

# Issues Affecting Benefit Realisation in Electronic Marketplaces

**Rosemary Stockdale**

School of MIS

Edith Cowan University

Joondalup, WA 6027

Australia

Tel: +61 8 9400 5064, Fax: +61 8 6304 5988

[r.stockdale@ecu.edu.au](mailto:r.stockdale@ecu.edu.au)

**Craig Standing**

School of MIS

Edith Cowan University

Joondalup, WA 6027

Australia

Tel: +61 8 9400 5545, Fax: +61 8 6304

[c.standing@ecu.edu.au](mailto:c.standing@ecu.edu.au)

## Abstract

*In the complex and dynamic environment of electronic marketplaces, organisations need to identify the issues that will impact on their identification and realisation of benefits. This research uses a case study of a multinational organisation to further an understanding of the perceived benefits gained in the early stages of participation in an e-marketplace for the purchase of goods and services. The research uses a framework of IS evaluation taxonomies to identify where anticipated benefits lie. The issues affecting the realisation of these benefits are then discussed to distinguish their potential relevance to other organisations. Lessons for prospective e-marketplace participants emphasise the need for detailed planning for early recognition of information needs and of structures for managing communication flows. Other lessons highlight the importance of recognising the impact of participation on individuals and on relationships. Two lessons of particular significance relate to the identification of the wider issues that may affect the realisation of organisational benefits, and the importance of considering the wider environment. An understanding of the issues from an early stage will enable organisations to make more informed choices about e-marketplaces and facilitate the recognition of further benefits and relevant issues as the marketplace environment evolves.*

## Keywords

Benefits, evaluation, electronic marketplaces

## 1. Introduction

The evolution of electronic markets has long been studied and discussed as advances in information technology have allowed for their development (Bakos, 1991; Clemons, Reddi, & Row, 1993; Malone, Yates, & Benjamin, 1987). The widespread use of the Internet in commerce has extended the ability of electronic markets to offer a range of value-add services and to aggregate services into Web-based marketplaces (Bakos, 1998). The resulting proliferation of electronic marketplaces has led to some turmoil in the online trading environment as market-makers seek to gain competitive advantage.

Despite the uncertainties of the situation, high-profile coverage in the business press has led to great pressure on companies to participate in e-marketplaces (Banham, 2000., Wise & Morrison, 2000). The main driver towards participation is competitive necessity rather than competitive advantage and companies need to question not only whether to participate, but also what they will gain, or lose, by doing so. The dynamic online environment, where many purported benefits remain unrealised, exacerbates the difficulties of evaluating the results of participation. Effective evaluation, particularly in such an environment, is a difficult process and currently there is little empirical evidence of actual benefits, beyond cost savings, being realised by organisations participating in e-marketplaces.

This research contributes to an understanding of what benefits can be realised by an organisation in the early stages of e-marketplace participation and identifies lessons for prospective participants planning to enter the e-marketplace environment. The research examines the issues resulting from the purchase of goods and services, via an e-marketplace, by the Australian division of a multinational organisation. The organisation's expectations of benefits, prior to participation, were limited to cost savings and enhancement of employees' e-commerce skills. In order to further the understanding of potential and actual benefits that the organisation could realise, this research uses a framework of IS evaluation taxonomies to identify where anticipated benefits lie.

The paper is structured as follows: a summary of the e-marketplace environment is followed by an overview of IS evaluation tools. The selection of an interpretive case study is addressed in the methodology and the findings discussed within IS evaluation classifications. Lessons that can be drawn from the case study experiences are then discussed.

## 2. The Electronic Marketplace Environment

There is a wide selection of e-marketplace business models evident online (Kaplan & Sawhney, 2000; Piccinelli, Di Vitantonio, & Mokrushin, 2001; Raisch, 2001), many of which are proving unsuccessful (Wise & Morrison, 2000). The initial proliferation of marketplaces has now been replaced by a period of consolidation (Aberdeen, 2001). However, the combined turnover of globally operating e-marketplaces exceeds a trillion dollars annually (Afuah & Tucci, 2001; Federal Trade Commission, 2000) and non-participation will be damaging to individual companies as the impetus towards majority participation gathers pace (Downes & Mui, 1998; Leebaert, 1999).

The initial predominance of independent, venture capital-funded marketplaces is giving way to more industry-specific hubs financed by industrial consortia (e.g. covisint.com in the automobile industry and TradeRanger.com in oil and gas). A more recent development has been the emergence of private marketplaces, operated by a single multinational organisation for its suppliers.

E-marketplaces offer a range of transaction mechanisms (e.g. auctions, catalogues and negotiation). Levels of service vary from simple identification of buyers/sellers through to full execution services, supporting logistical and financial facilities (Choudhury, Hartzel, & Konsynski, 1998). Currently, there are few barriers to entry and membership of multiple marketplaces remains common as companies seek to find the most appropriate platform for their needs. This will change as competition amongst marketplaces speeds the drive towards consolidation and surviving market-makers develop their business models to attract and retain more participants. These business models will take their value propositions beyond the current transactional offerings to information intensive, value-add services (Raisch, 2001).

In this complex and dynamic environment, participating companies need to identify the benefits and issues that will arise if they are to realise these benefits.

### **3. IS Evaluation**

The focus of evaluation studies has changed significantly as IT has brought extensive change to the business environment and IS have become more ubiquitous and complex. As IS developed more strategic value, the early technical focus of evaluations was broadened to include a range of aspects such as user satisfaction, system usage and more commonly, financial measurements, particularly cost benefit analysis and return on investment (Smithson & Hirschheim, 1998; Mirani & Lederer, 1998; Walsham, 1993). The traditional formal-rational approach ignores the social and business aspects of successful use and delivery of value (Jones & Hughes, 2001) so essential to realising benefits in the current business environment. A paradigm shift to a holistic, interpretive approach encompassing the context of an organisation's internal and external environment is advocated (Ballantine & Stray, 1994; Jones & Hughes, 2001; Smithson & Hirschheim, 1998; Ward, Taylor, & Bond, 1996).

However, the adoption of interpretive evaluation methods and the development of appropriate models has been slow, particularly for e-commerce systems (Molla & Licker, 2001), where a cumulative tradition of comparative studies is yet to be established. This adds to the difficulties of evaluating early stage participation in an e-marketplace where the identification of benefits rests primarily on anecdotal evidence. To facilitate the evaluation process, a well-established model of IS success (DeLone & McLean, 1992) was used as a reference point against which to evaluate where the benefits of e-marketplaces might lie.

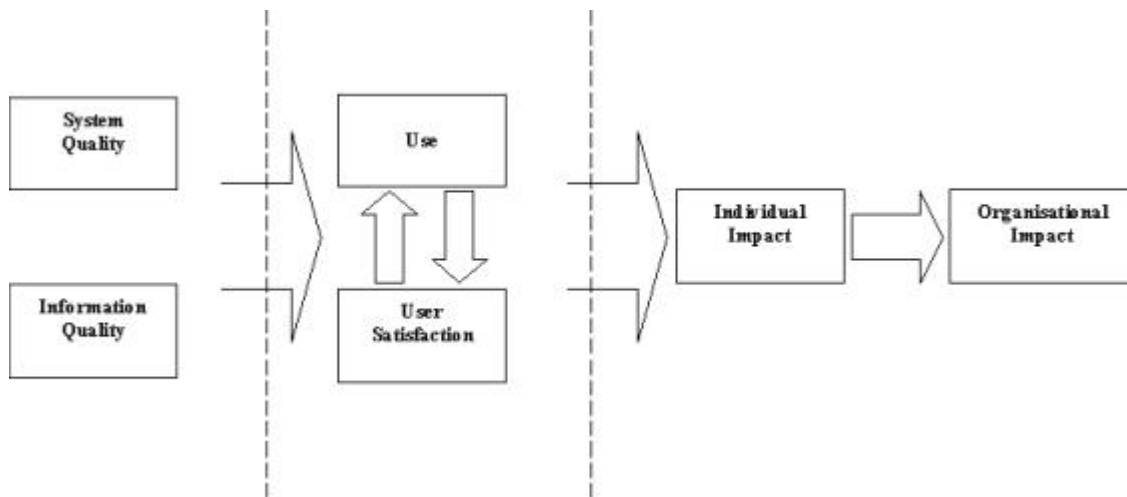


Figure 1. DeLone and McLean's IS Success Model (D & M model)

The D&M model has never been seen as definitive and extensive work has refined and analysed it (Ballantine, Bonner, Levy, Martin, Munro & Powell; Garrity & Sanders, 1998; Molla & Licker, 2001; Seddon, 1997]. However, there remains much doubt as to the extent to which these models of IS success apply to e-commerce (Rai, Lang & Welker, 2002), particularly in the external, interconnected environment of IOIS such as electronic marketplaces. Much of the emerging literature continues to draw upon the D&M taxonomy (Rai et al., 2002) and at this early stage of benefit realisation in e-marketplaces, we believe the model retains the advantage of simplicity while containing the main evaluation classifications from the IS discipline.

## 4. Methodology

This paper examines the issues arising from the use of an e-marketplace for procurement purposes by an Australian organisation. An examination of an IOIS such as an e-marketplace necessarily involves an awareness of the social, political and organisational contexts within which it operates. To allow for the range of interpretations and reflections required to address the complexity of the issues that may arise from the research, an interpretive case study approach is taken (Walsham, 1995; Trauth, 1997). The acceptability of case study research has suffered from a perceived lack of ability to generalise the findings. However, drawing on Yin (1994), Walsham argues that case studies are generalisable to theoretical propositions, and extends this to four types from interpretive studies: the development of concepts, the generation of theory, the drawing of specific implications and the contribution of rich insight. In giving examples of these generalisations he states that they should 'be seen as explanations of particular phenomena derived from empirical interpretive research in IS settings, which may be valuable in the future in other organisations and contexts' (Walsham, 1995).

An interpretive case study requires a variety of data sources to ensure the appropriate issues are set in context, both current and historical (Crotty, 1998). In addition to observations, discussions, e-mails and meetings over a two-year period, in-depth interviews were conducted with the procurement manager, his deputy and twelve procurement officers from the case study organisation to ascertain perceptions of the benefits and problems arising from participation in the e-marketplace. Content analysis of the data, including taped transcripts, was based on an awareness of both

manifest and latent strategies (Berg, 2001, p243) to account for the physical presence of elements and an awareness of the underlying meanings. Units of analysis were developed using the themes identified in Figure 1.

## 5. Background to the Case Study

Bexhill (a pseudonym) is an Australian mining company, with its headquarters and several remote industrial sites centred in Western Australia (WA). Its US-based parent company has over 100,000 employees worldwide. The participants in the study, the procurement staff for operational supplies and capital expenditure, were responsible for implementing the move to an e-marketplace for the purchase of “at least 75% of goods and services”, a decision made at corporate level in the US.

The organisation selected a horizontal e-marketplace (GlobalMarket) that specialises in reverse auctions as, currently, the most appropriate platform for their needs. The value-add facilities that are a feature of many e-marketplaces are not available from this auction marketplace.

An internal taskforce was set up within the procurement department to offer training and advice to procurement officers to facilitate the transition to GlobalMarket's auctions.

## 6. Findings

Prior to implementation the procurement staff's perception of benefits focussed on cost savings, although the procurement manager anticipated further benefits 'down the line'. Post-implementation, the staff's perception of benefits and attendant issues had broadened and were discussed as follows:

### 6.1 System Quality

The issue of technological quality was not raised during discussions on e-marketplace advantages, although in response to direct questions interviewee remarks ranged from “the technology for GlobalMarket is seriously ordinary” to “we have had a few glitches”. More seriously, in one auction a fault in the software had left suppliers bidding against different information; a problem that had the potential to cause serious damage to relationships with all suppliers involved. Initially, response time problems were experienced where suppliers' bids, placed in the last few minutes of an auction, had not been recorded. The closing bid period was extended from two to five minutes to correct this.

### 6.2 Information Quality

Perceptions of information quality varied according to the type of e-marketplace. Two interviewees with in-depth knowledge of a vertical marketplace offering a range of transaction mechanisms and value-adds were emphatic in their differentiation of the quality and uses of the information available in the different marketplaces:

*“there is a significant difference between that type of information and the information that GlobalMarket provides which is about getting good, clear specifications, making sure everybody's on the same page, getting instantaneous feedback to suppliers about where*

*they are in a particularly bid, giving them multiple opportunities to look at whether or not they want to continue to participate in a bid and providing good feedback in terms of what marketplaces are doing generically so you can look at old bids, and other people's*

Perceptions of information quality differed in that company-related information was held to be accurate, but with generic information

*“you need to be careful that the information they (the market makers) are providing is specific to you or to your industry or that particular bid. We've had occasions where savings have been touted...but you have to look behind the software to understand how the saving is comprised. You have to be careful, knowing what you're getting and what you're going to do with that information and how you are going to apply it.”*

The amount of information impacted on user satisfaction where procurement officers reported being inundated with trivial e-mails from suppliers, prior to a scheduled auction. The required information was in the tender documentation, but suppliers 'obviously felt it was easier to send an email.'

### **6.3 Use and User Satisfaction**

The e-marketplace was used by all procurement staff and those suppliers wishing to continue to bid for Bexhill contracts. Frequency and degree of use was therefore pre-determined and cannot be considered a category of evaluation in this context.

User satisfaction amongst the procurement staff was generally high. Dissatisfaction with the system was directly related to personal experiences in the bids and where problems were encountered the level of enthusiasm for the marketplace was more tempered.

### **6.4 Individual Impact**

Interviewees did not directly address the issue of how use of the e-marketplace impacted on their work processes and the corresponding personal impact this had. However, from issues raised elsewhere it was evident that changes in personal perceptions were taking place. For example, the earlier informality in some of the supplier relationships had been replaced with stringent tendering procedures, bringing a 'cold, clinical approach' to the process. This had some effect on job satisfaction for those who had established close relationships over a long period and impacted on user satisfaction.

### **6.5 Organisational Impact**

The majority of the benefits and issues identified in the interviews related to the impact on the organisation of participation in an e-marketplace. Interviewees were confident that further benefits would be forthcoming once identified issues had been resolved:

#### **Cost savings**

Cost savings are held to be a major advantage of electronic markets (Bakos, 1998; Malone et al., 1987; Raisch, 2001) and were identified as a driving force behind the decision to use GlobalMarket. All interviewees believed that cost savings had been achieved, with an overall

assessment of savings of “10 – 20% on historical costs”. The “online bidding process drives costs down to the optimal market price” with “almost instantaneous payback”. Where the cost of goods and services had risen over the year, savings on the amount of the rise were seen as cost reduction.

However, the calculation of savings was felt to be more involved than the market maker made clear, with hidden costs involved in bid preparations;

*“Bexhill does not cost the time spent in pre-bid work, it does not have the management systems to do this which perhaps distorts the outcomes.”*

Reported savings based on historic costs were also questioned. For certain procurement needs such as service contracts these costs were not accurate and therefore reported savings from the bids “were quite arbitrary.”

Another concern related to sustainability of cost savings. Where suppliers were seen as efficient, it was believed that cost savings came from margin compression and were therefore not sustainable over the longer-term. Alternatively, lower prices from ‘some inefficient suppliers’ were seen as a result of improvements in work practices.

## **Time savings**

Anticipated timesavings were not realisable in the short-term, although it was believed they would be achieved once the tendering processes had been assimilated and streamlined.

One employee was very concerned that the timescales expected of people in the more aggressive electronic environment “lead to very high stress levels. The environment is results driven and is very stressful for everyone, including the suppliers.”

## **Process efficiencies**

In recent years Bexhill’s policy of close supplier alliances has resulted in the reduction of both the supplier and the knowledge bases. The nature of some relationships has led to more governance passing to the contractors who have virtually become “part of the workforce”. This has led to great difficulties in preparing bids for tender where Bexhill’s workforce do not have the knowledge to describe necessary detail for the auctioning system. The previous relationship allowed for

*“descriptions to be written on the back of a cigarette packet. He (the contractor) knows what I want, I know what I want and he gives me a price.”*

This informality has been replaced by the need for stringent descriptions in the tender documents, and the requirement to garner this information from a diverse number of people both internally and externally. In at least one case, the supplier has provided the specifications to Bexhill, to ensure that the tender was an accurate one;

*“he (the supplier) was concerned that only he knew the real price of things. Say for example we put out a description for a nut and bolt which cost \$1, but really we needed a different one which cost \$5. Our incumbent knows this so he bids the realistic price while everyone else bids what we’ve asked for and he disadvantages himself at the bid stage. So it’s in his interest to help us put the bid together, as he’s then bidding on a level playing*

## Staff reductions

Two interviewees believed that it was unrealistic not to expect a more streamlined department once use of e-marketplaces had been assimilated. This early stage of participation involved no extra staff. Increased individual workloads were not expected to revert to former levels.

## Relationships

Relationships were the most discussed topic amongst procurement staff, who raised issues relating to relationships between their own department, suppliers, internal customers and GlobalMarket.

There was no consensus on the advantages or problems associated with changes brought about by Bexhill's e-marketplace initiative. Indeed, there were many opposing views, such as the effects of the reduction of the number of people in the procurement process. To some this was beneficial as it "streamlined the whole process of contracts", while to others it brought "a cold, clinical approach" centred on computers rather than people. Again, one interviewee believed that a benefit of the e-marketplace was that "it will enable Bexhill to re-establish relationships with truly local suppliers" as bids can be disaggregated to enable different suppliers to compete for parts of a larger contract. In contrast, another procurement officer found that the new system was causing tension and "aggro" amongst local suppliers who felt daunted by the technology and the increase in the competing supplier base.

There was agreement that many of the incumbent suppliers were seriously upset by the introduction of the auction process, while new suppliers were more enthusiastic as it gave many an opportunity to bid for business with Bexhill. In the previous climate of tight alliances, these potential suppliers had had few opportunities to penetrate Bexhill's business and were now able not only to submit a bid, but to react dynamically to the competition by adjusting their bid during the auction process.

A similar diversity of attitudes was observed by procurement officers amongst their internal customers. Some customers said "you don't understand the value of our relationship with our suppliers" and believed the push to re-bid all the contracts had an adverse effect on their work. Other customers said "this is terrific, you've taken 20% off the price of my goods". This diversity of opinion was recognised by the procurement manager;

*"you see all the emotions good and bad, depending on how the bids have gone and the nature of the previous relationship. The relationships required do depend on the commodities in question. Where you get your electricity from is not a problem as long as it comes down the wire, but buying servicing for your car demands more of a relationship."*

The relationships issue is further affected by the limited regional market. For some products and services there are only one or two suppliers capable of meeting requirements and this requires careful handling to maintain goodwill within the region:

*"you have to be upfront and honest. WA is a small world and honesty is the only way you will retain goodwill, especially in the current environment."*

The relationship between the procurement staff and GlobalMarket's staff was also discussed where the need for an intermediary who thoroughly understood Bexhill's business needs was emphasised.

## 7. Discussion

The early phase experiences of Bexhill highlight a number of lessons of potential relevance to other organisations moving towards e-marketplace participation. Although Bexhill operates in the mining sector and uses a horizontal, independent marketplace, the themes drawn out using the D&M model raise issues of significance for other organisations and marketplaces. The lessons, drawn from the case study findings, are discussed as follows:

The structure of the internal taskforce was a major contributing factor to the high levels of user satisfaction expressed by the procurement team. Use of the e-marketplace was a mandatory requirement, which could have led to some resistance from those opposed to change. However, the hands-on training and subsequent auction processes were supported by the taskforce members and the unity of the procurement team was evident. The good responses from GlobalMarket were also held to be a contributory factor.

The ability of electronic marketplaces to provide a wide range of information is very evident. This information falls into three recognisable categories: industry-specific information, company-specific transactional information and generic information relating to the marketplace environment. Recognition of the scope and relative values of these information types will facilitate individual organisations in determining their information needs prior to participation.

There was a dramatic increase in the volume of information crossing procurement officers' desks. This information, much of it in electronic form, included stringent tendering documentation, correspondence from suppliers and internal customers, and information on the workings of the marketplace. Effective plans for managing the volume of communications would significantly reduce the pressures of early stage participation. In the longer term, such value-add services as decision support, collaboration and strategic planning will enhance business processes, but require competent information management planning.

The impact of e-marketplace participation on individuals within an organisation should not be underestimated. Different working practices, new skills and changes in relationships were all identified issues that will have an effect on people, positively and negatively, according to the individual and their perception of the issues.

An outcome of e-marketplace participation that concerns all prospective participants is the impact on relationships. Several issues were highlighted by Bexhill's move to the marketplace. For example, Bexhill's relationships are complicated by the cultural and social aspects of operating in a regionally remote area. The region has a small workforce where personal loyalties and networks play an important part in business. Expanding the supplier base to a global scope and formalising the procurement process adds pressure to some relationships and advantages may be offset by threats to specialist-supplier alliances that are vital to the smooth running of the organisation's industrial sites. Remoteness is also an issue for procurement needs such as maintenance and repair requirements where downtime in the industrial sites requires a trusted relationship to ensure immediate responses from incumbent contractors. Thus Bexhill's organisational needs and business ethos affect their ability to realise some global advantages, such as a worldwide supplier base, offered by the marketplace.

Table 1 summarises the benefits identified by Bexhill's procurement staff and lists the complex issues that may impact on the realisation of organisational benefits.

Perceived benefit	Outcomes	Issues
Cost savings	<ul style="list-style-type: none"> <li>• Lower prices</li> </ul>	<ul style="list-style-type: none"> <li>• Validity of calculation of historic cost</li> <li>• Cost of time and effort involved in writing tender documents</li> <li>• Sustainability of cost savings over a longer period and the effect it will have on suppliers</li> <li>• Effect on supplier relationships</li> <li>• Effect on local community of inability of local suppliers to compete effectively</li> </ul>
Time savings	<ul style="list-style-type: none"> <li>• Lower costs</li> </ul>	<ul style="list-style-type: none"> <li>• No assessment of time savings (in search, transactional &amp; administrative areas) has yet been made</li> <li>• Pressure on staff</li> </ul>
Regaining of governance ceded to some suppliers through informal purchasing methods	<ul style="list-style-type: none"> <li>• Greater understanding of company needs</li> <li>• Smoother running of contracts</li> <li>• Time savings</li> <li>• Closer control of suppliers</li> <li>• Cost savings</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of flexibility in supply</li> <li>• More formal relationships based on specified tenders</li> <li>• Greater ability to share knowledge within the organisation</li> <li>• Impact on cultural aspects of a regionally remote area where networks are tight and inter-connected.</li> </ul>
Widening of the supplier base	<ul style="list-style-type: none"> <li>• Wider range of goods and services</li> <li>• Encouraging greater efficiencies in suppliers through more competition</li> <li>• Ability to disaggregate contracts to the benefit of smaller, local suppliers</li> </ul>	<ul style="list-style-type: none"> <li>• Threats to close alliances with specialist suppliers</li> <li>• Potential disruption to internal customers' relationships/ supplier alliances</li> <li>• Disruption to long term relationships with trusted suppliers</li> <li>• Increased level of risk from unknown suppliers</li> <li>• Allows for new supplier relationships</li> <li>• Effect on Bexhill's commitment to the local communities within which it operates</li> <li>• Remoteness - distance and delivery times may remain a problem for some procurement needs</li> </ul>
Increase in the e-commerce skills of the procurement staff	<ul style="list-style-type: none"> <li>• More knowledgeable and well trained staff</li> <li>• Increased efficiencies</li> <li>• Greater awareness of the electronic environment</li> </ul>	<ul style="list-style-type: none"> <li>• Staff retention against potential poaching of e-enabled staff</li> <li>• Job satisfaction</li> </ul>
Staff reductions	<ul style="list-style-type: none"> <li>• Cost savings</li> </ul>	<ul style="list-style-type: none"> <li>• May lead to higher stress levels amongst remaining staff</li> <li>• Effects on staff loyalty</li> <li>• Job satisfaction</li> </ul>

Table 1. Summary of identified benefits and the issues they raise

One lesson that is relevant to all potential participants transcends DeLone & McLean's model. Even in early stage participation, social, political and cultural issues impacting on the realisation of benefits have become evident. For example, the effect on local communities of Bexhill's use of e-marketplace procurement may be extensive. The organisation's political and cultural ethos is to support local communities and make a positive contribution to the area. Bexhill has worked

towards alleviating anxieties expressed by local communities by exempting some suppliers from the auction process and encouraging the learning of new skills. On the positive side, the online tendering process enables disaggregation of contracts to allow for multiple tenders to be submitted to the benefit of smaller suppliers. However, long-term solutions to these issues require a balancing of the benefits to be gained from both the electronic environment and the local communities.

## 8. Conclusions

Issues that have arisen as a result of Bexhill's participation in an e-marketplace indicate that the evaluation process in an interorganisational IS environment requires a broader and more flexible approach than is currently evident if the full scope of benefits is to be realised.

In the case study, benefits were identified against DeLone and McLean's success model. Although it is evident that the model is not comprehensive enough for use in e-marketplace evaluation, it provided a framework for the identification of several issues particularly in respect of the social, political and cultural aspects affecting the realisation of benefits, ,

Issues affecting benefit realisation have been discussed in a broad context to emphasise their potential relevance to other organisations. Seven lessons were identified that will facilitate organisations' ability to realise benefits from e-marketplace participation. Some lessons emphasise the need for detailed planning, such as the composition of a support team, early recognition of information needs, and structures for managing communication flows. Others emphasise the need for recognition of the impact of participation on individuals and on relationships. The final two lessons are particularly important in highlighting the need to identify the wider issues that may affect the realisation of organisational benefits, and the importance of consideration of the wider environment.

The dynamic nature of e-marketplaces also requires a recognition that benefits realisation will change over time. As participation evolves and organisations make more informed choices about e-marketplaces, more issues will be addressed impacting on achievable benefits and adding clarity to the perception of other benefits.

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