

The Implementing of Business-to-business E-commerce Application: An Australian Case Study

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Abstract

This paper will discuss the effects of implementing e-commerce applications on a non-profit organisation, both pre- and post implementation of this form of business application. The commonality of the problems between a not-for-profit organisation and a typical profit-making organisation makes this paper applicable for both types of businesses. Currently, organisations are effectively “bandwagon jumping” into the e-commerce form of business without sufficiently studying the total effects that such a move create and the problems created by insufficient investigation into this tactical move. Consequently, too many enterprises are slow to restructure their organisation and their processes and then adapt to this new mode of

business operations. They will therefore lose opportunity gains and competitive market positioning. Here is explored the non-profit organisation #A. Initially, this paper analyses Organisation #A's integrated value chain to identify its current business processes. The use of this method suits the investigation into the information flow of a business operation, whether e-commerce based or not. The influence of technology however, is emphasised here as improving the business processes which in this case is the use of web-based service applications such as workflow systems, legacy EDI, and Internet application program interfaces. Following this is a description of the importance of architectural framework using the Papazoglou's (2000, 2008) framework, which permits the flexibility, interoperability, and openness needed for e-commerce applications.

Key Words: e-commerce, business process

1. Introduction

Due to the lack of information and knowledge of what the results of engaging in the world of e-commerce will do to an organisation, there has been a reluctance to restructure to a new organisation that embraces e-commerce as part of the organisational whole. This may result in the organisation losing its core competencies in the fog of 'Why are we doing this?' The answer ought to be 'To stay on top, to maintain market position, and to accept the new markets that are evolving for us.'

To succeed in the digital economy, an enterprise must understand what are its core competencies and to use them for the best competitive advantage. These competencies along with the development of alliances with partners to provide customers with services that knit together for the benefit of all parties, including the customer, and this resulting value chain integration presents itself as a tool for enterprises to achieve improved and expanded core competencies. In a report by Cambridge Technology Partners, "a value chain integration is the

process in which multiple enterprises within a shared market cooperatively plan, implement, and manage (electronically and physically) the flow of goods, services, and information from point of origin to point of consumption” (Cambridge Technology Partners Report, 1998).

Moreover, according to T.H. Clark and H.G. Lee (2000), “traditional relationships across the value chain are usually weak. As a result, many organizations today are establishing new forms of inter-organisational systems with their suppliers and customers in an effort to improve total channel performance. Electronic commerce linkages are being created between independent organizations in multiple industries, including manufacturing, financial services, transportation, and retailing. Efforts to improve channel efficiency using business-to-business electronic commerce systems generally require increased interdependence and expanded coordination between independent firms to capture the potential benefits enabled by tighter inter-organisational integration of operations.”

They further commended that “participating firms can gain dramatic benefits from establishing electronic linkage only when the system is used to increase interdependence and to expand coordination between firms involved in the new inter-organisational relationship.” (T.H. Clark and H.G. Lee, 2000),

Having identified the significance of the implementation of an integrated value chain that utilises the various competencies that several organisations may provide for the aim of presenting a unified support for their customers, the first section of this paper introduces the current literature concerning the role of integrated value chains that address the technology challenges of the digital economy. The second section provides the business aspect of Organisation #A (Western Australia branch) and outlines its business plan strategies. The third section discusses the research methods used to examine both the value chain integration analyses adapted from Porter (1985), Prahalad and Ramaswamy, (2004) and the architectural framework proposed by Papazoglou (2000, 2008). The fourth section discusses the preliminary findings and the role of factors that drive the integrated value chains and their interoperability,

here in the context of e-commerce. Finally, the fifth section presents conclusions regarding the practical significance of the results of the literature, and the potential business impact of these findings to Organisation #A.

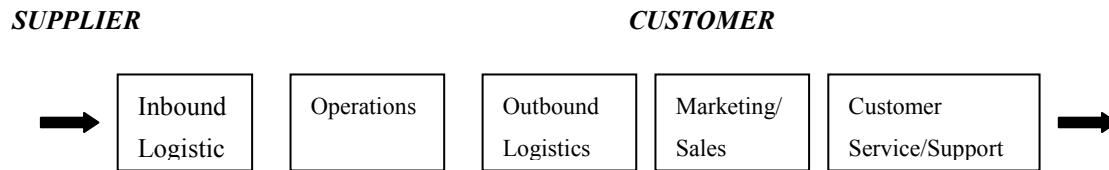
1.1 Value chain integration

According to Papazoglou, M.P.& Yang, J (2000), value chain integration means “*an enterprise’s business systems can no longer be confined to internal processes, programs and data repositories, rather they must interoperate with other such systems that support links in the supply chain.*” From this, an organisation’s value chain is transformed into a set of integrated value systems that may be seen as an “extended enterprise” creating and enhancing customer-perceived value by means of cross enterprise collaboration” (Dobbs, J. H. reference in Papazoglou, M.P.& Yang, J, 2000).

In order to improve the perceived and real value of e-commerce transactions, these authors found that integrated value chain systems, created to support overall business goals, also support the integrated views of all business elements across departmental boundaries. Furthermore, they indicate that this can be achieved through the utilisation of distributed workflow technology that allows business processes to be shared and passed across the value chain to create networks of highly efficient virtual organisations. This distributed workflow technology composed of integrated business functions, application program interfaces, data warehousing and a legacy system is the heart of this new business approach.

1.2 The technology challenges in digital economy and Integrated Value Chain

In this section, a quick back-to-front tour through the value chain is initiated, looking briefly at the technological challenges the new digital economy poses within each link as shown in Figure 1 below.



In a report by Cambridge Technology Partners (1998), concerning the digital economy, it is stated that an enterprise must have the ability to exchange data with suppliers quickly and easily, regardless of format. The report also states that data formats can be based on standards, such as extensible mark-up language (XML) or electronic data interchange (EDI), where inbound logistics systems recognise and understand data originating from outside the enterprise, and also replicate and transform it for use within internal and external downstream processes irrespective of the sources of the data.

In the operations part of this model is the place where added value is generated.

Finally, on the right side of the figure, outbound logistics, sales and marketing, and customer's service and support are the customer-facing links of the integrated value chain. The Cambridge Technology Partner's Report also indicates that in the digital economy, customers are required to have an authorised read-and-update access to enterprise data that will overcome the usual obstacles presented by an operational, internal application. In return, the companies can interact with customers through a variety of data and product delivery channels. Consequently, this provides companies with chances to consolidate, aggregate, and deliver data over the Web and any other outbound channels intuitively and immediately. Having discussed the integrated value chain that addresses the technological challenges faced within the new digital economy, the next section puts this into a context for Organisation #A (Western Australia branch) with its evolved business strategies outlined.

2. Organisation #A (Western Australia Branch)

Organisation #A is a worldwide human rights movement. It is independent of any government, political ideology, economic interest, or religion and mobilises volunteer activists in more than 140 countries and territories in every part of the world.

The Western Australian branch of Organisation #A has been operating since 1977. The Branch Executive Committee forms the management structure that consists of a President, a Vice-President, a Secretary and a Treasurer. There are also general committee members. They are all volunteers who coordinate and provide help for any action plans and campaigns. The branch currently has one paid full-time staff member, the Regional Coordinator.

The financial income comes from memberships, pledges, direct mail campaigns, and other fund raising activities. The main income comes from funds raised on Candle Day. The WA branch at one stage operated an Op Shop, which sold Organisation #A merchandise, however, the Op Shop was closed in 1998.

The income generated from membership fees goes to a National income account, and income generating activities specifically related to branch operations such as the Candle Day group, and event income and merchandising income are directly attributed to regional accounts, which help offset operating costs.

The WA branch has other small work groups, and there are currently thirteen groups, of which four are university groups. The other groups are in metropolitan and country areas stretching from Como/South Perth, Nedlands, and Subiaco, to Margaret River and Geraldton. These work groups organise individual group or joint group events and help organise the main fund raising event, Candle Day.

The regional office currently has seven letter writing networks in operation to aid political prisoners. In addition to the general “Urgent Action Network,” there are a range of specialist networks focussing on the areas of health, legal issues, religion, women, unions, journalists, and writers who are subject to political interferences in their work and daily lives.

The “Urgent Action Network” currently has 250 members, which includes community groups and over 30 school groups. In 1998, the legal network responded to about 30 “Urgent Actions” pertaining to legal issues such as imprisonment without fair trial, the death penalty, and threats to and intimidation of lawyers and other legal professionals representing human rights abused persons and groups wherever supported.

The Religious Network includes individuals, school, and church groups. Members are sent “Urgent Action” cases from a range of countries as well as information about the international campaign called the Universal Declaration of Human Rights campaign.

The Health Professionals Network also distributes letter-writing actions to its members as well as publishes articles in the Australian Medical Association bulletin for the perusal of physicians.

The next section addresses Organisation #A’s strategic plan and how its strategy is translated into critical success factors.

2.1 Strategic Business Planning for Organisation #A

Organisation #A's strategic business planning processes are determined within its mission and its long-range goals and objectives. These goals and objectives promote the observance, throughout the world, of human rights as set out in the Universal Declaration of Human Rights, through impartial actions and the international solidarity of a worldwide movement of people.

Organisation #A's goals and objectives put in critical success factors, where these critical success factors address success measurements sourced from Organisation #A's e-commerce system design, and its activities at the tactical, operational and control levels. However, these critical success factors would also enable Organisation #A to produce quality services to satisfy its members and clients. These critical success factors are as follows:

- *Implementing, utilising, and improved E-commerce management systems.*

Improvements in increased levels of e-commerce management make necessary and vital information easy to source, share and evaluate, as content and document management, correlation and the indexing of information, dynamic publishing, and client profiling can facilitate collaboration to achieve a given goal. Consequently, an increase in collaboration stemming from improvements in efficiency would lead Organisation #A to achieve productivity gains.

- *Integrating marketing functions with the Internet*

Savings may also be realised from technological efficiencies, e.g. using the Internet as a medium for campaigning for human rights. Savings is created in promoting the observance of human rights by Organisation #A through making information easily and widely available on the Internet. With easy accessibility of information, its members' satisfaction from a given project might actually increase.

The critical factors outlined above would show that Internet applications are able to support Organisation #A's attempts to achieve an integrated view of all business elements that cut across departmental boundaries and also assist them to manage the entire operational flow of the organisation.

3. Research Methodology

The dialectical hermeneutics approach is used to interpret the data (Yin 1994, Wong, 2004, 2005, 2006, 2007). The basis of the research methodology for this study uses an exploratory case study approach. While the research focuses on a single company, I was able to collect the data from Organisation #A's management team applicable to almost any organisation (source: personal interviews, July 2007)

Key players were identified from Organisation #A's West Australian branch and these individuals (the regional co-ordinator, administration officer, and field officers) were interviewed. The interviews were semi-structured and later transcribed. Each interview took two hours to complete and focused on the objectives of the particular e-commerce processes that the individual was involved (source: personal interviews, July 2007).

The various networks that were shaping the diffusion, design, and implementation processes were examined as well. In addition, the use of informal conversations and documentary evidence in order to build rich process descriptions of the projects were included (Wong, 2004, 2005, 2006, 2007).

The case study explores the relationship between the analysis framework of the integrated value chain adapted from Porter (1985) and Prahalad & Ramaswamy (2004) and the architectural framework proposed by Papazoglou (2000, 2008). It also examines the factors

that drove the integrated value chains and the interoperability of Internet applications in the context of e-commerce.

4. Preliminary Findings and Case Study Analysis.

In this section, Porter's (1985) and Prahalad & Ramaswamy (2004) analysis framework of integrated value chains and Papazoglou's (2000, 2008) architectural framework will be used in the analysis of the case study. Following this is a discussion and presentation of the factors that drove the integrated value chains and the interoperability of Internet applications. This section will also include an examination of how Internet applications are differentiated, and how they may be designed more effectively.

4.1 Proposed Theoretical Model of Investigation – Value Chain Analyses

Here is the application of the proposed model of integrated value chain analysis to Organisation #A.

In Organisation #A's case, the integrated value chain analyses is used to identify its current business processes. Suitable particular items are used to investigate information flow of the organisational business processes which focus on competitiveness and the role of technology within the organisation to add value or reduce costs or both.

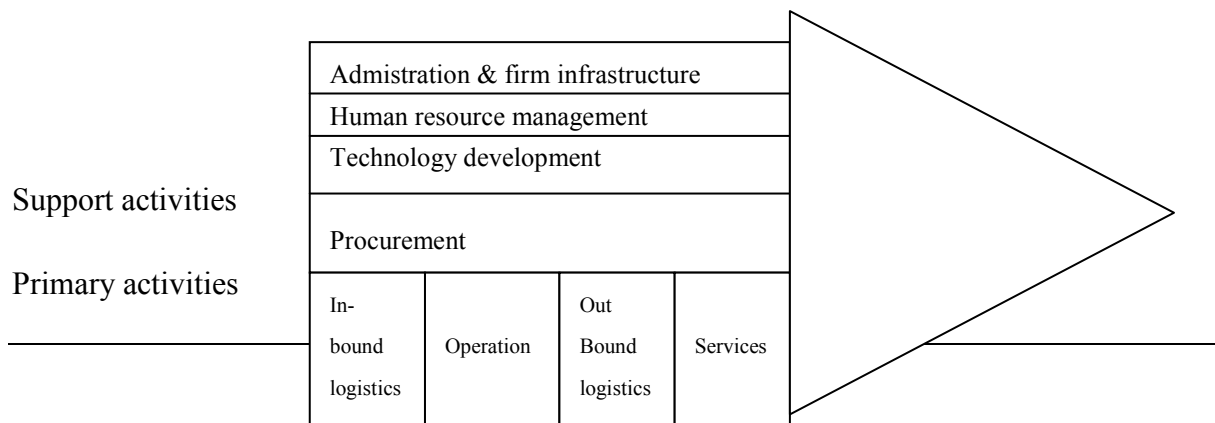


Figure 1, presents a diagram of the traditional value chain for Organisation #A. Adapted from Porter (Porter, 1985).

The value activities contribute value for Organisation #A’s members, and the margin is the difference between the value added and the cost of producing these values.

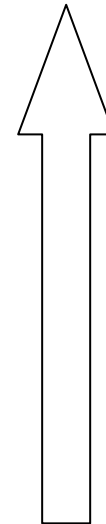
By modelling the activities of Organisation #A, it is possible to distinguish between its primary activities, i.e. those that contribute to bringing the service closer to Organisation #A’s members, from its secondary activities, i.e. those, whose role is to support the primary activities.

Moreover, value chain analysis can also allow Organisation #A to investigate the e-commerce application of its business processes by identifying technologically and economically distinctive activities, especially in relation to quality standards.

Figure 2 below Papazoglou’s, (2000, 2008) analysis framework illustrates the proposed integrated value chain for Organisation #A. This figure shows Internet applications taking on a much broader and strategic role in support of business requirements that go well beyond efficiencies and cost saving achieved through electronic publishing.

Business Value

Web Services Value Chain	
<p><u>Business Transactions</u> E.g. Intranet/ Extranet integration tools used for its business outputs involving education issues, human rights issues, refugee & asylum issues, activism activities etc</p> <p><u>Process Automation</u> E.g. The integration information flow of administration, finance, marketing, human resource management processes etc.</p> <p><u>Information Sharing</u> E.g. Content/document management, correlating and indexing information from activist groups, volunteers speaker groups, staff interactions, information gathered from members and the community as a whole</p> <p><u>Information Access</u> E.g. quarterly and annual reports, campaign kits, merchandise catalogue, public events etc</p>	<p>Converged E-Commerce</p> <p>Workflow</p> <p>Collaboration</p> <p>Knowledge Management</p> <p>Electronic Publishing</p>



Efficiency/cost Savings

In Organisation #A's case the greater its ability to extend its Internet applications and move up the above stack, the more value is returned, as simpler applications deliver cost savings and efficiencies, while the upper layer applications create value, not just cost savings. For example, in the publishing of

quarterly and annual reports, the member's directory, and events of activities, electronic publishing can save time, paper, printing, and postage costs.

Furthermore, allowing customers to purchase products, to make contributions Online, and the integration of the customer service application with the purchase process, saves precious funds as well. This may also open up a new market - say, an international electronically based e-market – that was not previously available to the business.

In order to improve the interoperation support for e-commerce, leading Internet applications have evolved from the current simple page-serving environments to rich application platforms that provide server-side application runtime engines – and in some cases, integrated security, encryption, indexing, messaging, scheduling, and database services.

These new applications allow Organisation #A to broaden its horizons as far as services to clients are concerned, but Organisation #A must take the risk of such investments and three apparent opportunities come to mind, and they are outlined below.

Firstly, improved profitability from commercial activity on the Web includes productivity savings, information management savings, and incremental or new revenue streams, such as members' fees collection. Productivity savings arise from reductions in order and processing costs, and more efficient information management within these areas. Improvements in information management makes information easier to find and to share as content or document management, correlation and indexing information, dynamic publishing, and client profiling can facilitate collaboration. The increases in collaboration achieved because of probable efficiencies in the use of personnel may also lead to productivity gains and cost reductions.

Secondly, realised savings from improved efficiencies in the marketing and human rights campaign functions are apparent. The Internet shifts more of these functions to the clients and members. As a result, savings within the marketing functions may result through reduced brochure printing and

downstream distribution costs. In addition, savings on expenditure related to human rights campaign functions may also result from making information more easily and widely available.

Thirdly, incremental or new revenue streams are available for organisations participating in digital commerce, through, for example, online sales, advertising revenues, or information brokering. Increases in incidental revenues seem achievable for Organisation #A by using the Web to expand into new channels of collaboration and knowledge management, and the new market segments of electronic commerce.

4.2 The impact of Business-to-business E-commerce Supply Chain

This section explores the strategic insights of Organisation #A's business-to-business e-commerce supply chain. The findings, as to how the legacy EDI system, by allowing large volumes of information to flow across organisational boundaries, may transform the relationship between trading partners by bringing them much closer together with its own departments and groups is also discussed.

The first part of this section is devoted to exploring the following factors:

- (1) The nature of the relevant markets and their distribution channels;
- (2) The necessary organisational structure and processes; and
- (3) The buyers' influence and the implementation of their legacy EDI integrating with its suppliers, members and customers.

In Organisation #A's case, staff are always exchanging information about their activities with their suppliers, members, and customers, through business meetings, including the exchange of documents, using telephone, telex, and facsimile. This means that legacy "EDI may facilitate data warehousing as it is seen to allow large volumes of information to flow across organisational boundaries in a single moment. Legacy EDI also has the potential to transform

the relationship between trading partners by bringing them much closer together” (Holland, C. P, Lockett, A. G, and Blackman I. D, 1992). This was also in consistence with Chan, C. and Swatman, P.M.C. (2000) report on "From EDI to Internet Commerce: The Case of BHP Steel” where EDI capabilities allowed the BHP Steel to send and receive business documents. They also identified a number of factors and issues impediments to the success of this EDI implementation, including inadequate management support, lack of technical knowledge and support, and lack of understanding of the technology. Despite these limitations, BHP Steel gained significant advantage from being able to require its trading partners to trade electronically (Chan, C. and Swatman, P.M.C, 2000).

In another article by Holland, C. P, Lockett, A. G, and Blackman I.D, (1992), the authors suggest “the general organisation can cover the whole of the supply chain from inventory to customers and for each industry sector the number of stages may vary”.

For example, Figure 3 below depicts the supply chain for Organisation #A.

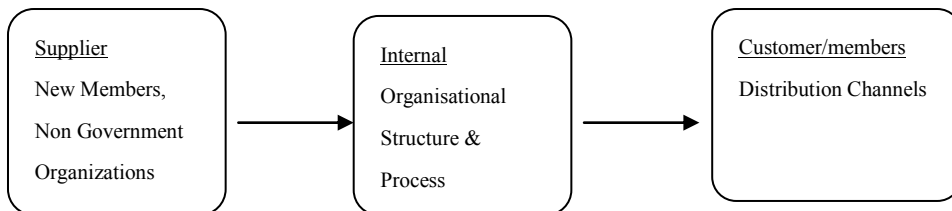


Fig. 3. The Supply Chain for Organisation #A

Legacy EDI is in many parts of Organisation #A’s chain, and in this paper, in order to produce a general conceptual solution for Organisation #A, the number of stages is aggregated into three main ones - supplier, internal, and customers or members.

These stages allow the development of an applicable generic scheme so that regardless of their position in the chain, the management team of Organisation #A can apply the chain to its area of responsibility.

1) Supplier-related Channel

Holland, C. P, Lockett, A. G, and Blackman I.D, (1992), state, “The strategic EDI model contains several factors such as a supplier-related stage, internal operations, and customer-related channels, which are important for planning EDI links with suppliers. In the past, only companies with a dominant market share were able to impose trading terms on suppliers that included EDI arrangements.” However, the trend has now changed, and legacy EDI is seen to be becoming more easily and efficiently integrated into Electronic Commerce. In Organisation #A’s case, using legacy EDI to do business in the end may enable it to relinquish its control over its suppliers.

2) Internal Operations Channel

Holland, C. P, Lockett, A. G, and Blackman I.D, (1992), state, “the internal operations were concerned about the implication of EDI with suppliers and customers on internal operations, and how these can be exploited for the benefit of the organization.”

In Organisation #A’s case, legacy EDI created a knowledge repository for storing explicit knowledge and it also created a virtual ‘information Library’ accessible 24 hours a day to Organisation #A’s staff across all branches within Australia. This means the improved information exchange will result in an increase in intangible benefits, cost reductions and quality improvements sourced from the knowledge sources available to the branches.

3) Organisational Structure and Process Channel

C. P, Lockett, A. G, and Blackman I.D, (1992), state, “EDI may link customers with suppliers thus affecting the nature of business relationships. Individual roles and tasks associated with managing customer and supplier relationships therefore change. In picture, staff, and cost

reductions have been achieved throughout the whole organisation. This concept is not new and could simply be viewed as an extension of the value chain.”

In Organisation #A's case, the use of legacy EDI for information sharing between its suppliers and customers, strategic communications between its subsidiary companies, and information application processes, such as order entry etc, is significant. In addition, legacy EDI facilitates the ability to invoice electronically, and tie the transactions into accounting and purchasing systems. This in turn improves the quality and timeliness of information, so orders are placed more frequently and in smaller quantities.

4) Customer-Related /Distribution channels

In Organisation #A's case, the number of ownership stages measures the length of the supply chain, from its supplier to its end customers. If there are a high number of ownership stages, it is more likely that it involves a traditional chain of market hierarchies (i.e. producer, wholesaler, retailer, and consumer). However, a potential alternative chain for Organisation #A to utilise would be to bypass the wholesaler, resulting in a lower purchase price for its customers. Moreover, in Organisation #A's case, the introduction of legacy EDI and its subsequent integration has led to gains in efficiency and a reduction of manual data entry errors. This efficiency gain coupled with redirecting employees from tedious manual tasks to resolving critical business issues to improve margins, reduce inventory levels, improve internal processes, and otherwise reduce extraneous costs, had clear benefits to Organisation #A.

The strategic insights of Organisation #A's business-business e-commerce supply chain supported by a legacy EDI was also in consistence with Chan, C. and Swatman, P.M.C. (2000) report on "From EDI to Internet Commerce: The Case of BHP Steel" where the authors described, "a case study of BHP Steel, the largest steel producer and one of the largest companies in Australia, which is a leader in e-commerce implementation. The results suggest that, over time, the driving force for e-commerce changed significantly. From an initial push to

improve current business processes by adopting EDI to achieve savings and improve efficiency, the company came to be driven by a desire for greater supplier involvement and customer service in later implementations.” (Chan, C. and Swatman, P.M.C, 2000).

4.3 Further discussions and implications of the architectural Internet base framework

Having explored the strategic insights of Organisation #A’s business-to-business e-commerce supply chain supported by a legacy EDI, the next section is devoted to providing a description of the important architectural Internet base framework necessary for Organisation #A to expand its Internet applications. The use and application of Papazoglou’s, (2000, 2008) analysis framework is the approach used to analyse this case study.

A review of the economic impact on Internet applications value chain analysis was carried out for Organisation #A and it was suggested that flexibility, openness, and interoperability support is secured from five areas. These are as follows:

- Business process compatibility,
- Adaptability of business processes,
- Leveraging legacy assets,
- Support for business transactions, and
- Network security services.

The success of Internet applications in supporting the five critical elements listed above serves as the foundation for Organisation #A’s e-commerce strategy.

1. The role of Internet in supporting business processes compatibility

According to Papazoglou (2000), “*compatibility at the business level is a critical requirement for interoperation in the context of e-commerce. This means it requires a formalisation of the process of*

expressing business process interchanges in a consistent and extensible manner in order to facilitate communication between business processes and enable electronic interchange.”

From this, Organisation #A may use Internet applications to facilitate the compatibility of its business processes since Internet applications can provide rapid electronic publishing and universal access to a broad audience through a standard interface.

In addition, Organisation #A’s Internet applications operate by using a communication network linking interfaces, which consists of a set of XML document type definitions that are common for B2B, B2Customer and trans-organisational transactions. As a result, standardisation of the digital services would create sustainable network relationships for Organisation #A between its local and international team.

2. The Role of Internet in Supporting Business Processes Adaptability

Papazoglou (2000) states, *“to remain competitive, organisations must be able to move fast and quickly adapt to change. Moreover, they must be able to reconfigure their key business processes as changing market conditions dictate.”*

In this paper, the classical organisational view that to initiate business change, changes to business goals are necessary, this means the necessary linking of Organisation #A’s organisational goals to its business activities. Therefore, an increase in Organisation #A’s change management to its new organisational goals will change its business activities. Hence, its business process adaptability must involve collaborations between its local and international team members. As a result, this increase in collaboration through more efficient trans-organisational communications may well lead to an increase in productivity gains and the role of the Internet may facilitate such proactive change management of business processes. This change management of business objects can accommodate selective functionality from legacy information systems.

3. The Role of Internet in Supporting Leveraging Legacy Assets

According to Papazoglu (2000), “...*the interoperability requirements of e-commerce and virtual organization scenarios cut across the traditional product or organizational boundaries of systems and mandate that legacy assets of an organization are leveraged and integrated into next generation business systems. Thus, the e-commerce interoperability challenge places particular emphasis on integration at the transaction level and not on data integration, replication, and batch transfers of data.*”

In order to achieve the virtual nature of e-commerce end-to-end business processes, Organisation #A needs to ensure that business rules and transactions are available to every branch for incorporation within their own systems. Accordingly, legacy systems are treated as components physically or they can be perceived as components by means of their interfaces. Moreover, Internet applications can provide this opportunity as they also include an object wrapper technology for combining business objects with legacy systems and allow mixing legacy systems with newly developed applications by providing access to the legacy system.

4. The Role of Internet in Supporting Business Transactions

Papazoglou (2000) indicates, “...*a key activity in integrated value chains is the collection, management, analysis, and interpretation of the various commercial data to make more intelligent and effective transaction-related decisions. Performance tasks require involving collaborative computing technologies to support the distributed workflow processes.*”

In Organisation #A’s case, the increased levels of management information makes such information easy to find and to share as content or document management, correlation and indexing information, dynamic publishing, and custom profiling which can facilitate collaboration. Furthermore, increases in collaboration through more efficient personnel may also lead to productivity gains. As a result, Internet

applications can represent new opportunities for Organisation #A as they facilitate business transactions. In addition to these, business transactions foster the support for business commitments, which binds businesses with other organisations.

5. Conclusion

In this paper an attempt was made to briefly describe the importance of Organisation #A's architectural Internet framework as it had adopted Papazoglou's (2000, 2008) interoperability conceptual model, which permits flexibility, interoperability, and openness necessary for e-commerce applications. It is suggested that flexibility, openness, and interoperability support can be provided from the following four areas:

- (1) Compatibility of business processes,*
- (2) Adaptability of business processes,*
- (3) Leveraging legacy assets, and*
- (4) Support for business transactions*

A successful e-commerce implementation as seen in Organisation #A's case has improved the competitiveness of that organisation by reducing costs, and improving the time taken to exchange information, services, and products.

The paper also discussed the two factors needed for Internet applications to facilitate inter-organisational transactions and to enhance their internal operations by integrating internal and external networks in e-commerce. These factors are identified as:

- The implementation, utilisation and improvement in e-commerce management systems; and
- The integration of marketing functions with the Internet.

Porter's framework of analysing the integrated value chain was chosen to examine Organisation #A because it a pragmatic approach, which focuses on competitiveness and the role of technology to investigate information flow of business processes.

In conclusion, it was found that analysing the existing and proposed strategies encapsulated in Porter's integrated value chain, and Papazoglou's (2000, 2008) interoperability architectural framework could serve to clarify the need to employ e-commerce applications in identifying advantageous routes to expansion and to increase business opportunities for organisations like Organisation #A.

Limitations and directions for further research

The approach used in this paper is to provide some successful e-commerce implementation strategies to a non-profit organisation. However, the factors that contributed to the success of Organisation #A's e-commerce implementation were compared to those success factors identified in the literature. The result of this study can be easily generalised to other similar organisations – in particular, to Government Non Profit Organisations, in other states and other countries.

The work outlined in this paper may encourage other IS researchers to formulate a conceptual framework that would provide organisations with a set of critical prerequisites necessary for success in the new digital economy.

Finally, it is hoped that this brief introduction of Porter's integrated value chain analysis and Papazoglou's (2000, 2008) interoperability architectural framework, may also help other readers in understanding the significant impact of implementing e-commerce applications on organisations.

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