

# The Eleven Years of the European Conference on IT Evaluation: Retrospectives and Perspectives for Possible Future Research

Egon Berghout<sup>1</sup> and Dan Remenyi<sup>2</sup>

<sup>1</sup>University of Groningen, The Netherlands

<sup>2</sup>Trinity College Dublin, Ireland

[e.w.berghout@eco.rug.nl](mailto:e.w.berghout@eco.rug.nl)

[dan.remenyi@tcd.ie](mailto:dan.remenyi@tcd.ie)

**Abstract:** This paper provides an overview of the papers that have been presented at the European Conference on IT Evaluation during the past eleven years. It considers the main issues, and learning themes addressed in papers presented to these Conferences. The paper also reflects on the possible future direction, which this research may take and three major research themes are suggested. Some 356 papers have been presented at ECITE. Over the eleven year period it is clear that the level of understanding as reflected in the papers has significantly increased. Themes, which were particularly well addressed, include IT and IS value, the multidisciplinary nature of evaluation, the importance of stakeholder analysis, organisational learning and life cycle management. Three issues are identified as particularly important for further research. These are, the theoretical underpinning of IT evaluation, improving the data sets for research and establishing a more common core of concepts.

**Keywords:** IT, IS, Evaluation, Theoretical frameworks, empirical research, case studies, questionnaires, core concepts, corporate politics, data sets, research maturity.

## 1. Introduction

This paper describes the research conducted by those who have presented papers at the European Conferences on IT Evaluation (ECITE). It is a high level overview of the proceedings of these Conferences and is based on the papers published during the first eleven proceedings. The purpose of this paper is to facilitate an understanding of the thrust of research in this field of study and to reflect on its possible future direction.

The objective of ECITE, which has remained constant throughout the eleven-year period, is to provide a platform for academics and professionals to join together and discuss the theory and practice of the evaluation of information technology. The first ECITE was held at Henley Management College on the 13<sup>th</sup>-14<sup>th</sup> of September 1994.

The first paper in the first issue of the conference proceedings concludes by stating: '.... IT costs have been growing by rates of about 15% p.a. over the last decade.' 'This rate of growth is far in excess of the growth in the underlying businesses and cannot be sustained into the next century' (Dier and Mooney, 1994, p.11). This statement, although perhaps a little naïve, clearly indicated the relevance

of the research. Considering the current state of the IT industry it also illustrates that evaluation research may be thought of as being unable to achieve a soft landing. This overview of the 10 conferences, therefore, addresses what might be regarded as research highlights in terms of vision and practical relevance and at the same time it also considers problems such as industry impact.

Questions addressed in this paper are:

- What type of researchers contributed to the IT evaluation conferences?
- What type of research questions were addressed?
- What were the most prominent research findings?
- What other interesting research questions are suggested?

## 2. Background of participating researchers

ECITE has always been a small specialist Conference. It was never intended that it should attract large numbers of papers or attendees and thus the focus of the Conference has been retained. During the eleven years 513 authors contributed to the conference. Of this group 458 were academics and 55 authors had an industry background (11%). A number of authors

contributed on multiple occasions to the conference. In the second and third conference 30% of the authors had also contributed to previous ones. As the conference grew so this ratio changed. For the last three years this number was 9%.

The conference has been held in the UK, in the Netherlands, in Ireland, in France and Spain.

Although the conference is referred to as a European conference, ECITE has always welcomed contributions from authors around the globe and there have been papers presented from 38 different countries. Of these 38 there have been 17 different European countries as well as the USA, Australia, South Africa, New Zealand and several Asian countries. The largest number of contributions to the conference have come from the UK (34,9%), Australia (9,4%) and Netherlands (9,4%) as shown in Figure 1.

Country of origin	Quantity	%
Australia	48	9.4%
Austria	5	1.0%
Bangladesh	1	0.2%
Belgium	12	2.3%
Brazil	2	0.4%
Canada	6	1.2%
Chile	1	0.2%
Denmark	5	1.0%
Estonia	1	0.2%
Finland	32	6.2%
France	12	2.3%
Germany	15	2.9%
Greece	5	1.0%
India	1	0.2%
Indonesia	1	0.2%
Ireland	30	5.8%
Italy	9	1.8%
Korea	3	0.6%
Latvia	1	0.2%
Luxemburg	3	0.6%
Mexico	3	0.6%
Netherlands	48	9.4%
New Zealand	3	0.6%
Norway	2	0.4%
Poland	1	0.2%
Portugal	2	0.4%
Romania	1	0.2%
Saudi Arabia	1	0.2%
Seychelles	1	0.2%

Country of origin	Quantity	%
Slovakia	2	0.4%
South Africa	17	3.3%
Spain	9	1.8%
Sweden	21	4.1%
Switzerland	4	0.8%
Tunisia	1	0.2%
Turkey	2	0.4%
UK	179	34.9%
USA	23	4.5%

**Figure 1:** Nationality of researchers

With only 11% of conference attendees coming from industry it is clear that this combination of academics and practitioners could be improved. For two of the years the conference supported a doctoral colloquium.

### 3. How the research papers were focused

The evaluation of IT encompasses many topics and this diversity is reflected in the papers. A total of 356 papers were published in the proceedings. It is interesting to note that the majority of the papers are based on case study research, representing 52,7%.

There was a diverse range of topics and this paper considers the research under the following categories:

- Types of information systems;
- Industry sectors;
- Geographical areas;
- Organisation of the overall information function;
- Development of particular evaluation methods;
- Theoretical foundation of evaluation.

#### 3.1 Types of Information Systems researched

A plethora of information system types have been investigated. Examples are:

- Executive information systems (EIKordy, et al., 1997; Carlsson, 1998).
- Strategic information systems (Spil, 1995; Deitz, 1995; Savolainen, 2000).
- Electronic data interchange (EDI), (Hoogeweegen, et al., 1994).
- Manufacturing information systems (Wheeler and Chang, 1994; Bonner, 1995; Ezingard, 1998; Coronado, 1999).

- Knowledge based systems (Clark and Soliman, 1996; Poon, 1999; Savory, 2001; Tyndale 2002).
  - Workflow (Kueng, 1998; Grunden, 2002).
  - Intranets (Magrill and Brown, 1997).
  - Electronic commerce (Miller, et al., 1999; Stamoulis, 1999; Lee, 1999; Cherian, 2001; Al-Mashari and Al-Samad, 2002; Beyno-Davies, 2002;).
  - Groupware (Josefsson and Nilsson, 1999).
  - Enterprise systems (Ezingear and Chandler-Wilde, 1999; Stefanou, 2000; Stafyla and Stefanou, 2000; Al-Mudimigh, et al., 2001; Hillam and Edwards, 2001; Al- Mudimigh and Al-Mashari, 2002).
  - Customer relationship management systems (CRM) (Ezingear, et al., 2001; McCalla, et al., 2002).
  - Infrastructures (Renkema, 1997).
  - Development tools (Addison and Sutherland, 1995).
  - Evaluation of Transhuman technology (Bannister 2004)
- Protti, et al., 2000; Suomi and Tahkapaa, 2001; Bergamaschi and Ongaro, 2001; Turunen, 2001; Ammenwerth, et al., 2002; Carson et al, 2004
  - Telecom industry (Peterson and de Wit, 1997; Demkes, 1997; Lampikoski and Rusi, 2002; Cheverst et al, 2004).
  - Small and medium sized enterprises (SME), McNutt and O'Donnell, 1997; Hillam and Edwards, 1999; Dans, 2000; Dans, 2001; Johansson and Carlsson, 2002).
  - Public sector (Newton, 1995; Worrall, et al., 1998; Oliver, 2000).
  - Financial services industry (Nijland and Berghout, 2000; Maimbo and Pervan, 2002; Diniz et al, 2004).

These papers typically addressed ex ante assessments of the above systems investigating the potential value of investment in these areas. In general the researchers are quite successful in this type of investigations. However, it is clear from the analysis of these papers that the authors are also often uncertain about the correctness or validity of their outcomes. This is probably caused by the fact that the researchers are not often able to study the actual realisation and outcome of the projects researched. However, most of these information system based papers also lack a theoretical underpinning of their methodology, which results in additional uncertainty about their measurement instrument. Due to the labour intensiveness of case study research the number of involved organisations was also limited.

### **3.2 Industries researched**

Many papers refer to particular industry sectors. Examples are:

- Healthcare, which is also the most often researched topic overall (Kaplan, 1995; Lock, 1996; Murray and Dhillon, 1996; Peterson and de Wit, 1997; Salmela and Turunen, 1997; Vlug and Lei, 1999; Niss, 1999; Orr et al., 1999;

It is clear that evaluation research requires insight into specific industry practice. Without this contextual knowledge the assessment of competitive advantage or organisational improvements is extremely difficult. Through focusing on a particular industry sector, researchers are better able to understand industry contexts and validate elements of the evaluation framework. However it is interesting to note that authors frequently do not retain the industry specific focus when discussing their conclusions. And thus too much is sometimes made of the finding from what is essentially a narrow focused study.

### **3.3 National focus**

Many studies have referred to a particular geographical area. Examples are:

- United Kingdom (Miller and Dunn, 1997; Stansfield, et al., 2000).
- The Netherlands (Nijland and Berghout, 2000; Stansfield, et al., 2000).
- Spain (Arribas, 1996; Arribas and Ingusta, 1997).
- South Africa (Hart, 1999; Sutherland, 1994, Pather et al, 2004).
- Australia (Cronk, 1999; Myles, et al., 2000; Singh and Byrne, 2004).
- Belgium (Deschoolmeester and Braet, 2000).
- Romania (Avram, 1999; 2000).
- Greece (Mitrakis and Serafeimidis, 1994).
- Denmark (Andersen, 1999).
- Ireland (O'Donnell and O'Regan, 2000).

- Saudi Arabia (Al-Turki, 2000)
- Sweden (Frisk and Planten, 2004)
- Finland (Kontio, 2004)

These papers often suggest that they provide state-of-the-art overviews of IT evaluation in a particular country and thus these studies do include regional specific elements of evaluation. The way groups or cultures deal with corporate dimensions such as power, user participation and risk are major influences on the evaluation. Country studies typically include representative data sets.

### **3.4 Organisation of the IT function**

Besides evaluation of IT projects or operational information systems, the evaluation may also refer to the overall IT function (see, Watad, 1995; Shin, 1997). In particular, issues relating to outsourcing is an object of study (Willcocks and Fitzgerald, 1994; Currie and Irani, 1999; Khalfan, Gough, 2000; Lin and Pervan, 2001).

Papers in this area all refer to measurement problems and evaluation i.e. the evaluation of an outsourcing decision requires some form of measurable objectives and processes. These papers also typically address the boundaries of measurement (not everything is measurable) and also consider some of the arguments related to the nature of the measurement activity (every measurement potentially raises another measurement problem).

### **3.5 Evaluation methods**

A number of evaluation methods are especially noteworthy. Those that received more attention than others include:

- The Balanced Scorecard (Grembergen and Bruggen, 1997; Hillam and Edwards, 2001; Deschoolmeester and Braet, 2000).
- Simulation as analysis tools for examining the effects of an envisioned information system (Jong, 1999; 2000; Anderson, 2000).
- DSDM (dynamic systems development method), as an approach to enhancing a system development methodology with an evaluation approach (Barrow and Maylew, 2001).

Given the focus of the conference, the number of papers that actually develop

evaluation methods is modest. The discussion about evaluation methods has primarily been taken place outside the conference (Parker and Benson 1988; Remenyi and Sherwood-Smith, 1997; Thorp, 1998; GAO, 2000) and was published in book form. Perhaps this is due to the fact that any discussion on the development of evaluation methods requires much more detail than can be reduced to approximately 5,000 words.

These methods are all of a multidisciplinary nature. Financial approaches receive relatively little attention except for the option theory approach (see next Section for references).

### **3.6 Evaluation theory**

Evaluation is a multidisciplinary topic and many theoretical approaches have been applied to study evaluation practices and explain the various phenomena. Examples of theory-based approaches are:

- Economics/accounting theory (Dier and Mooney, 1994; Dirks and Lent, 1997; Bannister and McCabe, 1999; Maanen and Berghout, 2001; Svavarsson, 2002;);
- Interpretative approach (Serafeimidis and Smithson, 1994; McBride and Fidler, 1994; Abu-Samaha, 2000);
- Critical approach (Nijland, 2001; O'Donnell and Hendriksen, 2001; Jones and Basden, 2002);
- Structuration theory (Vaujany, 2001, Jansen and Nes (2004));
- Grounded theory (Jones and Hughes, 2001);
- Contingency approach (Turk, 2000);
- Soft Systems Methodology and process theory (Kefi, 2002; Stansfield et al., 2000).
- Cognitive mapping (Newman and Hang, 2002);
- Option theory (Jong, et al., 1997; Clare and Lichtenstein, 2000; Mehler-Bicher, 2001; Svavarsson, 2002;);
- Social theory (Berghout et al., 1996);
- Post-modernism (Remenyi and Sherwood-Smith, 1996).

Theoretical underpinning of IT evaluation research is a major issue, because this very well demonstrates the level of understanding of the topic. The variety of approaches already illustrates that there is

little consensus in this area. It is even extremely complex to make a statement about more or less promising approaches. Option theory has not been very successful from a practical point of view. However, it remains noteworthy from a theoretical perspective explaining the economical aspects of evaluation. The interpretative approach such as that advocated by Walsham, (1993) received the widest attention. Elaborating upon a theoretical foundation of IT evaluation research is certainly an urgent issue.

#### **4. Research results**

In this section the conclusions of the 298 papers are summarised into four main research findings as follows:

- The untangling of IT value;
- The multidisciplinary nature of evaluation;
- The importance of stakeholder analysis;
- The importance of organisational learning and life cycle management.

##### **4.1 The untangling of IT value**

The untangling of IT value is discussed, first, through elaboration on IT cost, second, through elaboration on IT benefits, and third, through elaboration on IT value creation.

###### *4.1.1 Untangling IT cost*

Many of the 298 papers deal with the notion of cost as a resolved issue. However, a number of papers illustrate that this is perhaps not the case (Bannister and McCabe, 1999; Maanen and Berghout, 2001; Dirks and Lent, 1997; Dier and Mooney, 1994). Costs associated with developing or operating information systems are primarily of a fixed and indirect nature. Calculating IS cost, therefore, always implies the allocation of cost and there are many unresolved issues regarding such allocation. Bannister and McCabe present a list of difficulties associated with understanding IT related costs (Bannister and McCabe, 1999):

- Identification problems. IT is always part of something else, being a project or departmental unit. For example, to what extent are user-cost included in IT costs?

- Data capture problems. Besides general accounting failures, there are typical non-recorded costs, such as, implementation cost.
- Overhead allocation problems. Cost accounting of IT includes many charging issues making this a personal and political problem.
- Accounting conventions. Different standards regarding amortisation and capitalisation are applied between and within countries.
- Disbenefits. This typically refers to the negative consequences of introducing IT, such as, increased risk of fraud and decreased flexibility of operations.

A cost-based approach also seems to be more adequate for investment analysis than cash flows. Examples of cost that would be unaccounted for using a cash flow analysis could be hardware cost, when the IT investment would not directly result in a purchase of additional hardware.

In contrast to what is suggested in many of the conference papers, there are many issues still unresolved regarding IT cost. There is little knowledge of the cost behaviour of information systems and few, if any tested methodologies or even theories to manage and control IT cost. IT costing is a complex issue, which is well suited for further research.

###### *4.1.2 Untangling IT benefits*

Most of the papers deal with the complex issue of untangling IT benefits. Sometimes this is done in great detail (Bannister, 1998; Remenyi, 1999; Bannister, 2000; Lillrank, et al., 2000; Remenyi, 2002). Remenyi identifies four major problems with IT benefits measurement and management (Remenyi, 1999):

- Benefits such as intangible performance improvements. Unlike cost, such benefits primarily impact processes inside an organization and seldomly associated to goods or services sold on an outside market. Their value is, therefore, predominantly dependent on individual judgement and not on market prices.
- The issue of information reach. Even for the most straightforward application it is never simple to understand exactly what the results will be of bringing together information about different

business issues. There will nearly always be knock-on effects, especially when such a system results in integrating business processes.

- Tangible and intangible benefits. Some aspects of an information system may produce hard or tangible benefits which will directly improve the performance of the firm, such as reducing cost and will therefore be seen in the accounting numbers of the organisation as an improvement in profit and perhaps in return on investment. However, other aspects of this system will only create soft or intangible benefits, which will make life easier in the organisation, however, will not directly lead to identifiable performance improvements. In a competitive market cost reductions are primarily transferred to customers and the associated prevented competitive loss may also not show up in the accounting numbers of the firm.
- Benefit evolution. Many information systems will have some easy to identify or obvious benefits which will be sustainable over a period of time. However, as the development of the project proceeds and the ramifications of the system more fully understood, new ideas about potential benefits will also become apparent. This will have been due to the process of creative dialogue between the principal stakeholders, which will bring to light new business processes and practices. In short, potential benefits should not be seen as being static, but rather evolve as a greater understanding is gained of the organisation and the role which the system will play in this. Given this observation, some researchers developed techniques to actively manage benefits (Lillrank et al., 2000; Remenyi and Sherwood-Smith, 1997).

Notable is that most researchers define value in a multidisciplinary perspective and very few restrict themselves to a purely financial analysis. There is, however, no consensus about the operationalisation of the measurement and management of benefits.

#### *4.1.3 Untangling IT value creation*

Given the problems encountered with untangling IT cost and benefits, it may be expected that there will also be difficulties with untangling the notion of IT value, and this is certainly the case. However, some

common understanding has also developed in this area.

Process models have been developed to illustrate the process of value creation at a higher level of detail. Well-known examples of such models from outside the conference are Trice and Treacy, (1986), Weill (1990), Soh and Markus (1993). Conference papers regarding process models include McKeen et al. (1996), Jurison (1999), McAuley (2000), Remenyi (2002).

Similar to the discussion around benefits there is a prominent role for individual perspectives and the multidisciplinary nature of value.

Almost all studies presented at the conference evaluate the value of IT on an organisational level and, remarkably, few on higher levels, such as, governments or countries (Shu, 2001, Bannister and Remenyi 2003). There are also few publications regarding the lower individual level (exceptions are Bannister, 2002 and Hughes, et al., 2002). The country studies that have been presented focus on the use of evaluation techniques in a particular industry or organisation and not on the effects of its impact upon the country or the society. Although, the mission of the conference explicitly includes macro economic studies, these papers still have to find their way to the conference.

#### **4.2 The multidisciplinary nature of evaluation**

There has been a special interest in the multidisciplinary nature of evaluation since the first conference, see for example the papers McBride and Fidler (1994), Serafeimidis and Smithson (1994), Brown (1994), Jurison (1994). Section 3.6 already provided an overview of the various theories that have been suggested or used. However, there is no common understanding regarding the methodology necessary to understand a multidisciplinary field of study. Difficulties with finding appropriate data sets and issues related to how handle these have yet to be resolved.

### 4.3 The importance of stakeholder analysis

Regardless of the research approach or theoretical underpinning, an analysis of the objectives and influence of the various stakeholders has become a common part of evaluation studies (see for instance Serafeimidis (1999), Hughes and Jones (1999), Jones and Hughes (1999), Khalifa, et al. (2000), McAuley and Doherty (2001). Although a stakeholder analysis appears to be an essential element of an evaluation study, the methodological consequences remain relatively unexplored (Grembergen and Bruggen, 1997; Deschoolmeester and Braet, 2000; Hillam and Edwards, 2001). First studies that contain a methodology to include stakeholder perspectives are Jones and Hughes (1999), Barrow and Mayhew (2001), Remenyi (2002). These approaches all focus on a continuous value management: the more traditional accounting viewpoint of pre and post implementation studies is abandoned. These types of continuous management are typically suited to managing scope dynamics of projects and emergent values (Remenyi, 2002). These approaches seem to be, however, far from robust.

### 4.4 The importance of organisational learning and life cycle management

In line with the multidisciplinary nature of evaluation and stakeholder analysis is the importance of organisational learning and life cycle management. The organisational and strategic impact of IT primarily depends on organisational and market characteristics, such as the ability to adapt new working methods, as well as, the willingness to pay for additional product information. Information about already completed projects is, therefore, essential to improve ex-ante or up-front assessments (Alsen and Linde, 1994; Kaplan, 1995; Ward, et al., 1995; Serafeimidis and Smithson, 1995; Swinkels, 1997; Nijland and Berghout, 2000).

Many researchers observe problems in this learning process (see Nijland and Berghout, 2000). Several reasons are given:

- The project objectives were defined in an uncontrollable fashion.

- The priorities of other tasks are higher.
- The outcome differs from the initial perspective and the various stakeholders try to avoid discussing who is to blame for this.

As a consequence evaluation researchers are confronted with the situation that evaluation practice is relatively poorly developed, case studies are unable to validate the more advanced elements of evaluation methods and practitioners are reluctant to use untested methods.

There is also the issue of diminishing value of additional evaluations. Although continuous evaluation and life cycle management do seem to be an obvious route for the development of evaluation methods, there is always the risk over 'over-measuring'. This issue has, so far, not been explored at the conference.

## 5. Perspectives

In this Section three issues are presented that we consider particularly interesting for further study. Given the complex nature of this field of study and the relatively short time it has been of interest to academic researchers the number of topics that could be explored is, of course, almost endless. However, based on the observations in the previous Sections we conclude that some issues might have a higher priority than others. These issues are:

- Theoretical underpinning of IT evaluation.
- Improved methodological understanding of which data sets are appropriate and how they may be used in this type of research.
- Establishing a more common core of concepts.

### 5.1 Theories used to underpin IT evaluation

As presented in Section 3, the number of different theories used in the studies of the past nine years is significant and there is certainly no commonly accepted understanding of which of these might be most appropriate.

Accounting theory and interpretive analysis are most frequently applied. Interpretive analysis has been supported since the first days of the conference (Serafeimidis and Smithson, 1994). In this

case IT evaluation is viewed as a socially embedded process including formal and informal procedures and where actors try to make some sense of their situation. Other researchers encouraging this approach are (Abu-Samaha, 2000; Jones, 2001; Agerfalk et al., 2002; Kefi, 2002).

Several researchers refer to Habermas' theory of social action, where the "world" is explained as a whole (Jones and Basden, 2002). Habermas' theory is centred on communication and seeks to clarify the conditions, means, content, constraints and objectives of socially organised human behaviour (Habermas, 1984). Researchers that encourage this approach are O'Donnell and Hendriksen (2001) and Jones and Basden (2002).

Glaser and Strauss's Grounded Theory is referred to by Jones and Hughes (2001) as a more structured approach that provides some form of synergy between the more quantitative interpretive research and more qualitative positivistic research.

Other noteworthy frameworks include critical theory, referred to by Nijland (2001) and Giddens' structuration theory, referred to by Vaujany (2001). Furthermore, option theory is another referred to quantitative approach (Jong, 1997; Clare and Lichtenstein, 2000; Meher-Bicher, 2001; Svavarsson et al., 2002).

Clearly there is no single, superior, theoretical underpinning for research in this field of study. And this issue in itself is a major problem which deserves much attention.

## **5.2 Improved data sets**

Business research is primarily built on empirical data and often in the form of case studies and questionnaires. This is a logical situation given the relative immaturity of this research. Comparable with medical sciences, most medical breakthroughs historically originated from observations of initially successful patients and were not the result of double blind testing. However, the internal and external validity of some case studies is a matter of concern to the rigorous researcher.

The issue of what data is appropriate and how to use it in reaching conclusions is by no means agreed and needs much more attention.

## **5.3 Common concepts**

IT evaluation researchers are still far away from a generally agreed and accepted use of common concepts. This is a major problem and can cause substantial misunderstanding and disagreement. For example, costs and cash flows are sometimes confused. Putting more effort in the creation of more commonly accepted concepts will probably also reveal that we left many issues unattended in the scientific rush forwards.

Particularly noteworthy papers in the area of concept development are those of Bannister and McCabe (1999) on cost, Remenyi (1999) on benefits and Remenyi (2000) on value.

## **6. Summary and conclusions**

The purpose of this paper is to present an overview of eleven years of an IT evaluation conference. In these conferences 407 authors contributed to 298 papers. The number of different approaches to IT evaluation was considerable and this diversity of the papers reflected the complexity of this field of study.

One of the most obvious conclusions, which may be reached from this analysis, is that this field of study is still active across a wide range of issues and that there has not been any major attempt to focus the breath of topics researched. This eclectic approach to the research may reflect the fact that there has been only a marginal improvement in the maturity in this field of study over the past eleven years. On the other hand the view can be taken that although a substantial amount of research has been conducted in IT evaluation there are still many problems to be addressed and many of the problems, which have been addressed as yet are still to be fully resolved.

However before sharpening pencils and diving into more case studies or surveys it is important to reflect at a more fundamental level on what is being done in the field of IT evaluation. So far the energy expended on research in this field has not produced much insight into the core problems.

Three suggestions are made:- firstly, it would be useful to focus more research on



the reasons why IT evaluation is important and also on why it is not conducted by practitioners as much as perhaps the academic community feels it should. The fact that there is a political dimension of evaluation is well known but more work needs to be undertaken in this direction. Corporate politics and power relationships within organisations are not a well researched area perhaps because of the difficulties of getting to the root of the problems. But this should not discourage academic researchers. This research into power relationships should include careful study of how investment analysis both ex ante and ex post is performed for other functions in business or in government and if it is correct that IT projects are regularly singled out for more severe scrutiny and more thorough analysis than other similarly sized investments.

Secondly, research attention needs to be focused on the question of data or evidence. Are case studies and questionnaires really relevant to researchers in this field of study? Do these research techniques really lend themselves to the delivery of useful insights in this field of study? Should for example action research not become the main paradigm in the field of IT evaluation? Clearly in the light of our first suggestion concerning power relationships there would appear to be a need for more research employing a critical theory perspective. Furthermore given the availability of certain data sets then what are the implications for the academic researchers' ability to analyse it and which are the most effective tools.

Finally, the question of trying to define the core of this field of study and in so doing create some degree of understanding and perhaps even consensus as to the important concepts which are required to be able to evaluate IT investment, needs to be addressed. This amounts to developing a theory of IT evaluation. This is not a simple matter as this field of study is intrinsically eclectic and thus draws on a wide range of theoretical and practical thinking. To integrate this so that IT evaluation could be regarded as having its own theoretical foundation is a major challenge. As it stands IT evaluation is very fragmented and to the outsider it looks quite disjointed. As mentioned above it is clear that misunderstandings creep

into research because of this lack of consensus. Also there is a tendency for many novice researchers to try to reinvent or define basic concepts again and again. The notions of value and benefits to mention only two ideas are churned over again and again with virtually no progress to should for this debate. This need for theoretical underpinning is perhaps the most difficult area of IT evaluation research to tackle and one which needs the most philosophical and theory building attention.

In general there is no doubt that IT evaluation is a field of study, which very is complex. Its scope is exceptionally wide ranging. There are still many challenges and it is perhaps for this reason that it is so attractive to some researchers. However there are other fields of study which are complex and which have been able to arrive at a higher degree of maturity. In this respect is it not now time for IT evaluation research to catch up?

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