



An interpretive approach to evaluating information systems: A content, context, process framework

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Abstract

An evaluation framework is proposed reflecting the content, context, process (CCP) perspective developed from existing IS literature. Evaluation is guided by addressing the questions: why is the evaluation being done? What is being evaluated? Who affects the evaluation? When is the evaluation taking place? And how is the evaluation to be carried out? The framework reflects the identified need for more holistic processes for evaluating information systems and explains the role of interpretive methodologies in identifying the complex interplay of issues. The framework reflects the social, political and cultural factors that influence the economic benefits and emphasises the need for an integrated approach to evaluation.

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1. Introduction

In the rich field of information systems (IS) evaluation literature there are many arguments advocating different methods and approaches for conducting effective evaluations. As systems have

become more complex and interconnected the need for evaluation processes that allow for the true contribution of an IS to be recognised has increased. This reappraisal of IS evaluation has coincided with and been influenced by a paradigm shift in the way evaluation is perceived in other disciplines (Guba and Lincoln, 1989).

In IS, the adoption of a broader view has become yet more important with the advent of e-commerce that connects firms and customers in new ways, and where the system is a competitive necessity rather than a competitive advantage.

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This paper's contribution is a holistic evaluation framework that considers the context, content and process of evaluation with the detailed evaluation factors that address what is being evaluated, why the evaluation is being done, those that influence the evaluation, the timing of the evaluation and how the evaluation is to be carried out.

2. Information systems evaluation

The calls for interpretive approaches to IS evaluation that incorporate the recognition of information systems as both social and technical entities have increased since the late 1980s (Hirschheim and Smithson, 1988; Symons, 1991; Walsham, 1993). Hirschheim and Smithson (1988) argue that treating IS evaluation as a technical problem leads to meaningless conclusions that overlook the social activity inherent in the evaluation process and ignores the political–social environment of an organisation. Their arguments reflect those of Guba and Lincoln (1989) in recognising the importance of stakeholders and the need to look beyond evaluation producing an answer. Benefits tend to be qualitative and often intangible and evaluation must look beyond 'a narrow quantification of costs and benefits to an analysis of the opportunities presented by IT, together with the potential constraints on its application' (Symons, 1991, p. 211). This broader perspective is echoed in Walsham's (1993) view that evaluation is a dynamic socio-political process within multi-level social contexts. Recognition of the socio-political contexts and role of the stakeholders demands an interpretive approach to allow for the deepening of understanding and generation of motivation and commitment to an evaluation.

Although there are many methodologies for evaluating systems, several of them summarised in substantial review papers (DeLone and McLean, 1992; Farbey et al., 1993; Powell, 1992; Seddon, 1997), there are few examples of frameworks from which to build evaluation strategies that encompass the broader context demanded by the interpretive arguments.

This study develops the context, content, process (CCP) idea originally proposed by Pettigrew (1985) for his work on organisational change, and later used to critique the literature on IS evaluation by Symons (1991). The selection of the CCP perspective has two advantages. First, there is a widespread acceptance of CCP among leading contributions to IS evaluation theory (Lyytinen et al., 1991; Serafeimidis and Smithson, 1998; Smithson and Hirschheim, 1998; Walsham, 1993, 1999) that has led to recognition of the concepts in much of the recent literature. Second, the concepts are broad enough to accommodate the myriad ideas and arguments in this well-documented field, while still providing parameters for reviewing them. A parsimonious framework provides a structure for building individual evaluation models, thereby supporting Irani's (2002) argument that generic evaluation is not effective.

A major challenge for IS evaluation is to develop frameworks that are sufficiently generic to be applicable to a wide range of applications but also sufficiently detailed to provide effective guidance. This paper proposes a detailed extension to the CCP perspective based on an extensive literature analysis. The use of CCP as an overarching approach to evaluation allows for questions of what is being measured, by whom and for what purpose, to be asked. The interaction and linking between context, content and process allows for the complicated procedure of evaluation to be explored in multiple ways. For example, an exclusive focus on what is to be evaluated ignores the reasons for the evaluation and the stakeholders that impact on the information systems. The context of the organisation, including its history, its relationships and its information flows supports the treating of evaluation as a longitudinal process through the lifecycle of a system. This flexibility encourages deeper questions in regard to socio-technical–political aspects of evaluation to be asked. Such questions address the focus from the perspective of the technology and the people engaged in that technology. This requires an understanding of why the evaluation is being conducted, who is conducting it, what needs to be measured and for what audience. Recognition of the intended

outcomes of the evaluation also require explanation if effectiveness is to be achieved.

3. The CCP framework for evaluating information systems

A detailed examination of the literature has enabled the identification of the potential factors that influence the content, context and the process of evaluation and supports the construction of a framework to support information systems evaluation. The overarching categorisation of relevant IS evaluation literature as presented by Symons (1991) is used as a starting point and is extended to provide explanations of the significant constructs and alternatives for evaluation. The features of the CCP perspective are examined to identify the elements that affect the conduct of an evaluation and to distinguish the interaction between them.

3.1. Content

A crucial factor in any evaluation study is an understanding of *what* is being measured. Researchers in the socio-technological paradigm advocate a shift away from straightforward measures such as the narrow quantification of cost, to include such measures as intangible benefits, risk and an analysis of opportunities presented by the IS (Serafeimidis and Smithson, 2000). The changing nature of IT and its uses mean that the content elements have changed and new methods that account for the richness of more intangible benefits are needed. This does not mean that all previous measurement tools can be discarded or that there is one single instrument that can capture all aspects of an evaluation (Mirani and Lederer, 1998). An IS can impact on social, economic, organisational and management terms (Smithson and Hirschheim, 1998) and this indicates the need for consideration of measurements against a set of criteria. The choice of criteria determines the content, by what it excludes as well as includes. Frameworks such as the benefits evaluation ladder (Farbey et al., 1995) identify the various levels of complexity and argue that the level of IS dictates

the approach of the evaluation process. A similar approach is recognisable in Seddon et al.'s (1999) rather complex model of Effectiveness Measures that uses the level of system to be evaluated as one of two dimensions for their model. Their second dimension is based on the value judgement of five identified stakeholder groups and the different perspectives they may hold. The recognition of stakeholder perspective is an acknowledged facet of interpretive evaluation (Guba and Lincoln, 1989; Walsham, 1993) and does not confine the evaluation to one group. When examining *what* is to be measured, within the context of a CCP framework, more distinct, less complex taxonomies are required. The use of recognised success measures within a holistic interpretive model enables an evaluator to add flesh to the bones of the evaluation process, building on established IS research, thus contributing to a cumulative body of work within the discipline.

The most tried and tested model is DeLone and McLean's IS Success Model (1992; 2003). Within the concept of *what* is being measured, the metrics outlined in their model allow for detailed identification of categories that support evaluators in the identification of success in an IS. However, one area of metrics that is not included in the model is that of financial measures. Adherence to financial methods is understandable when organisations are faced with a range of seemingly unmeasurable intangibles and where a money value enables everything to be reduced to one recognised acceptable measure or value (Land, 2000). In many cases the dominance of financial executives in the political structure ensures that such measures, relevant to them, remain in use (Irani and Love, 2002; Mogollon and Raisinghani, 2003). A decision on what is to be evaluated is a more complex process than might first appear and is significantly influenced by the stakeholders and by the context of the organisation.

3.2. Context

Approaching information systems as socio-technical entities in research requires consideration of the role of context (Avgerou, 2001; Trauth, 2001). Avgerou's advocacy of technical innovation

Table 1
External and internal influences on the context in an IS evaluation

Context	Influences on context	Source
Inner or organisational context	Organisational structure	Irani and Love (2002); Symons (1991); Willcocks (1992)
	Organisational goals and strategies	Mirani and Lederer (1998); Huerta and Sanchez (1999);
	Organisational culture	Irani and Love (2001); Willcocks and Lester (1996)
	Political structures	Farbey et al. (1995); Huerta and Sanchez (1999);
	Hierarchical structures (e.g. management structures)	Jones and Hughes (2001); Remenyi and Sherwood-Smith (1999); Ward et al. (1996);
	Social structures and processes	Willcocks (1992)
Outer or external context	Stakeholders	Jones and Hughes (2001); Remenyi and Sherwood-Smith (1999); Serafeimidis and Smithson (1999); Smithson and Hirschheim (1998); Symons (1991); Walsham (1993)
	Social, political, economic and technological factors including: <ul style="list-style-type: none"> • National economic situation • Government policy and legislation • Market structures and conditions • Competitive environment • Industry sector • Globalisation • Privatisation • Cultural influences • Technological developments 	Huerta and Sanchez (1999); Jones and Hughes (2001); Remenyi and Sherwood-Smith (1999); Serafeimidis and Smithson (1999, 2000); Smithson and Hirschheim (1998); Symons (1991); Vetschera and Walterscheid (1995)

being considered within the organisational and environmental context in which it is embedded supports the context element of the CCP approach to evaluation. External and internal influences identified from the literature are given in Table 1.

The organisational context will determine the reason for an evaluation and affect the influences of the stakeholders and requires the *why* and *who* of evaluation to be considered within the context section. Trends and developments in the wider business environment also need to be considered since they are powerful legitimating forces.

The purpose of an evaluation tends to be for appraisal of value, a measure of success or recognition of benefits (Guba and Lincoln, 1989; House, 1980). However, evaluation can be used to reinforce an existing organisational structure for political or social reasons and be a ritualistic rather than effective process. Table 2 identifies both ritualistic as well as value reasons for why an evaluation is carried out.

The complexity of an interpretive approach to evaluation owes much to the different perceptions

and beliefs of the different stakeholders involved; an aspect that is being recognised in practitioner literature (Boulmetis and Dutwin, 2000). Stakeholder groups are identified in Table 3 and include initiators of the evaluation, the evaluators who conduct the evaluation, the users of the systems being evaluated and a range of other parties such as trade unions and government agencies. The evaluators must decide which groups are relevant to the project being evaluated. The power associated with stakeholder groups and its implications for effective evaluation is a complex issue which the evaluators should be aware of since there is a danger that outcomes may be skewed to meet the objectives of those holding power (Jasperson et al., 2002).

3.3. Process

Guidance on the process of evaluation requires information to explain the *how* of evaluation (Symons, 1991). There are a wide range of different methodologies and instruments reported in the literature to examine the *how* of evaluation; such as

Table 2
The why of evaluation

Why of evaluation	Comments	Source
Ritualistic reasons	Ritual evaluation reinforces existing organisational structures	Walsham (1993)
Budgetary process that gives 'a final <i>yes</i> or <i>no</i> — <i>pass</i> or <i>fail</i> —verdict'	Especially manufacturing—focus on justification rather than constructive appraisal	Irani and Love (2002, p. 76)
Systems to participate in current business processes	Justification outweighs need to evaluate	Powell (1992)
Hoop jumping exercise	Ritual rather than effective process	Farbey et al. (1999)
Project closure	Not an opportunity for improvement	Remenyi and Sherwood-Smith (1999)
Value reasons		
Appraisal of value	Leading to:	Guba and Lincoln (1989); House (1980)
Measure of success	<ul style="list-style-type: none"> • Improvement in business goals • Organisational effectiveness • Investment management • Problem diagnosis • Consensus achievement 	Remenyi and Sherwood-Smith (1999); Serafeimidis and Smithson (1999); Smithson and Hirschheim (1998); Symons (1991)
Recognition of benefits	<ul style="list-style-type: none"> • Decision-making • Understanding risk 	Farbey et al., 1999; Remenyi and Sherwood-Smith, 1999; Serafeimidis and Smithson, 1999
	<ul style="list-style-type: none"> • Gains in organisational and personal learning 	Remenyi and Sherwood-Smith (1999); Serafeimidis and Smithson (1998); Smithson and Hirschheim (1998)

simulation modelling (Giaglis et al., 1999), cost benefit analysis, return on investment (Ballantine and Stray, 1999) and the traditional measure of user satisfaction that has been developed over many years. For example, the user satisfaction instrument developed by Bailey and Pearson (1983) was evaluated and refined by Ives and Olson (1984) and further adapted by Goodhue (1998). Although evidence suggests that organisations remain with these tried and tested methods (Smithson and Hirschheim, 1998), they do not enable a holistic approach to evaluation to be achieved. Thus, many factors that can significantly influence the conduct of the evaluation are ignored and the benefits of the interpretive approach lost. These include recognition of the role of evaluation in organisational learning, more examination of the strategic value of systems and exploration of the softer methods for determining benefits (Farbey et al., 1993). For example, there is some evidence that informal evaluation procedures are

often ignored by senior management (Jones and Hughes, 2001), but that informal communication is an essential element in effective evaluation (Farbey et al., 1999; Jones and Hughes, 2001; Serafeimidis and Smithson, 1994, 1998; Smithson and Hirschheim, 1998). Symons (1991) describes the informal procedures and information flows around an IS as integral to the work done using the system and argues that evaluation should consider the diversity of official and unofficial information flows. Other *how* factors to be considered include the involvement and commitment of stakeholders and the conducting of both formative and summative evaluations. Remenyi and Sherwood-Smith (1999) assert that continuous formative evaluation helps to minimise cases of failure, whereas summative evaluation is aimed at assessing outcomes and impacts and is by nature more financial/statistical. This view is supported by Farbey et al. (1999) who see accounting and control as essentially a summative evaluation process.

Table 3
The who of evaluation; the stakeholders

Who	Comment	Source
Initiators	Influence the evaluation process	Vetschera and Walterscheid (1996)
	Issues of accountability and dissemination of results Impact on the purpose and level of formality of evaluation process Application of power implications from senior management involvement	Guba and Lincoln (1989) Farbey et al. (1995, 1999); Jones and Hughes (2001); Serafeimidis and Smithson (1998, 1999); Willcocks and Lester (1996)
Evaluators	Deep understanding of stakeholder perspectives Human intuition Understanding of politics Moral agent stakeholder conflict interpretation Need to recognise different stakeholder perceptions of benefit	Serafeimidis and Smithson (1998) Walsham (1993) Smithson and Hirschheim (1998)
	Users	Long recognition of use as a measure of success Major stakeholders in the evaluation Contributes information for evaluation process Different perspective from IT people Close perception of benefit delivery Subjectivity-differences of opinion can be seen as rich source of data
Interested parties	Identification of range of interested parties and effective analysis of their input can be problematic Interested parties may include:	Serafeimidis and Smithson (1998)
	<ul style="list-style-type: none"> • Trades union • Shareholders • IS personnel • Managers and workers affected by the changes • Government agencies May use evaluation for own reasons and own political agenda—arena for organisational politics Stakeholder conflict can be used to inform the evaluation process	Gregory and Jackson (1992); Seddon et al. (1999); Willcocks and Lester (1996) Grover et al. (1996); Mirani and Lederer (1998); Willcocks et al. (1996) Jones and Hughes (2001); Symons (1991) Farbey et al. (1999); Guba and Lincoln (1989); Walsham (1993)

The final element of the CCP approach is the *when* of evaluation. Symons (1991) argues for 'treating evaluation as continuing throughout the various stages of system development' (Symons, 1991, p. 211); an argument well supported by academics (Jones and Hughes, 2001; Smithson and Hirschheim, 1998) although neglected by practitioners (Willcocks, 1992). Extending the lifecycle of evaluation from pre- through post-implementation would allow for changes in organisational objectives, the system and learning processes to be incorporated in the evaluation (Remenyi and Sherwood-Smith, 1999; Serafeimidis and Smithson, 1999; Ward et al., 1996). Thus the emphasis moves from evaluation as a summative process, that is aimed at assessing outcomes and impacts to formative evaluation where ongoing examination can reduce the risk of failure (Remenyi and Sherwood-Smith, 1999).

3.4. Integration of the CCP framework

In information systems, the adoption of a broader view has become more important as systems have become more pervasive. Information systems are no longer confined to one department, but often interconnect an entire firm or cross into interorganisational roles. This is particularly true with the advent of e-commerce where systems connect firms and customers in new ways, and where the system is a competitive necessity rather than a competitive advantage.

In the rich field of IS evaluation literature, the single most important point that arises is the complexity of an effective evaluation process. The problems that surround an organisation in setting out to achieve an effective process are numerous. Systems are often purchased as an 'act of faith' (Powell, 1992) and the decision to evaluate can lead to perceptions of chaos and out of control costs (Irani, 2002), where CEOs fall back on informal 'gut feeling' methods of assessment (Irani and Love, 2002). There is also evidence that this lack of willingness to be rigorous and analytical in the evaluation process may be more common in information system projects than with other capital projects (Ballantine and Stray, 1999). This raises serious questions at a time when information sys-

tems are moving beyond internal, departmental systems and becoming capable of capturing benefits at strategic, tactical and operational levels (Irani and Love, 2002; Weill, 1992).

IS evaluation literature follows two strongly identifiable themes; the development of instruments and tools to measure identifiable constructs, such as user satisfaction and system use, and at a meta level, discussions on the paradigms that should be used to approach the evaluation process. These two themes are not mutually exclusive and are referred to within the concepts identified by Pettigrew (1985) and Symons (1991). The choice of the content, context, process (CCP) perspective is validated by a review of the IS literature where it is possible to identify the rich vein of work that considers the *what*, *why*, *who*, *how* and *when* factors of evaluation. Placed within an interpretive paradigm as advocated by many IS evaluation researchers, the CCP concepts allow for the recognition of a wide scope of factors that need to be taken into account in an effective evaluation. These factors are interlinked and cannot be considered in isolation. For example, *how* the evaluation is to be carried out and *when*, (the process) is closely informed by *what* is being evaluated (the content). These factors are affected by the different perceptions of the stakeholders involved, the *who*, and the reason for the evaluation (the context). Informing the entire evaluation are the internal and external contexts of the organisation in which the evaluation is being carried out.

The consideration of all the identified concepts within an evaluation demands an interpretive approach to capture the interlinking of factors and the richness of the data available. This can be far more demanding than the single instrument approach evident in the literature, but once the need for a more holistic approach is accepted, the outcomes from an evaluation process can change from a judgmental function to one of learning through understanding (House, 1980). This is only achievable if the results are widely disseminated and the learning cycle is taken through the organisation, leading to organisational change. This is clearly highlighted in Serafeimidis and Smithson's (2000) case study where changes in evaluation procedures were ineffective because of lack of organi-

sational change, lack of senior management support and lack of formal dissemination of changes throughout the large organisation. Although consideration of informal perspectives in addition to gathering the formal evaluation data may seem onerous, meetings can be used to discuss the informal perspectives that the evaluators have become aware of in their interactions with other stakeholders. An interpretive approach is important as a lens to uncover the institutional structures that shape the organisational culture and form the norms and values of the organisation (Oliver, 1991; Giddens, 1979). Its major contribution therefore is to make visible the social and political life world of the organisation and provide managers with a setting where these features can be discussed.

A framework showing the concepts discussed in this literature review is given in Fig. 1 to provide a theoretically justified model giving guidelines for establishing key issues in an evaluation (Clarke, 1999). The concepts of content, context and process were further divided into elements of *what*,

why, *who*, *how* and *when* to enable more accurate reflection of the influences within an interpretive evaluation approach. Fig. 1 illustrates the interlinking of the three primary concepts and their smaller elements in this approach as discussed above. The concept of the external context encompasses the whole framework as the factors provide perspective for the organisation and its environment. The element of *who* is discussed within the concept of context, but its central relationship to the other elements is emphasised by placing it in the middle of the framework. Symons (1991) argues that a consideration of the interactions draws in the qualitative aspects of IS evaluation and prevents the narrowing of focus on the technical or quantifiable economic elements that has been a focus of the majority of IS evaluation to date. The content, context, process approach allows for the social, political, and economic consequences of evaluation by examining the interplay of the elements, including the many stakeholder perspectives that can influence the outcome of an evaluation study.

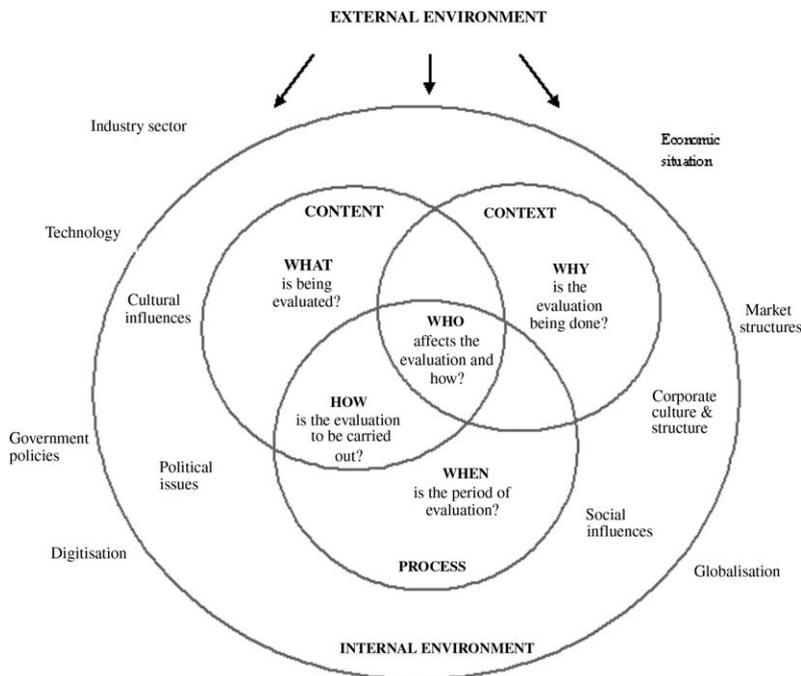


Fig. 1. The content, context and process framework.

The evaluation of an IS project requires consideration of the internal organisational environment and the wider external environment. The perceived success of a system is framed by the expectations of the stakeholders. These expectations are shaped by the organisational culture. For example, an organisation that has a culture that embraces technological change and has a track record of successful leading edge IS implementations is likely to have higher expectations. This needs to be considered in the evaluation process. The ability of staff to work in teams and the presence of conflict within an organisation need to be viewed as a backdrop to the evaluation process.

The external environment may seem beyond the scope of an IS project evaluation. However, projects need to be evaluated in context and the trends, events and legislation in the wider environment act as a catalyst for many IS implementations. The economic conditions in a country at a given time may encourage organisations to invest in new technological infrastructures. Government policies may encourage or pressure organisations to adopt certain technologies or information management practices. The level of competition within an organisation's industry sector can be a powerful legitimating force for IT adoption. Longer-term trends may seem far removed from the specifics of a particular project. The trend for larger companies to globalise operations and the trend of digitisation of data, information and more recently knowledge provide a deeper level of understanding of the role of an individual project.

The framework proposed has sufficiently broad categories for it to be used in a wide variety of evaluation situations. However, the evaluation of complex systems in complex environments is not to be underestimated, especially when the social and political nature of the situation need to be considered. To take this into account an appropriate methodology is required.

4. Methodological implications

Use of the CCP framework requires an approach that supports understanding of the nuances, influences and perceptions of those involved

in the evaluation, and the way they are in turn influenced by the context of the organisation. This provides justification for the use of an interpretive methodology that allows for the element of sense-making in a complex situation, taking into account multiple interpretations and drawing lessons from the evaluation process that can be used to improve future processes. Multiple interpretations enable evaluation to be regarded as an encompassing activity that takes account of both the positive and the negative side of any IS, the informal and formal, and the subjective and objective.

The principles proposed by Klein and Myers (1999) for the conduct and evaluation of interpretive field studies inform such a research approach. Their fundamental principle of the hermeneutic circle echoes calls for the reiterative examination of 'contrasting divergent constructions' until a sense of coherence is achieved (Schwandt, 1994). Hermeneutics is primarily concerned with the meaning of text and seeks to make sense of confused, incomplete or seemingly contradictory meanings to bring out the underlying coherence or sense (Myers, 1994). It allows the researcher to critically examine conflicts and contradictions within the complexity of social, cultural and political systems from many perspectives within the organisation. The requirement for meanings to be set in the context of the micro- and macro-environments accords with the CCP framework's acknowledgement of the need to examine context when evaluating a system. Thus conducting the evaluation process through the methodology of an interpretive case study supports the richness, complexity and the identification of social and political issues demanded by the CCP approach.

The acceptability of case study research has suffered from a perceived lack of ability to generalise the findings, a clear outcome of positivist research studies. However, drawing on Yin (1994), Walsham (1995) argues that case studies are generalisable to theoretical propositions (1995): an argument supported by Klein and Myers' (1999) observation that there is a philosophical basis for abstraction and generalisation in interpretive field studies. Unique instances can be related to ideas and concepts that apply to multiple situations. What differentiates anecdote from interpretive re-

search is relating the latter to theory. Case study findings can be used to develop the concepts identified from the literature and where appropriate to draw implications from the data.

The influences of the case study method, together with those of the theoretical perspective of hermeneutics require adherence to the principles of dialogical reasoning, multiple interpretations and suspicion (Klein and Myers, 1999). Dialogical reasoning within a hermeneutic study allows for the inherent prejudices of the researcher to be recognised and used to improve understanding through the interpretation process. This process needs also to take account of the multiple interpretations, the sixth of Klein and Myers principles that will be evident among the participants. The reconsideration of the different interpretations within the context of all the data sources enables recognition of where and why views diverge.

5. Strengths and limitations of the framework

The CCP framework proposed in this paper makes a distinct contribution to the evaluation literature because it provides the detailed factors that need to be considered in evaluation yet it remains sufficiently flexible to be of value in evaluating a wide range of projects. In this respect, the CCP framework provides a high level structure for evaluation (content, context, process) with a detailed breakdown of sub-constructs or elements. Much of the evaluation literature provides perspectives on evaluation without providing frameworks. Those evaluation frameworks that are presented in the literature examine certain aspects of evaluation and do not consider an integrated set of constructs. For example, DeLone and McLean's (2003) work examines what should be evaluated such as data quality or user satisfaction but does not give guidance on how to go about the evaluation process. Similarly, Walsham (1993) and Mirani and Lederer (1998) have discussed who should be involved in the evaluation without considering what should be evaluated and the process of evaluation. A process perspective has been employed to model relationships between users and analysts

(Newman and Robey, 1992) and whilst this is useful for viewing IS development as a series of events or episodes involving the two groups it can only be used as one part of an evaluation.

In reviewing the content, context, process framework (Fig. 1) the importance of the elements of the constructs, rather than those constructs themselves, is suggested. The elements allow for more flexibility when indicating the inter-relatedness of the different aspects of the evaluation. The *who* of evaluation is shown as central to the other elements since the stakeholders are seen to affect every aspect of the evaluation, from *why* the evaluation was being carried out, to the examination of *what* was to be evaluated and *how* it was to be done. The *what* of evaluation can include a range of measures as advocated by Mirani and Lederer (1998) who argue that any single instrument cannot capture the complexity of any evaluation. Using recognised IS measures enables a cumulative tradition to be carried forward within the discipline, although this does not preclude new measures that can account for the richness of intangibles in the complex environment of interorganisational systems. These should, however, not ignore the need for a consideration of intangibles, which requires that an open approach be taken when contemplating *how* the evaluation measures are to be examined. The *how* also requires a consideration of the period of evaluation. The *when* is also influenced by the stakeholders as the different stages of e-marketplace participation involves different people from different perspectives, as well as changes in the views of stakeholders as participation progresses.

The evaluation framework reflects the connections observed between the decision on what is being evaluated, with the process of carrying out the evaluation and the timescale in which it takes place. The time element is particularly important in the evaluation of dynamic e-commerce systems where changes can occur rapidly and where stages of development can be observed. This supports the calls in the literature for more formative evaluation and also for more acceptance of informal evaluation findings; seen as essential elements in effective evaluation (Farbey et al., 1999; Jones and Hughes, 2001).

The internal and external environments have a significant influence on understanding the many factors affecting the realisation of benefits and this is indicated in the framework. The social, political, cultural and economic factors are actually inherent within these environments, and provide background to the framework because of their intrinsic importance to the evaluation process.

The use of an interpretive case study approach to evaluation, based on the constructs of the CCP framework, necessarily imposes limitations on the generalisability of an evaluation study. The outcomes of individual evaluation studies can be used to inform other organisations of the concepts and conclusions that may be applicable to their own case. They cannot provide the quantitative application of statistical sampling procedures to a larger population, but rather enable an assessment of the 'fit' between the case and other firms where one might apply the concepts and conclusions from the evaluation study (Schofield, 2002). The CCP framework does not allow for generic solutions, but supports the ability of evaluators to apply the relevant questions to the constructs and to explore the range of influences from the social and political to the cultural.

In the same way, the framework does not reflect the outcomes from the conduct of an evaluation. Definitive outcomes from evaluation are the hallmark of the scientific paradigm. In the context of an interpretive approach these outcomes are ideally replaced with a consensus on the claims, concerns and issues of the stakeholders (Guba and Lincoln, 1989). The implications are that such evaluation is less definitive, often leading to ambiguous outcomes with attendant implications of less direct managerial control with an interplay of power and politics among the stakeholders. However, the gains from consideration of the concerns, claims and issues of the stakeholders leads to widespread involvement and consensus (Guba and Lincoln, 1989; Rossi and Freeman, 1989) and more learning and understanding (Serafeimidis and Smithson, 2000).

The CCP framework builds upon recent theoretical developments and propositions and synthesises the current state of thinking on IS evaluation research. The approach now needs to

be tested in a wide range of situations through in-depth case studies to fine tune the details and assess relative priorities within the framework. The holistic perspective used in the framework and the consideration given to social and political aspect of organisational life should make the approach relevant to practitioners and increase the likelihood of adoption. The language used in the framework is not overly academic and as such should be easy for evaluators to present to management and users. Evaluators must decide what is relevant from the framework for a particular situation. For example, trade unions in some situations may not be one of the stakeholder groups.

6. Conclusions

If information systems are considered to be social as well as technical entities and stakeholders are key to every stage of IS, then the traditional methods of IS evaluation based on the use of technical measures are no longer sufficient.

The extended CCP framework gives a model that offers a structure against which individual evaluation studies can be planned and carried out. The structure incorporates the elements that will contribute to the rich, holistic studies advocated by current evaluation thinking to achieve an understanding of the contribution of an IS. However, the framework supports the use of existing measures within the evaluation design to contribute to a cumulative tradition of evaluation literature, but allows for new measures to be incorporated. This approach reflects the requirement for evaluations to be tailored to the needs of individual organisations based on their environment, the context of the evaluation, what is to be evaluated and recognition of stakeholders.

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