

Management and business issues for B2B eCommerce implementation

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Abstract

Until recently little research had been undertaken into the process of eCommerce implementation, especially in relation to the implementation of business-to-business (B2B) relationships. Given the complexity of this process we have, in this paper, endeavoured to contribute to what we perceive as a gap in the body of theory surrounding the implementation process in the extant business-to-business literature. We describe the findings of a series of multiple case studies comprising ten major Australian eCommerce initiators. In addition to confirming our earlier finding of the importance of non-technical factors for the success of the implementation process we also present, through our case studies, the various management and business issues associated with the success or otherwise of B2B eCommerce implementation.

1. Introduction

Although there are no official figures concerning the growth of B2B transaction volumes, the indications from industry commentators are very optimistic. For example, Boston Consulting Group (1999) predicted that one quarter of all U.S. business-to-business (B2B) purchasing will be done online by 2003, estimating that between 1998 and 2003, U.S. B2B eCommerce would grow by 33% per annum and would reach US\$2.8 trillion in terms of transaction value. In the Asia-Pacific region alone, they are anticipating eCommerce volumes of \$US440 billion by 2005 [1]. While predictions such as these sound very impressive, very little is known about real-world B2B eCommerce implementation, a pre-

requisite for the eCommerce activity which will generate these results.

Until recently little research has been undertaken into the process of eCommerce implementation. Although it is clear that the success of IT implementation relates to the handling of the process of implementation [2, 3], researchers in this area have, as yet, very limited knowledge of the actual process of eCommerce implementation. Such knowledge not only has obvious potential benefits for that group of organisations considering or beginning to engage in eCommerce implementation but, perhaps less obviously, also for those organisations which have already engaged in such implementations, since it can provide them with an understanding of the generalisability of their experiences. Recent work by Wilkins *et al* [4-6] has looked at the impact of eCommerce implementation by government agencies on user organisations, with particular emphasis on the social and organisational contexts in which such implementations take place. This body of work offers an insight into the issues surrounding the adoption of mandatory standards and the technical and cultural changes which such adoption requires, but does not focus on providing an understanding of the actual process of implementing eCommerce *per se*. We believe that such understanding is not only important for practitioners, but also offers a significant insight into the process complexity of this relatively new technology.

In this paper, therefore, we endeavour to contribute to what we perceive as a gap in the body of theory surrounding the implementation process in the extant business-to-business relationship literature. We describe the findings of a series of case studies comprising ten key Australian eCommerce initiators. The major

discussion of the paper concerns the implementation process, the issues influencing this process and the organisations' future approaches to B2B eCommerce.

Researchers in the field of IS implementation have used a variety of models to explain the IS implementation process (see, for example, [2, 3, 7-9]. These models include:

Table 1: IS implementation models

Models	Description
<i>The change process models</i> [10, 11]	Also known as the 'traditional' change process, the original model suggests that the change process consists of unfreezing, moving and refreezing processes.
<i>Org'l innovation models</i> [12, 8, 13-15]	Based on the notion of a process to diffuse an innovation (the technology in question). Originally a three-stage process (initiation, adoption and implementation), this model has since been expanded.
<i>Applied models</i> [16, 17]	These models have been developed by practitioners to represent "real world" implementation environments.

Most of these models attempt to explain the process of IS implementation in terms of a number of distinct, sequential stages. However, other researchers [18-21] suggest that a much broader view, which takes into account various socio-political influences such as user resistance and political aspects of the implementation, is needed to better describe IS implementation.

Another dimension used to describe IS implementation in organisations includes the popular "stages of growth" theories. Gibson and Nolan [22], Nolan [23], Earl [24], Galliers and Sutherland [25] have all studied the maturity of IS implementation within organisations. They examined the growth and expansion of IS implementation over a period of time and suggested that organisations pass through a number of stages (called stages of growth) in terms of their IS implementations. More recent approaches to the stages of growth theory include Timmers [26], who provides eleven business models for Internet-based B2B trading, and McKay, Prananto and Marshall [27], who have proposed an "eBusiness stages of growth" (SOG-e) model. These studies provide additional support for the concept developed in the general IS literature that there

2. Theoretical framework

IS Implementation

exists a series of stages during the process of implementation.

Additional light is thrown onto the process of building and sustaining complex information systems by those researchers who have identified issues which arise during the implementation process of inter-organisational systems (IOS). Some examples of these are:

- Cash and Konsynski [28] investigated inter-organisational relationships and provided the earliest hint of the issue of power in IOS development – an issue which was clarified and extended by Webster [29, 30];
- Porter [31, 32], Wiseman [33], ScottMorton [34], Ward and Griffith [35], Applegate, McFarlan and McKenney [36] looked into the strategic use of IS (SIS) and pointed out the unanticipated nature of many of the so-called 'strategic' systems of the 1970s and 1980s;
- Finnegan, Galliers and Powell [37] and Segars and Grover [38], *inter alia*, noted the importance of SIS planning, and Galliers, Swatman and Swatman [39] extended this concept to the development of EDI systems; Chan and Swatman [40] discussed the EDI implementation process, including factors influencing the implementation.

In this paper, we discuss the implementation process of eCommerce technologies and applications, from EDI and Internet-based technologies used in the business-to-business (B2B) relationships.

B2B eCommerce implementation – from EDI to Internet commerce

In Australia, B2B-related technology implementations in the form of Electronic Data Interchange (EDI) were first initiated around 1986-7 by a number of large companies which included the major retailer Coles-Myer, Ford automotive, Australian Paper Manufacturing (APM), BHP Steel, the Australian Customs Service (ACS) and the Australian Quarantine and Inspection Service (AQIS). From that early beginning the adoption of EDI in Australia has been described as very slow by a number of authors [see, for example, 41, 42, 43, 44]. Recent studies [44-46] on EDI adoption have revealed that fundamental factors [which were identified previously, see 47, 48], such as lack of awareness of the benefits of EDI and lack of willing trading partners, are still contributing to the slow adoption of EDI in

Australia. Other reasons suggested by these authors include the higher implementation costs associated with the establishment and on-going communication costs (eg. VAN-related charges).

The introduction of the Internet for commercial use in the mid 1990s has offered a solution to this cost-associated problem. Using the Internet as the communications medium for EDI transactions these costs, which include the cost of purchasing the translator software, the establishment of the communications network or subscription to a value-added network can all be reduced. Chan and Swatman [42] have indicated that this cost reduction drives the move from traditional EDI towards Internet-based EDI and enables smaller organisations to more readily afford the implementation. Currently, the most popular B2B eCommerce applications used by organisations are:

1. Traditional electronic data interchange (EDI), which is the exchange of formatted electronic documents between organisations using an agreed standard. Various forms of traditional EDI include proprietary file exchange, VAN-based or direct link EDI, and EDI to fax.
2. Internet EDI, which is EDI formatted documents transmitted over the Internet (eg. the use of file transfer protocol (FTP) or email applications to place the EDI messages into formatted documents and transmit them to their intended recipients);
3. Web-forms, which is the use of a web-based form or web intelligent interactive form to exchange business documents over the Internet. This included various organisation's specific document transmissions and exchanges; and
4. XML EDI, which is the Internet-based EDI featuring interactive business document exchange, has been predicted to be the next mostly used eCommerce for the B2B eCommerce [See, for example 49]. Although this technology has not been widely used in Australia, Tradegate/ECA, which is the Australian eCommerce peak body, has stepped into this initiative by working with a number of Australian industries towards the development of the international XML standard proposed by the United Nations: ebXML. This initiative aims to lower the entry barriers to electronic business for small and medium-sized enterprises (SMEs).
5. Other varieties of purely Internet/web-based initiatives such as procurement solution and e-marketplaces, and B2B portals. This type of initiative is often implemented without any reference to EDI as in 1-3. According to Forrester research this year [50], there were about 2500 such initiatives.

A recent paper focussing on B2B eCommerce [51] suggested the use of the Internet to support various

supply chain networks. Based on process analysis rather than empirical data, the authors analysed the required mechanisms for supply chain management and suggested a framework which utilises various B2B applications such as EDI, WWW, intranet and extranet for these processes. Although this framework is intuitively appealing, Threlkel and Kavan [52] believe that there may be a number of difficulties in implementing the proposal in its present form. These factors include insufficient standards for Internet transaction, uncertain legislation, reliability of data transmission, and security.

The discussion above raises the question of how the B2B eCommerce implementation process actually functions in organisations. What factors influence its process and how do organisations manage such issues? Combining theory, previous IS implementation research and empirical data; we present ten case studies in an attempt to answer these questions. These data relate to the Australian eCommerce experience, but provide a starting point for researchers investigating this phenomenon around the world.

3. Research approach

The study reported in this paper uses a combination of single and multiple case study research approaches. Initial understanding of the implementation process was synthesised from the literature to provide an initial framework for the study. Benbasat, Goldstein and Mead [53] suggest that a single case study for a pilot is a very useful in a highly exploratory research study. An in-depth investigation into one major case study was undertaken to obtain a "real world" context of the conceptual understanding formed from the literature survey. During this single case study, which covered the three-phase eCommerce implementation experience of BHP Steel, one of Australia's largest companies (and arguably its most sophisticated from an eCommerce point of view), direct observations, pertinent internal and external documentation (during 1989-1999) as well as intensive interviews were all used as sources for data collection. Extensive interviews with 15 key personnel involved in the implementation were undertaken during 1998. The use of a variety of methods of data collection increased the reliability and validity of the information obtained. Information collected from the interviews was cross-referenced with the information obtained from the documents to eliminate the weakness of human memory when dealing with history. Using pattern analysis techniques, the information was structured to identify the stages involved in each eCommerce initiative and to identify factors influencing the process. This part of the overall project has been reported in other papers [41, 42].

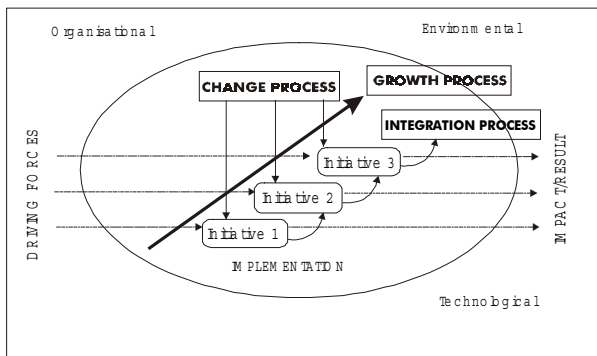
Following this major case study, a multiple case study approach was undertaken involving ten organisations

from a variety of industries around Australia. The objective of this multiple case study was to provide cross case analysis, as well as to refine the understanding, which resulted from the initial, single case study. Yin [54] and Benbasat *et al.* [53] believe that multiple case studies are appropriate means of refining the initial propositions of a study. The selection of sites for the multiple case studies was largely based on the length of the organisation's experience with B2B eCommerce implementation. The organisation had to have been involved in such an implementation for at least 5 years. Other criteria used were the type of industry, company size and the level of the eCommerce implementation. In this multiple case study, key players in each organisation were interviewed during 1999-2000 utilising a semi-structured method, which made use of an interview protocol. In addition to this face-to-face interview, the project documentation and company literature were also used as sources of information. During the analysis process, we compared and contrasted the findings with the literature and the previous single case, taking into account both the positive and negative findings.

4. The in-depth single case – developing the framework

As mentioned previously, the single case study is used as a pilot to provide an initial "real world" understanding of the eCommerce implementation. The model below describes the B2B eCommerce implementation process based on this single case.

Figure 1: The BHP Steel implementation process



The model illustrated in figure 1 shows that the implementation of eCommerce is not a single process (nor, indeed, a single project), but rather a continuous series of stages or projects, for which different driving forces might trigger the initiatives. This model represents the three sub-processes of the implementation: the change process, the growth process and the integration process.

The **change process** describes the process of change, which results from the introduction of a new technology or policy. Based on the findings of the single case, we believe that this process can be divided into four stages:

Table 2: Change process

Change process	Description
Initiation	Initial change process, which often includes experimentation and a feasibility study. This follows the decision to adopt or not to adopt the technology.
Systems development	Installation and development of the systems, which includes the systems study, systems design and systems testing
Routinisation	The process of utilising or using the technology, which often involved user resistance and training management
Diffusion & expansion	The process of diffusing and expanding the use of the technology into the organisation's various business units, as well as externally to trading partners.

The **growth process** describes the maturing use of the information systems within the organisation. Various aspects can be measured to describe this stage of growth process such as the type of applications implemented or the number electronic document exchange, the maturity level of the company's initiative and also the innovativeness of the initiative. For example, in general organisation starts the implementation with a simple bilateral relationship on a single application (ie. EDI) and moves toward more complex multi-lateral relationships.

The **integration process** is the process of integrating or incorporating the new business process into existing business processes. Swatman [48] examined this process and found that EDI integration occurred in four stages: from a stand-alone PC to full corporate integration.

The figure above also shows the importance of various factors in affecting the adoption and implementation of eCommerce technology. In an earlier paper [42] technology, management and business-related are issues believe to affect the eCommerce implementation. Additionally, business issues have been increasingly considered as the major factor indicating the maturity of the implementation.

Although we do not discuss the impact of the implementation process in this paper, we believe that the impact of such implementation is sometimes difficult to measure due to the intangible nature of the benefits, such as enhanced relationships with trading partners and benefits of the learning process.

5. Multiple case studies – further confirmation

Ten Australian organisations (summarised in Table 3), undertaking more than 40 eCommerce projects, were used for the second stage of the research project. While the organisations concerned have not been identified in the interests of commercial confidentiality, four case studies were located in Sydney, three in Melbourne and three in Canberra. The unit of analysis is the process (and the factors influencing this process) of the company's B2B eCommerce initiative implementations over the past 10-15 years.

Table 3: Multiple case study overview

Case #	Years	Technologies implemented	Ind ¹
1	12	Traditional EDI	Govt
2	12	Traditional EDI, Internet EDI, Web forms	Govt
3	12	Traditional EDI	Govt
4	6	Web form, e-marketplace	M
5	10	Traditional EDI, Internet EDI, Web forms	M
6	12	Traditional EDI	M
7	11	Traditional EDI, web form, e-marketplace	W
8	11	Traditional EDI, Internet EDI, Web forms, XML-EDI	T
9	12	Traditional EDI (F-EDI)	F
10	11	Traditional EDI, Internet EDI, Web forms	R

Driving forces

Table 2, below, compares the findings of the single case and the multiple cases. New findings are presented in italics.

Table 4: Common driving forces

Single case	Multiple cases
Technological benefits (Savings and efficiency)	Technological benefits (Savings and efficiency)

¹ Govt-federal government, M-manufacturing, W-wholesaler, T-transport and logistic, F-finance, R-retail

Strategy-related reasons (competitive advantage, getting closer to the customers	Strategy-related reasons (competitive advantage, getting closer to the customers
-	<i>Mandated by government</i>

While technological benefits such as savings and efficiency were the major motivations for eCommerce initiatives in government organisations, strategic-related reasons such as competitive advantage, getting closer to their customers and improving customer service have been the principal driving forces for the commercial organisations other than retail. We also found that two of the organisations (cases #8 and #9) believed that the major driving force was a mandate from the government, which requires certain industries and business processes, such as document submission, to be undertaken electronically.

During the more advanced stages of development which include the adoption and use of more up-to-date B2B technologies such as Internet-based applications, organisations have a greater appreciation of the benefits resulting from the use of the technology. However, this does not change the fact that strategy-related factors are still the major driving forces in non-government organisations, especially within the manufacturing industry.

Implementation process

In the majority of the cases, the companies had extensive experience with B2B e-Commerce, although one organisation has only been implementing eCommerce for the past 6 years through its Internet-based ordering systems. This organisation was selected nonetheless because it was a major alliance of the largest e-marketplaces in Australia.

The change process – the critical expansion stage

The process of each implementation can be viewed in terms of the four phases we have already identified:

- In the *initiation stage*; Six cases (#1-5, 10) appear to have taken a very thorough approach to their implementation. Depending on the initiatives in which they were involved, they set up an eCommerce unit (eCommerce or supply chain management) to undertake the preliminary feasibility studies which investigated the capability of the technology and infra-structure of the initiative – and to predict its uptake. Although these feasibility studies were then used to decide whether or not to proceed with the implementation, many of the companies found that uncontrollable factors such as political and regulatory moves, arising after

the decision had been made, had significant potential to affect the implementation. For example, one Internet-based ordering system is going to be abolished after three years of implementation, due to lack of participation. This initiative was introduced after extensive feasibility studies into both the technological and business capabilities of the trading partners. Reasons blamed for the failure of this initiative include the introduction of a Goods and Services Tax (GST) in Australia during 2000 which has made this initiative less important for the potential users.

- *Systems development*; Those companies which began the implementation process with EDI started their early implementation with a PC-based stand-alone system which was later replaced with mainframe-based (or distributed systems) and fully-integrated business applications – a confirmation of Swatman’s [48] stages of EDI integration model. The majority of the cases had in-house systems development and coding (in a few cases, there was industry-wide co-development) assisted by consultants. In two cases (case #5 and #6), the experiences learned from its associated US and European companies were utilised.
- *Routinisation*; Depending on the technology employed, this often involved education and training processes for system users. Nine cases agree that friendlier applications such as web-based applications tend to have a shorter routinisation time. However this “easy to use” technology does not significantly increase the number of participants (our definition of success).
- *Diffusion and expansion*; This last stage has been considered the most crucial, with uptake rate being seen as the measure of success. In this process, the cases have to continuously introduce, attract and market their initiatives to their trading partners or clients. Various non-technical issues often occur during this stage, such as lack of interest, financial constraints, or even difficulty in agreeing on a suitable business model. In a few initiatives, the organisations even need to persuade their trading partners or clients with some incentives such as discounts on products/services, or by covering communication costs.

The growth process - from EDI to Internet Commerce

In general, the eCommerce implementations started with only 1-2 applications (eg. purchase orders) in the traditional EDI initiatives. This was later expanded to include various documents such as shipment notices and payment instructions. In some cases, this process involved the development of new messages (especially

in those industries where standards have not sufficiently evolved).

Until today, EDI-related application is still the most common B2B initiative implemented. For example, one government agency has introduced 14 B2B initiatives since its introduction of EDI and currently still maintains 11 EDI initiatives. In contrast to Ho’s [55] study, which discovered that the use of the web in business-to-business (B2B) transactions is “unexplored territory”, we found six cases (see table 1) which had started Internet-based initiatives, while three others had also initiated planning for such ventures. While introducing their Internet-based initiative, all cases (except one which did not commence its eCommerce activities with EDI) still maintain their traditional EDI related initiatives (including those based on proprietary standards). One organisation (#8) has even started exchanging XML format documents over the Internet.

Factors influencing the implementation

To varying degrees, the majority of issues previously identified in the single case study have been confirmed by the multiple case studies. All cases experienced these issues to some extent, depending on the industry and the type of eCommerce initiative involved.

Table 5: Factors influencing the implementation

	Single case	Multiple cases
Tech'l	Complexity Compatibility	Complexity Compatibility <i>Various levels of TP capability</i> <i>Rapid change of technology</i>
Org'l/ Mgt	Mgt commitment and support Resistance to change	Mgt commitment and support Resistance to change <i>eCommerce perceived as a lower priority</i>
Business	TP relationships Cost/benefit issues	TP relationships Cost/benefit issues or <i>Spending appropriateness</i> <i>Slow adoption by the business community</i>

Technological issues – non-technical solutions

The findings indicate that complexity and compatibility are the major technological issues experienced – and are critical variables for successful e-Commerce implementation. Trading partners (both within Australia and overseas) are currently using a variety of different standards and platforms, which

increase not just the cost of the implementation but also the complexity of the process. Two possible solutions, currently being used by some of our cases, have been suggested to overcome this impediment:

- Ensuring the right decision is made in terms of technology, so that there is no difficulty with later integration issues (integration of the new technology with prior initiatives)
- Multiple ways to interact with and service a range of different technologies. Kalakota and Robinson [56, p.323] refer to this strategy as “channel fragmentation” and point out that such a strategy could lead to inefficiencies.

Management/organisational issues – commitment, change and priority

In all cases, commitment has been suggested as the most important factor for implementation success. There are two relevant forms of commitment referred to here: commitment of organisations to eCommerce initiatives, needed to support the process of implementation (specifically, resource commitment); and trading partner (or client) commitment to the project. In addition to trust, developing a sound business plan and achieving sign-off have been suggested as methods for gaining these commitments.

Other management issues which arise are primarily related to managing change so as to ensure system acceptance. This issue has often been associated with education and training and was recognised as a partly controllable factor [57].

This change issue has often been associated with education and training, which are partly controllable factor [57] and other uncontrollable factors such as trust [58].

Depending on the type of initiative, education and training can be very critical. For example, user’s training is critical for the EDI-related applications including Internet-EDI, but not quite critical for open Internet-related applications such as web forms, e-marketplace and specific business documents exchange. This user training relates to not just within organisation change but also extended to trading partner organisations. Case #10, for example, has to perform regular training sessions for its suppliers.

As pointed out by Keen [58 p.9] “the more complex your environment, the more you have no choice but to trust”. Implementation of eCommerce has a close relationship with ability of organisation to gain trust from trading partners. Case #10 is a major customer and believes that gaining trust from its suppliers is critical to expand the implementation. The suppliers has to trust that the company has chosen the right system, standard and process that would allow them to gain benefits from the implementation.

Various levels of trading partner capability, company culture and business processes have made this change process activity a complex exercise. Of the cases, one (case #4) had extreme difficulty in marketing its online ordering initiative, which had traditionally been undertaken by a sales person. Although the organisation is aware that a broader approach, such as resource allocation planning, needs to be used, such a change in approach has been extremely difficult due to the popularity of the current business process with the company’s customers.

All cases also believe that eCommerce has been seen as having a lower priority than the organisation’s core business-related activities. While the cases agreed that eCommerce is integral to improving business performance, convincing top management of this was not an easy task. In the non-commercial organisations, where profits are not the major objective, the issue is one of balancing priorities for systems development in relation to the organisation’s core business.

The inter-related business issues – slow adoption and cost/benefit justification

In both single and multiple cases, trading partner relationships played crucial roles for the success of the implementation. Being an initiator (or sponsor organisation) could mean that the organisation has to provide various supports to its trading partners in order to have a successful implementation.

It is obvious, that the majority of cases appreciate the benefits of eCommerce implementation. However in case #8, where the implementation was initiated by government mandate, there was a strong belief that the eCommerce initiatives have provided more benefits to the government than to the business community, which has been left with little choice but to comply with the requirements. While there was an initial reluctance to participate in such mandated initiatives, in the more recent developments, the case appreciated the benefits of such systems and the initiatives have successfully obtained participation from business. Others [see, for example, 5] also believe that such participation, after initial lack of enthusiasm, has frequently become wholehearted over a period of time.

The majority of the cases also constantly suggested the need for continual reinvestment because of the rapidly changing technology and the slow uptake of the e-Commerce initiatives. In the commercial organisations, these issues led to difficulties in terms of cost/benefit justification, while in the government organisations, they tended to be related to the appropriateness of spending at a certain time (such as during an election year).

“Justifying benefits in the short term is difficult...it is a long process”.

“At this stage, suppliers have made no specific demand for an automated system, although this feature is being developed”.

While there is no agreement on how businesses can speed up their adoption of eCommerce, a few cases suggested the involvement of the federal government to speed up the process, using such initiatives as providing tax exemptions for eCommerce, or an industry-wide approach. Others were sceptical and believe that it is up to businesses to take the initiative in getting eCommerce off the ground.

Slow adoption of the initiative has obviously affected cost/benefit justification of the company implementing eCommerce. Cases overcome these issues through a variety of approaches. An extreme approach taken by one case (case #1) was to outsource its B2B eCommerce initiatives such as EDI. The organisation believed that this would reduce the cost of implementation and make it easier for the institution to justify the appropriate costs charged to its clients. One particular case (case #10) even decided not to proceed with its SME Internet-based initiative following the pilot implementation, because it was unable to justify the cost of labour and network supports for its suppliers. However, in general, the majority of case participants suggested focussing on improving the business processes within organisations because this is both easier to control and to manage.

6. Approaches for B2B eCommerce initiatives – from optimistic to pragmatic

As we analysed our cases on the basis of their initiatives, we categorised three types of approaches used by our cases for eCommerce initiatives: optimistic, cautiously optimistic and pragmatic.

A positive (or optimistic) attitude was found in two cases. One case (case #2) is one of the country's largest government agencies. As it is of great importance to the public, its aim is to improve its services through the use of B2B eCommerce technologies, which have been well supported by the government. The other case (case #4) is the company which started its implementation with Internet-based applications. This organisation became excited by the introduction of the WWW and generated three major initiatives. Both cases have a very positive attitude and believe that even though their Internet-based initiatives have not yet delivered what they expected, they will see positive results in the longer term. Therefore, they are prepared to continue their leadership role in the eCommerce initiatives with which they are involved.

A cautiously optimistic attitude was found in five cases. Two cases (case #1 and case #3) are inter-related government organisations. Due to the amount of paperwork they handle, a cost-effective solution has been the objective for their initiatives and EDI-related initiatives have satisfied their needs. However, these organisations will need to move toward Internet-based technologies because of government policy and joint cooperation with other government agencies. Three other cases (case # 4, #5 and #7) have been more cautious in adopting new Internet-based B2B. While they believe that the Internet will be the focus for their upcoming initiatives, they are uncertain when critical mass will be achieved. These cases have experienced both traditional EDI and Internet-based B2B eCommerce and suggest that they have been least satisfied with the benefits resulting from their Internet-based initiatives. Further, they continue to believe that the business community would not abandon traditional EDI as the Internet-based applications are “too clumsy” for detailed information exchange. Therefore, they intend to move to Internet/web capable gateways, which could accommodate both traditional EDI and Internet-based B2B (rather than replacing the traditional EDI systems with Internet-based systems). They would rather see what industry trends develop and what their trading partners' / clients' views and actions are before they make precipitate decisions.

A pragmatic attitude was found in three cases (case #6, #8 and #9). Two cases have obvious reasons for being pragmatic and not worrying about the technology – case 6, which has its eCommerce strategy planned by its European head office; and case 9, which implemented eCommerce because of government and industry requirements. The other case is quite interesting, as they believe that a pragmatic attitude is the only way to manage the technology. This organisation used to be extensively involved in industry initiatives, but has decided to be more cautious about being involved in various industry-wide initiatives than it was formerly, due to the uncertain direct benefits it receives. The organisation believes in its pragmatic approach and will only implement technology for immediate, measurable benefits (eg. significant cost and time reductions in the delivery process) or inevitable/mandated reasons (eg. government regulation or a request from a major customer).

7. Conclusion

Regardless of the high expectations concerning the use of Internet-based B2B eCommerce in Australia, we found that the over-riding issue was its relatively slow adoption by almost all our case study participants. This “slow adoption” further confirms recent studies undertaken overseas [59] and within Australia [60, 44-

46]. Additionally, three points arise from the previous discussions.

Understanding IS implementation is an enormous task, due to the complexity of the process. In this paper, however, we have attempted to describe this complexity through case studies, which we believe to be the ideal method for such an issue. We have suggested three dimensions for this process: growth process, change process and integration process. The most crucial part in the change process discussed above is the last stage, which involves the diffusion and expansion of the system – and which decides the success or otherwise of the initiatives.

The factors identified above have varying degrees of influence on the implementation process. This depends on the type of organisations involved, as well as on their initiatives. For example in manufacturing and retail organisations, customer and supplier inter-relationships are crucial for the uptake of the initiative. In government organisations, by contrast, the issue of public concern and the associated political issues related to elections and party politics play important roles in the implementation process. Another unanticipated result was that implementation costs associated with VAN-based EDI, as indicated by previous research (see section 2), might not be the major barrier for SME implementation – two of the four cases implementing Internet-based eCommerce suggested that their Internet-based initiatives have not been as successful as they had expected, while two others are still waiting to see the results of their Internet-based initiatives. This suggests that the cheaper, Internet-based alternatives are themselves less than satisfactory in some way(s). Clearly, more research is needed to investigate this point.

Although there were similar responses from all case participants (that is, business must drive eCommerce implementation) in terms of the organisation's future approaches to B2B eCommerce initiatives, the firms' own experiences have formed their attitude toward their next initiative. For example, those organisations involved with EDI implementations tended to compare their EDI initiative(s) with their Internet-based initiatives and were rather more cautious in their hopes for the future. An organisation (case #4), which has no prior EDI experience and just started its eCommerce activity through the Internet-based initiatives, by contrast, had significantly more enthusiasm and confidence in the system. It is clear, therefore, that a learning process occurs which shapes the organisation's attitude toward implementation.

Our multiple case studies have thus confirmed our earlier findings (based on a single, in-depth case study) concerning the complexity of the eCommerce implementation process and the importance of non-technical factors (ie. management and business) for the success of this process.

The major limitation of the present study relates to the generalisability of the research findings. The study involved only ten organisations in Australia and in two industries (financial and freight forwarding), there was only one organisation involved. This focus on a single country and a limited number of cases is the major weakness of the study, as it tends to be for many multiple case analyses. A further limitation is our reliance on the information provided by the senior eCommerce officers in the organisations and the organisations' published documentation. This was not the situation with the single case, where data collected were believed to be more accurate due to the multiple data collection techniques employed. Nonetheless, the material gathered provides both substantial confirmation of the findings from the single case study, and a starting point for future research in this area – both within Australia and in other countries.

The project has at least two primary strengths.

- Firstly, the overall study is longitudinal. The single case study involved two separate projects over a period of more than 8 years on a single organisation: the present research project, undertaken during 1997-2000 and an earlier project which focused on EDI [48].
- Secondly, the organisations involved in the multiple cases were carefully selected on the basis of their eCommerce maturity. This allowed a more detailed analysis of the cases rather than a snap shot measurement.

A further study, which investigates in detail the inter-relationships between each factor, identified in this study and the degree to which it affects the success of eCommerce implementation in various industries should now be undertaken to obtain a more detailed picture of the process. This should perhaps be undertaken within a specific industry segment to enable a more focused understanding.

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