasks with new possibilities, and see new phenomena which this IT could contribute to achieve".

No consideration of the total costs

Actual cost for an IT investment should be further clarified. Costs for hardware and software were calculated, but seldom the cost for operational work, staff, education etc. Several respondents had observed that within their organizations there was a tendency to buy new IT instead of upgrading the old. The opinion was that a proper calculation of actual costs would gain a better understanding of the costs of used resources and give a better ground for comparing the benefits between investing in new IT or upgrade existing IT.

No follow-up of the IT investments

Today, IT investments are rarely followed-up and the perceptions are that there exist no guidelines for what criteria to consider, how to perform and when to evaluate. Some practical experience from buying a new IT systems not so successful, was when one of the organizations bought the rights to use a Geographic Information System, and reached an economic agreement on a system called "Managing Risk and Analyses", none of the systems are in use. The perceptions are:

"We had a lot of good technical ideas and solutions, but what do we do with it"? A formal evaluation process was motivated by

"... not for catching the bad guys just to be able to tie up, to do a reflection and to learn."

Another argument is to be able to do better priorities between the different IT investments and also between different kinds of IT investments.

Too few stakeholders in the evaluation process

The respondents perceive that no guideline that makes explicit who should be involved when evaluating IT investments exists. It was considered important to include the opinion of the users and the IT department in the evaluation process. The IT department will secure that the IT investment will fit into the infrastructure and existing systems, and also to eliminate the risk of unnecessary high operational costs for IT. A relevant question would be:

"Could the new system communicate with other systems or is it a different system which is built upon a different platform".

Also, the respondents advocated that different stakeholders' view should be involved in the evaluation process. Stakeholders' meaning those who will be affected by the system, but also the "citizen perspective" is mentioned as an important perspective to consider.

IT affect power relations

Several respondents considered IT to be "charged", i.e., IT gives people power. This could contribute to the development of IT on wrong grounds, being motivated by individual power interests instead of the need of the organization. The decisions-makers should be aware of these aspects, and therefore take an organizational view when evaluating new IT-investments, and not only a cost or technical perspective.

Discussion

The views among the respondents as to why it is difficult to achieve value of IT investments was surprisingly similar, both between different levels within one organization, but also between the different organizations. The main difference concerns how the respondents perceive value of IT and IT´s role. This confirms previous findings that value is value-pluralistic.

Identified issues for achieving value of IT investments are: narrow perspective on value and costs; lack of coordination on national and organizational level; lack of strategy; no follow-up of investments; few stakeholders involved in the evaluation process; IT affect power relations. These issues have in implication for IT evaluation and in particular to clarifying the concept value. These findings will be further discussed below.

The concept, IT value

IT value is value-pluralistic

The respondents describe value of IT from their own perspective and role in the organization. One exception was IT management, who related value to the overall goals and strategies of the organization i.e. effectiveness. On top level, the respondents (not IT management) relate IT-value to reduced costs, i.e. efficiency. On tactical level several respondents relate value of IT to better analysis of the organization and to improve the decision-making i.e. quality. On operational level first-line managers have difficulties to relate how IT has improved their work. Instead they perceive IT as time consuming since today the IT systems require more input of information than previous and the respondents were uncertain to what extent that information contributed of value to the organization. For example, the respondents have to give the same input to accident reports, irrespective of the size of the accident. Also the firemen seem more interested in investing in better vehicles that could contribute to both a more efficient and qualitative work. Most of the respondents also mention the citizen as an important stakeholder that should be considered in the IT evaluation process. But stakeholders such as government,

community, union, suppliers, other collaborators, etc, received less attention when it comes to describing value of IT investments.

This implies that value of IT investments is value-pluralistic (Guba and Lincoln 1990; Cronk and Fitzgerald 1999; Bannister 2001) and it is obvious that the value or effects of an IT investment needs to be evident for all levels in the organization since value (output alt outcome) and input and output value is not always acting together at the same organizational level.

IT value as efficiency and effectiveness

The problem of achieving value of IT investments has for a long time been related to the productivity due to the productivity paradox (Bryngelsson 1993). Productivity, ratio between output and input is a measure of efficiency. Since IT systems are social systems it could be natural to assume that efficiency should not only include a rational aspect but also a qualitative aspect judged by involved stakeholders. One question that can be raised is:

- Can value of IT investments in terms of efficiency be evaluated without any connections to the effectiveness i.e. overall goals and strategy of the organization?

Effectiveness has in overall been described as fulfillment of goals, doing the right things (Fitzgerald 1998). According to the respondents, effectiveness was not considered when evaluating value of IT investments. A risk when evaluating value of IT from only an individual perspective and neglecting the overall goal and context of the IT system, (Symons 1991; Jones and Huges, 2001; Stockdale and Standing 2006), is that the IT development becomes ad-hoc, which is a fact at particular one of the involved organizations. This ad-hoc development and lack of evident organizational goals could in turn contribute to transmission of resources (see fig 1) (Modell and Grönlund 2006) and outputs that have no connection to the overall organizational goal and strategy. In the long run that give less valuable outcome, effects to the citizen, the taxpayer. Questions raised here are:

- Can effectiveness be evaluated without any connections to efficiency? Can neglect of effectiveness contribute to that core values such as saving lives become secondary and lose sight when investing in IT investments? Is it then a risk that the citizens and politicians will lose influence on what activities the public sector should give priority in order to give the citizen "value for money".

Organizational value of IT should include both a dimension of efficiency and a dimension of effectiveness i.e. do things right and do the right things. Also, since an IT investment affect different levels differently within the organization, such as the top-level, the tactical level and the operational level, and one level can receive benefits while another department or level can receive disadvantages, it is important to make

the value evident for all levels. Another important factor to take in consideration is that a public organization cannot always dismiss resources, just allocate resources. Therefore effectiveness and efficiency need to interplay in the IT evaluation process, none should be considered by their own since the public organization is foremost driven by pre-determined political goals that should be achieved, and not by the "bottom-line". Further efficiency should include both a economic and a qualitative dimension.

Implications for IT-evaluation

The identified issues indicate that in order to be able to evaluate value of IT investments in the public sector there is a need for consideration of issues such as:

- A clear definition of the value of IT-investments for the organization.
- Matching IT-investments with the overall strategy, goals and mission.
- Co-ordination of internal and external IT-systems.
- A formative, continuous IT-evaluation approach.
- A proper calculation of total costs.
- Involve relevant stakeholders of the IT system in the IT evaluation process.
- Taking issues of power into consideration.

These issues indicate that it is time to bury the hatchet between the economic and the interpretative IT evaluation approaches, and let them complement each other. In prior research the economic approach has received a lot of critique. For instance Serafeimidis (2001) argues that the economic stream suffers a number of deficiencies such as limited consideration of organizational context and neglect of human aspects of evaluation. However, the economic approach should not be abandoned just because of this critique, rather it should be complemented. Evaluating IT investments from an economic perspective with monetary items will continue to be an important perspective in the IT evaluation process, but it is of most importance that it is not the only perspective.

The interpretative IT evaluation approach could therefore contribute to improvement for evaluating value of IT investments in the public sector since the approach considers the context (which relates to strategy and co-ordination), stakeholders and the process (Symons 1991; Jones and Huges, 2001; Stockdale and Standing 2006). Although value and costs need further attention since neither the economic nor the interpretative IT evaluation approaches give guidelines for what types of value and costs should be included in the judgments of the organizational value of IT. The economic approach includes an economic perspective and the interpretative approach includes perspectives from the stakeholders. Therefore it seems important to clarify the organizational value of IT investments and what should be included in the judgment. Also to remember is that the economic evaluation methods are not developed for IT investments in particular such as the interpretative IT evaluation

approach. The interpretative IT evaluation approach includes no guidance on what should be considered in the judgment of value and costs, except for the stakeholders' perceptions. This is an important issue to further discuss since the "value for money" cannot be discussed if the costs calculation does not give an accurate calculation of costs. Without an accurate calculation of costs, proper judgments and evaluations of IT investments cannot be done.

Conclusions

This paper has addressed issues in the achievement of the presumed value of IT investments, and what implications this may have for the IT value as such, and IT evaluation.

Two points are important regarding IT value. First it is time to take the concept seriously, to problematize and define what is meant by IT value. Secondly, it is important to stress that IT-value is about organizational value of IT. The usefulness of an IT-investment to the organizations should be in the foreground, not the value of technical features of the system. The respondents describe value of IT from their own perspective and role within the organization, but at the same time they make complaints that evaluation of IT investments is not done with consideration from the need of the organization. For example, organizational value of IT should include a consideration of both efficiency and effectiveness (this is especially important in the public sector since it is driven by political goals and not by the "bottom line").

Regarding IT-evaluation, the main point is that both economic and interpretative approaches are needed. Evaluating IT investments from an economic perspective with monetary items will continue to be an important perspective. The problem here is that the economic approaches are general, and not developed for specific use on IT-investments. The calculation of cost in these methods must be further developed.

The interpretative IT evaluation approach could contribute positively to the IT evaluation process in the public sector since this approach consider strategic issues, co-ordination, stakeholders' involvement and evaluation as a formative process, i.e. it relates to several of the problematic issues identified in the study. Another issue that needs attention is how to take care of power and politics in the IT evaluation process.

The findings described above is particularly important for the public sector since no traditional income statement will validate the choice of used resources to the outcome. In a profit organization the income statement will sooner or later give indications if the business is on the wrong track. Who will have this insight in a public organization? If a public organization does not co-ordinate their output to the

outcome there could be a redistribution of resources to non-productive outputs, i.e. outputs not related to the expected outcome of the public organization. This could in turn be a serious waste of tax money on wrong outputs. Thus, achieving value is not only an evaluation problem it also demands management to address issues such as strategy, co-ordination, and cost control.

References

Avgerou (2000): Information systems: what sort of science is it? Omega, Vol 28, 567-579.

Ashurst, C. and Doherty, N.F. (2003). Towards the Formulation of a 'Best Practice' Framework for Benefits Realisation in IT Projects. Electronic Journal of Information Systems Evaluation, Vol. 6, 2, pp1-10.

Bannister, F. (2001) "Citizen Centricity: A Model of IS Value in Public Administration", Electronic Journal of Information systems Evaluation, Vol 5, 2.

Bennington, P. and Baccarini, D. (2004). Project benefits management in IT projects – An Australian perspective. Project management journal, June.

Berghout, E. and Remenyi. D. (2005) The elven years of European Conference on IT Evaluation:Retrospectives and Perspectives for Possible Future Research. Electronic Journal of Information System Evaluation. Vol. 8. Issue 2. pp 81-98.

Brynjolfsson, E. (1993) The productivity paradox of information technology. Communication of the ACM, Vol 36, 12.

Cronk, M.C. & Fitzgerald, E. (1999). Understanding "IS Business value": derivation of dimensions. Logistics Information Management, Vol. 12, pp. 40-49.

Dedrick, J, Gurbaxani, V and Kraemer, KL (2003) Information Technology and Economic Performance: A Critical Review of the Empirical Evidence, ACM Computing Surveys, Vol 35, 1, pp1–28.

Fitzgearld, G. (1998) Evaluating information systems projects: A multidimensional approach. Journal of Information Technology. Vol 13, pp 15-27.

Frisk. E. and Plantén A. (2004) IT Investment Evaluation: A Survey of perception among Managers in Sweden. European Conference on Information Technology Evaluation.

Guba, S. E. and Lincoln S. Y. (1990) Fourth generation Evaluation, Sage Publications.

Hamilton, S. and Chervany, N. (1981a) "Evaluating information systems effectiveness – Part 1", MIS Quarterly, Vol 5, 3, pp55-69.

Hamilton, S. and Chervany, N. (1981b) "Evaluating information systems effectiveness Part 2", MIS Quarterly, Vol 5, 4, pp79-86.

IT management (2007) Ny undersökning: Andelen misslyckade it-projekt ökar. IT-chefen Tidningen för IT-chefer och IT-strateger. Nr3, pp16.

Jones, S. and Huges, J. (2001). "Understanding IS evaluation as a complex social process: a case study of a UK local authority", European Journal of Information Systems, Vol 10, pp189-203.

Klecun, E. and Cornford, T. (2005) A critical Approach to Evaluation. European Journal of Information Systems, Vol 14, 3, pp229-243.

Klein, K. H. and Myers, D. M. (1999) "A set of principles for conducting and evaluating interpretative field studies in Information Systems", MIS Quarterly, Vol 23, 1, pp67-94.

Lewis, S.P., Goodman, H.S., Fandt, M.P., Michlitsch, F.J. (2007) Management Challenges for Tomorrow's Leaders. Thomson Sout-Western 5ed.

Modell, S. and Grönlund, A. (2006) Effektivitet och styrning i statliga myndigheter. Studentlitteratur.

Remenyi, D. and Sherwood-Smith, M. (1999) "Maximize information systems value by continuous participative evaluation", Logistics Information Management, Vol 12, pp14-31.

Serafeimidis, V. (2001) "A review of Research Issues in Evaluation of Information Systems", in Van Grembergen (ed.), Information Technology Evaluation Methods & Management, Hershey, Pa. Idea Group publishing.

Solow, R. (1987) We'd better watch out. New York Times Book Review. July 12.

Stockdale, R and Standing, C (2006) An interpretive approach to evaluating information systems: A content, context, process framework. European Journal of Operational Research Vo 173, 3, pp1090-1102.

Symons, V.J. (1991) A review of information systems evaluation: Content, Context and Process. European Journal of Information Systems, Vol 1, 3, pp205-212.

Thorp, J. (2001). A benefits realization approach to IT investments. In Grembergen (Ed.), Information technology evaluation methods & management. Idea Group Publishing. pp. 25-43.

Walsham, G. (1995) "Interpretive case studies in IS research: nature and method," European Journal of Information Systems, Vol 4, pp74-81.

Walsham, G. (1999) Interpretive Evaluation Design for Information Systems. In Willcocks and Lester (Eds.) Beyond the Productivity Paradox. London: John Wiley & Sons Ltd.

Walsham, G. (2006) Doing Interpretive Research. European Journal of Information System. Vol 15. pp 320-330..

Ward, J. and Daniel, E. (2006) Benefits Management, Delivering value from IS & IT Investments. John Wiley & Sons, Ltd.

Willcocks, L. P. and S. Lester (1996) "Beyond the IT Productivity Paradox", *European Management Journal,* **14 (3),** pp 279-290.