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Getting Sophisticated with eBusiness: An Extended Model of B2B

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Abstract

This paper reports on research carried out in 1999-2001 on the organisational benefits arising from e-business applications. An interview-based vehicle was used to collect data on a variety of established organisations from a diverse range of industries. The findings are analysed according to the level of sophistication of e-business model providing an extended classification of B2B. Eleven case studies of e-business integration are analysed in the context of this classification. Collectively the set of case studies is used to demonstrate the effects of increasing benefits from higher levels of sophistication of e-business integrating front and back-end systems through a network of e-business enabled organisations.

1. Introduction

According to Forrester Research (2000), industry projections expect the dollar value in online transactions in the B2B and B2C sectors to be \$6.3 billion and \$0.4 billion, by 2004. This implies the ratio of B2B: B2C will have increased to 14:1.

This has significant implications for traditional business with respect to future cost reductions and IT investment in the B2B sector of the economy. Table 1 shows the worldwide estimates for the dollar value of B2B and B2C transactions. Specifically the last column shows the ratio of B2B:B2C as a coarse measure of their relative value to business. B2B was already greater than eleven times the dollar value of B2C transactions for year 2000.

Table 1: Comparison of \$Values for B2B and B2C in Year 2000

Yr 2000	million \$	% B2B	million \$	% B2C	B2B : B2C
North America	468,79	77,6%	40,48	75,9%	11,58
Asia & Pacific	49,89	8,3%	3,81	7,1%	13,09
Western Europe	78,82	13,1%	8,54	16,0%	9,23
Latin America	3,32	0,5%	0,25	0,5%	13,09
Africa & Middle East	2,00	0,3%	0,15	0,3%	13,09
Eastern Europe	0,90	0,1%	0,07	0,1%	13,09
Total	603,72	100,0%	53,31	100,0%	11,32

These figures indicate the major beneficiaries of this e-business infrastructure are business partners (customers and suppliers). Given the growth in B2B this study focused mainly on this sector but included in this definition all inter- and intra-business transactions. This includes Buy and Sell applications with business partners as shown in Figure 1. We refer to these two concepts as B2B^S (supplier chain) and B2B^C (customer chain). Also included was business to employee, referred to as B2E and finally business to end consumer B2C since those organisations displaying the most sophisticated use of B2B typically covered the whole spectrum of e-business activities.

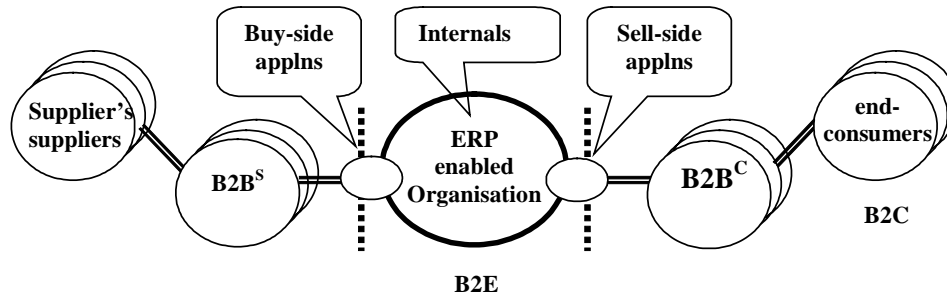


Figure 1: B2B Model of a Single ERP Enabled Organisation for Doing e-Business

This model was used as a general guide to assess the e-business implementation patterns of ERP enabled organisations. The use of ERP enabled organisations allowed us to ensure that our case studies focused on advanced use of ICT to underpin the business and complete front and back-end integration.

The study took place over a two year period and covered 11 organisations worldwide with at least two face-to-face interviews with several interviewees from each organisation supported by document analysis, telephone calls, e-mails and web searches. All cases showed that a staged pattern of change was the preferred transition route to e-business. The early adopters of e-business applications show an initial trend towards realising the benefits from procurement, and self-service applications. For example, *Statoil* expects savings of 30% from a 2b US\$ annual purchases bill; *BioTech* has reduced the time to fill an order from 10 to less than 2 days; *UBS* Banking has derived internal efficiencies from an intranet for the internal organisation of 40,000 employees globally; *Siemens* expects 25% of global sales from its e-shopping mall. Two case studies, of B2B e-business integration with a global computer supplier and its largest corporate customer, are used to demonstrate a more complex business interaction model supported by a network of ERP systems. Collectively the cases show that added benefits arise from an increased level of sophistication of B2B interaction.

2. Selection of Cases

“Embedded” multiple case-study analysis was chosen to investigate the research questions concerning the complex phenomenon of e-business change projects. Embedded approaches enlist the use of multiple units of analysis; (1) the company, (2) the project team, (3) the project (Yin, 1989; Eisenhardt, 1989). This triangulation attempts to validate primary data. The case-studies selection criterion required a major e-business project, which had organisational implications. Also, as the focus was on studying antecedents to organisational performance, a homogeneous set of projects (having similar initiatives) with variance across cases on the outcome measures - cost, responsiveness, flexibility, satisfaction, shareholder value, and other e-business metrics – was required. This enabled ‘theoretical’ replication with contradictory results in order to examine any differences that might exist in antecedents (Yin, 1989). In each case a senior IT project manager was contacted for the purpose of conducting the initial interview. This also identified other managers, team members and users for interview.

The primary questions for the interview are summarised in Table 2. However, it should be noted that the researchers used a structured interview format based on an existing model of e-business change management (Guha et al, 1997).

Table 2: Research Questions Matrix

Question	Data Collection Instrument	Data Analysis
a. How do organisations maximise the benefits from e-business projects?	Semi-structured 1 st interview questionnaire; used Nov 1999	Match case content of each e-business project against B2B interaction.
b. What is the nature of Business models induced by e-business?	Project correspondence with project managers and consultants	Content analysis of qualitative data. Cross-case analysis of benefits and components.
c. Does the increase in B2B interaction deliver increased benefits from e-business?	Public and private company documents; June 1999 - June 2001. 2 nd interview June 2000	Rate the level of benefits against the increased level of B2B interaction

Table 3 summarise the profiles of the case organisations that participated in the study. The findings are presented by the categories of the three interactive business models summarised as:

- Business-to-employee (B2E) to harness the flow/sharing of corporate information, via intranets.
- Business-to-consumer (B2C) to access a 24x7 global consumer base, via the Web.
- Business-to-Business (B2B^S and B2B^C) to support supply chain management between partner organisations.

Within each classification the case findings are presented in order of increasing e-business application sophistication.

Profile of Cases

Table 3: Business-to-Business Cases

**Case Alias	B2B Interaction	B2B:	e-Business Project Title	No. of Users
1. Engineer.com	Intranet access to ERP	B2E prof. engineers	"Employee Tracking Intranet"	~1100 staff
2. Bank.com		B2E all employees	"Employee Networking"	~40,000 employees
3. Society.com	Internet access to ERP	B2E all members	Online Ordering by Members	~60 staff
4. Charity.com	Internet access to ERP by ASP	B2C Citizens	1 st Charity Web site	~35 + 30 employees
5. Biotec.com	ERP to supplier catalogues	B2B ^S	Staff research procurement	~240
6. Pharma.com		B2B ^S , B2E	Sales Order and Rapid Delivery	~22,000
7. Media.com	e-Commerce	B2E, B2Bs	Simple Ordering e-catalogue	~28,000
8. O&Gas.com	Intranet access to ERP data	B2E, B2B ^S	Staff travel procurement	~18,000
9. Employee.gov	Employee orders	B2B ^S , B2E	Simple Ordering e-catalogue	~14,000
10. Comptec.com (cross-divisional)	ERP to customers	B2B ^C	Order Request System extended to an e-Mall of 3 companies	~11,000
11. PCsell.com + Customer.com	Non-ERP to ERP	B2B ^C + B2B ^S	Customised sales integrated with MRO procurement	~27,000 ~14,000

3. Findings

3.1 Findings for B2E Cases

The cases profiled in Table 4 demonstrate the use of e-business intranet applications. This category of application links a company's ERP data to the Web to provide access for all employee to corporate data 24x7. Typically, it represents the earliest stage of e-ERP implementations. Motivation for these developments is cost and efficiency based offering significant benefits from networking employees. The cases are presented in order of increasing e-ERP sophistication but decreasing information management and reporting.

Table 4: Business-to-Employee Cases

B2E Interaction	**Case Alias	B2E	e-Business example	No. of Users
Intranet access to ERP	1. Engineer.com	Managers & engineers	Mgt reporting and tracking of skilled contractors	~1100 staff
	2. Bank.com	All employees	Networking of employees across very large bank	40,000 bank employees

** 2 Large companies with increasing level of employee access 24x7 to personnel data

The B2E model of a Single ERP to Employee Intranet, is illustrated by Figure 2.

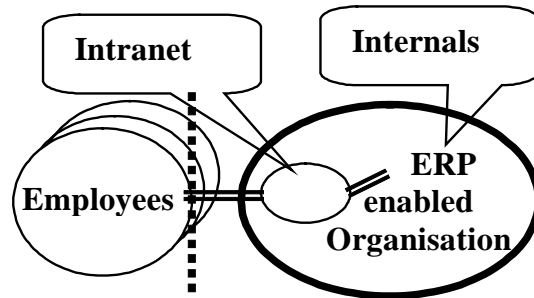


Figure 2: B2E Model of an ERP Enabled Organisation for Employee Self Service

3.2 B2E Employee Self Service for an Improved Quality of Work Life

Two large established organisations in different industries implemented organisational intranets that combined with their SAP R/3 business processes. These solutions were easy to deploy while offering significant benefits from networking employees and the management of corporate information.

Bank.com implemented the SAP Internet solution for internal address management. It covers all organisational information within the bank and is the most-used Web application, available for all 45,000 employees, with 300,000 transaction calls per day. It implemented its own Intranet integrated with R/3 to facilitate the networking of the staff in preparation of e-business. ‘This is a generic office management solution, not a Banking industry solution, to save time and paper for the distribution of staff information’. It offers transparent access to important policy manuals and procedure documents across all departments. ‘It also offers collective use of many functions’ (Perez et al. 1999: 49).

Engineer.com staff developed an in-house Web initiative that allows access to R/3 personnel data. It is a specific example of a HR Intranet application to improve

personnel management in Oil and Gas construction projects. The application has proven to be a major tool for supporting decision making towards minimising offshore labour costs of skilled agency workers in offshore projects. With the aid of computer graphics this Intranet system provides a simple “walk-up” user interface for casual users, including project managers who have little or no training on the use of the R/3 HR module. It has been expanded to include a computer hardware tracking system.

To *maximise the benefits*:

- A recognition that the inspiration of employee self-service applications comes from key users.
- This requires concerted corporate focus.
 - A recognition to create the Intranet system as a ‘learning system’.
 - Managers and IT staff must learn together (fast) to seek new business models.

To *minimise the barriers*:

- The design of intranet interfaces has to accommodate least trained employees.
- The design of the Web interface must enable users to be more efficient than other means.

In summary by allowing employees appropriate access to core systems:

- (i) The managers in the *Engineer.com* case were able to **reduce costs**.
- (ii) The employees in the *Bank.com* case were able to benefit from **efficient service**.
- (iii) In both cases the e-business applications provided collective use of many functions or “**shared services**” across certain groups (Perez et al. 1999: 49).

Finally, in maximising the benefits and minimising the barriers, stimulating **employee self-service** is critical.

3.3 Findings from B2C Cases

The cases profiled in Table 5 demonstrate the use of an e-business ‘sell-side’ application. This category of application links a company’s ERP catalogues and ordering processes to the Web, eg SAP’s “Online Store”. It represents a primary stage of an e-business implementation. The motivation for these developments or business driver is cost reductions and customised products from B2C interaction. The cases are presented in order of increasing e-ERP sophistication.

Table 5: Business-to-Consumer (B2C) Cases

B2C Interaction	*Case Alias	Consumers	e-Business example	No. of Users
Internet access to ERP	3. Society.com	Members	e-Shopfront for wines sales and services to registered members.	~60 staff
Internet access to ERP by ASP	4. Charity.com	Citizens & corporate	1 st Australian charity Web site for sales of greetings cards etc.	~65 employees

* 2 SMEs with consumer access (24x7) to R/3 sales catalogues and order data, decreasing level of ownership

Two models for B2C interaction a single ERP enabled organisation, are illustrated in Figures 3 and 4.

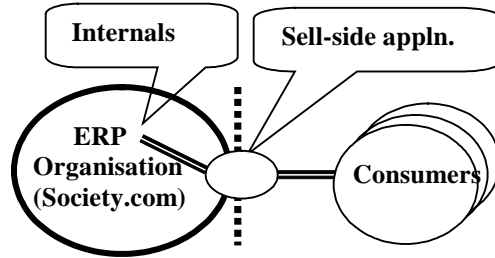


Figure 3: B2C Model of a Single ERP Enabled Organisation for Consumers

3.4 B2C Online Store for Improved Access to Customised Products and Services

Using SAP’s suite of e-business applications, *Society.com* was able to move its mail order business in a greater variety of directions without having to re-engineer its business processes; eg any time, anywhere. From the feedback through the website of 20 to 30 emails per day, ‘we are beginning to understand what our members want’, - ‘although we have not yet delivered this’. In addition, some technical issues were encountered; eg the lack of available business application interfaces from SAP.

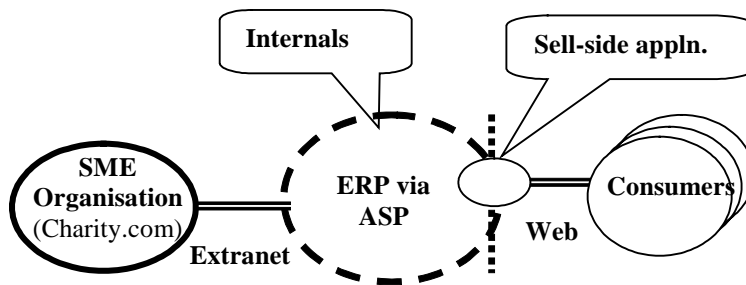


Figure 4: B2C Model of an ASP Hosting e-Business for Consumer Sales

During 1999-2000 *Charity.org* an Australian division of a global organisation pioneered a B2C 'Online Donations Facility'. This was achieved by outsourcing its total IT support, to an "application service provider" (ASP). This infrastructure provided a fully an integrated business administrative solution for the organisation's existing Web site, for the online sales of gift cards. It allowed for an improved product range (online), and a new business image. But 'how do we let people know we have a web presence?' Some technical issues remain with matching business processes with ERP.

To maximise benefits

- Be more pro-active by making the web site enjoyable.
- Utilise synergy between industry networks, email lists, web links,
- Capability on the web site to improve the product education.
- Improve publicity via emails and online catalogues.

To minimise barriers

Tackle all unresolved basic business issues (inefficient and ineffective processes within the e-business system). Eg Improve the tracking of orders as well as resolve out-of-stock procedures.

Take charge of the ethical issues in credit taken from members before stock is processed.

Communication between branches is an issue and must be addressed.

Empower staff in customer care.

In summary by allowing consumers appropriate access to core systems:

- (i) *Charity.com* was able to **reduce costs** in its business admin and high cost of e-ERP ownership by application hosting from an ASP.
- (ii) In both cases the e-ERP solutions enabled the organisations to benefit from **revenue generation**.
- (iii) The customers in the *Charity.com* case were able to benefit from **efficient service**.

(iv) In both cases the e-business applications offers collective use of many functions or “**shared services**” across certain groups (Perez et al. 1999: 49).

Finally, the two cases represent a new approach towards revenue generation. For maximising the benefits and minimising the barriers, stimulating **customer and employee self-service** is critical.

3.5 Findings for B2B: B2B^S and B2B^C Cases

The cases profiled in Table 6 demonstrate the use of e-business ‘buy-side’ applications. This category of application links a company’s ERP purchasing processes to a supplier’s catalogues, eg SAP “B2B Procurement”. Typically it represents a second stage of an e-business implementation. The motivation or business driver for these developments is cost reduction and efficiency gains with improved service and product image, from B2B^S interaction. The cases are presented in order of increasing e-business sophistication and integration with B2E.

Table 6: Business-to-Supplier B2Bs

B2B Interaction	***Case Alias	B2B Sub-class	e-Business example	No. of Users
ERP to supplier catalogues, and with Intranet access to ERP	5. Biotech.com,	B2Bs	e-Procurement of bio-chemicals and pharmaceutical items for core bus.	~240
	6. Pharma.com	B2Bs		~22,000
	7. O&Gas.com	B2E, B2Bs	e-Procurement as first stage of B2Bs and e-Marketplace	~18,000
	8. Media.com	B2Bs, B2E		~28,000
	9. Employee.gov	B2Bs, B2E	e-Procurement + HR timesheets	~14,000

*** 5 Cases representing 4 industries, ordered by increasing level of B2S interaction with B2e

The B2Bs model for a single ERP enabled organisation, is illustrated by Figure 5.

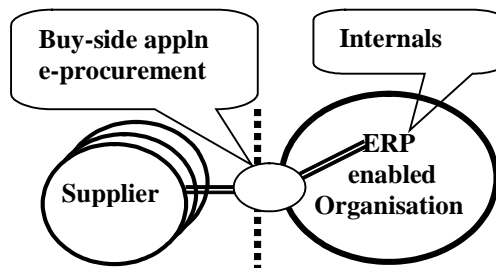


Figure 5: B2Bs Model of e-Procurement from Suppliers

3.6 B2Bs e-Procurement for Shorter Lead Times and Lower Costs

The cases in Table 6 are implementations of desktop procurement systems (DPS) designed for the non-professional procurement staff (Segev et al. 2001). The focus is an indirect procurement function that includes maintenance, repair, and operating (MRO) supplies. It brings into play the issue of employee self service (ESS) that includes retraining for this change in roles.

With SAP B2B Procurement e-business solution, *Biotec* reported that 'lead times to fill an order were shaved down from four to just one day – from the point in time when an employee identifies an order, to actual delivery'. Having achieved shorter lead times, *Biotec* no longer needs to keep large stocks of materials, so expenditures are down and cash flow is healthier. Indeed, the company expects to save between ten and fifteen percent of the cost of purchasing materials.

Another goal of the business-to-business project was to build more long-term links with preferred vendors. So far, *Biotec* has identified three such vendors. Their Internet sites were linked into the SAP procurement system, allowing *Biotech* staff to use e-procurement on the company's own intranet and to purchase from both the internal catalogue and external online catalogues. This was made possible by a specially developed open catalogue interface.

The procurement department already attributes one major success to its new procurement process: It has been able to increase the discounts previously offered by its three preferred vendors a further five percent (15% overall). But the benefits are by no means all one-sided. B2B Procurement gives vendors plenty of opportunities, such as direct ordering. All three companies believe future benefits will come from industry portals, eg Chems, O&Gas marketplaces.

The B2B procurement software, enabled *O&Gas.com* the world's largest supplier of crude oil to reduce its purchasing costs and gain an important competitive advantage. *O&Gas* processes more than 350,000 invoices annually, and awards over 40,000 contracts. The company expects a considerable improvement in the ratio of invoices to orders as well as a tangible contribution to revenue. The SAP software will allow approximately 18,000 *O&Gas* employees direct access to Internet catalogues from which they can select material as they require it, freeing resources in the oil concern's purchasing department for strategic tasks.

A leader in media sales and services world wide, *Media.com* implemented e-business Internet solutions to enable it 'to further leverage its investment in its SAP system by extending the functionality of the R/3 system to casual users'. This global integration strategy by networking the enterprise is viewed as 'e-business survival'. A change management team was commissioned to achieve this end. The numerous requests from various profit centres within the group for similar solutions showed a high level of acceptance from the user communities.

A major recruitment and employee services company, *Employee.com* implemented a full e-business suite of employee self-service applications. This was used to network more than 1,400 employees in more than 200 offices, countrywide. It

included an employee purchasing solution, 'expect to realise considerable cost savings in our purchasing and human resources organisations over the next several years.' It helped reduce administration tasks and paper (eg filling in forms, distribution of management information).

To maximise the benefits:

- Roll-out of the e-business solutions needs to be achieved very quickly for ROI.
- Also, there needs to be 'full cooperation between industry partners'. 'Increase the availability of supplier catalogues. Collaboration between suppliers, to standardise item numbers in catalogues. Further, 'it is only with content that you gain a win-win, eg industry catalogues. This implies the importance of the B2B value chain.
- Finally, to make use of B2B industry portal requires 'organisational culture readiness'.

To minimise the barriers:

- The procurement applications need to be much more user friendly. Easier linking of ERP data to Internet with a greater variety of BAPIs. 'We need to understand the environmental factors including IT infrastructure.'
- Corporate paranoia is in the minds of managers and consultants. Change management needs to be addressed and practiced, eg resistance to change, as most suggestions were concerned with technical or more practical issues.
- In the future, all three organisations believe their ERP technology will play an integral part in helping these established enterprises build and operate online business-to-business models. In particular, the B2B e-procurement developments could lead to industry specific or private e-marketplaces. This appears to have been provoked by an IT driven project mindset.

In summary by allowing employees appropriate access to purchasing systems:

- (i) *Biotec and O&Gas* were able to **reduce costs** in purchasing and lower inventory through; standardised catalogues, standardised vendor interfaces, open catalogue interface will enable sharing of profits between companies and their preferred vendors.
- (ii) *O&Gas* procurement solutions enabled the organisations to benefit from **revenue generation**.
- (iii) In all cases the e-ERP solutions enabled the organisations to benefit from **process improvement**.
- (iv) The employees in all cases were able to benefit from **efficient service**.
- (v) In all cases the e-Procurement applications offered collective use of many functions or "**shared services**" across groups.

Finally, the two cases represent a new approach towards cost reductions for both partners. In maximising the benefits and minimising the barriers, the focus has

moved beyond harnessing **employee self-service** issues to major change in the **quality of work life**.

3.7 B2B^C Interaction

The cases profiled in Table 7 demonstrate the use of an e-business ‘sell-side’ application. This category of e-business applications links a company’s ERP catalogues and ordering processes to an intelligent Web site, eg SAP’s Online Store. It represents a second or third stage of an e-business implementation. The motivation for these developments or business driver is optimisation of order processes, cost reductions and customisation of products and services.

Table 7: Business-to-Customers B2B^C

B2B (level)	Interaction	***Case Alias	B2B class	Sub-	e-Business example	No. of Users
ERP to customers		10a. Comptec.com (cross-divisional)	B2B ^C		e-Sales across a global network of divisions, within a conglomerate	~11000
Multiple ERP to customers		10b. Comptec.com plus 2 Divisions	B2B ^C		e-Mall of 3 e-Sales divisions across a global network	~11000

*** 2 Cases representing 1 industry, ordered by increasing level of B2B interaction

Comptec has its own ERP solutions for sell-side’ systems: The SAP-based **Order and Request System** (ORS) was developed by the parent company’s Business Services group (SBS), and has been deployed in eight European countries. The system was developed to optimise processes between Comptec and other divisions and institutional customers (Figure 6).

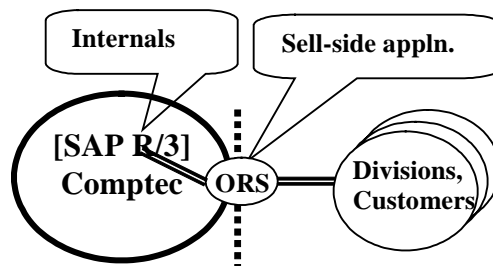


Figure 6: B2B^C Model of an e-Shopfront for Corporate Customers

Comptec’s business revolves around independent partners known as *valued-added* resellers and *key accounts*. In the past, system orders from partners were taken over the phone or in writing and then typed manually into the ERP system. To make ordering faster and more secure, partners now submit their orders to Comptec fully

electronically via the Internet. During the main periods of access (from 11 am to 4 pm), an average of one sales order with 6.5 items is received every 30 seconds and an average of 600 order tracking requests. In parallel to its release at *Comptec* in Germany, the ORS was rolled out on an international scale. Already it has been deployed in England, France, and Italy, and in early 2000 Austria, Belgium, Spain and Switzerland followed.

B2B^C Interaction divisional for improved sales efficiency and reliability, and customer services

For *Comptec.com*, the effect of integrating ERP systems with the Internet greatly improved efficiency aspects of B2Bc sales side. By November 1999, some 80% of orders from 2200 key accounts throughout Germany were handled by ORS. Also, there was reasonable acceptance by the end-users, with less order errors aided by the reliability of the data.

IT was the main driver in this “sell-side” B2B implementation. In addition to standard features such as the ability to browse a catalogue, collect items in a shopping cart, and place an order, ORS provides the following capabilities:

- Premium pages; the user’s specific list of commonly purchased items.
- Order Tracking; the ability to follow the progress of an order.
- Document Tracking; an extension to Order Tracking, which allows the electronic documents to be viewed.
- Help Facility; with information on setup, FAQs and a Help Wizard.
- News Forum; for announcements and customer debate.
- Download page; additional tools and documentation.
- News channel; Notification of events, as chosen by the customer.

Comptec summarise the benefits they and their partner received as shown in Table 8.

Table 8: Integrated Enterprise Systems Benefits Scorecard

Comptec Benefits	Partner Benefits
<ul style="list-style-type: none"> • Presentation of configurable products on the Internet • Ordering times optimised through online connection • Incorrect orders reduced to minimum • Shorter and therefore faster ordering times • Information management 	<ul style="list-style-type: none"> • Available 24 hours a day, 7 days/wk. • Simpler ordering, resulting in savings in cost and time • Automatic online information on order changes and delivery notifications • Tracking of orders at any time

3.8 e-Mall as B2B^C Interaction of a Seller Group with Customers

'e-Mall' is an Internet marketplace for a group of companies to sell their products and services to their business customers. The system architecture has the capability to connect and interact with a range of *Buyer* company's ERP systems.

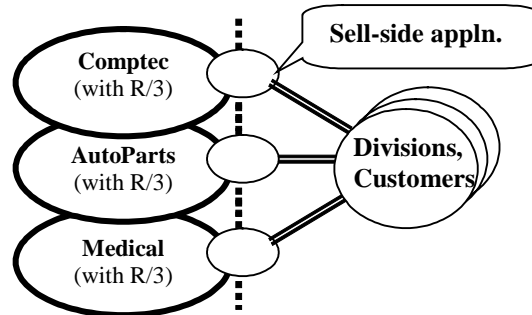


Figure 7: e-Mall as a Group of B2B^C e-Storefront for Customers

By June 2000, the company's e-Mall had progressed to version 2 with three companies; *Comptec*, *AutoParts*, *Medical*. The intended benefits of e-Mall flow from the streamlining of 'sell-side' business processes:

- Partner group specific product presentation;
- Integration of Group's products/materials systems;
- "One face" to the customer;
- Sales presence 24x7 and world-wide.
- Empower customers when ordering from efficiency to effectiveness using the visual more visual power and up-to-date power of the Web.
- Empowering customers (members) through the development of an e-community.

In maximising the benefits and minimising the barriers, the focus has moved beyond **customer self-service** issues to **customer care**.

3.9 B2B^S and B2B^C Integration Between a Supplier's and Customer's ERP

The cases profiled in Table 9 demonstrate the integration of two e-business applications. This category of application links a supplier's 'sell-side' application and customer's 'buy-side' application with ERP via the Internet, eg SAP 'Online

Store' with SAP 'B2B Procurement'. It represents a mature stage of an e-business implementation. The motivation for these developments or business driver is cost reductions and customised products from B2Bc interaction. The case represents the most simple form of a private e-Marketplace.

Table 9: Cases of B2BS with B2BC

Case Alias	Country	B2B class	Project Title	Users
10c. Comptec.com (linked to) SAP.com	Netherland Germany	B2B ^C with B2B ^S	Order Request System integration with ERP B2B Procurement	~40,000
11. PCsell.com linked to Customer.com	USA USA	B2B ^C + B2B ^S	Customised sales integration with Staff MRO procurement	~27,000 ~14,000

3.10 B2B Integration of ERP between Two Organisations for Complementary Benefits

SAP and *Comptec* have been conducting e-business since December 1999 in a point-to-point Internet buying and selling solution. They have implemented an all-SAP sell-side system called Order & Request System (ORS) which is based on the "SAP Online Store" Internet application components (IAC) with extensions. The solution links the SAP B2B Procurement solution to Comptec's ORS via the Internet; the implementation of the Order and Request System is realized through Comptec's Business Services.

The B2B^S + B2B^C model for the integration of Customer and Supplier ERPs, is illustrated by Figure 8.

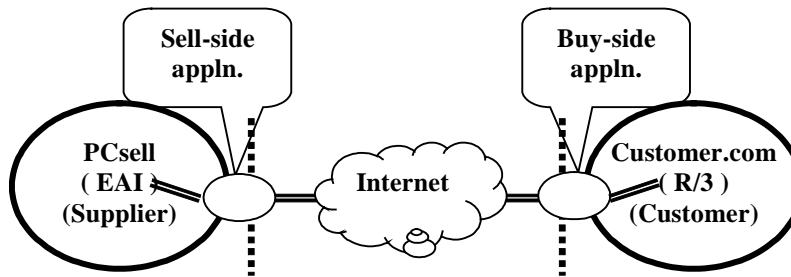


Figure. 8: B2B Model for Case 11: Supplier Linked to a Customer

3.11 B2B Integration of ERP between Two Organisations for Complementary Benefits

In 2000 *PCsell* pioneered its first business-to-business ‘B2B e-Business Integration’ with one of its largest customers (*Customer.com*). This case illustrates a first stage system architecture migrating to inter-enterprise computing. In this example, the integration of the system architecture is made possible through a variety of ‘back-end’, ‘sell-side’ and ‘buy-side’ systems.

Customer.com was able to leverage its existing SAP ‘back-end’ system and SAP Business Connector (powered webMethods technology) to communicate directly with *PCsell*’s component-based e-business system. This integration automates the e-procurement of all computer products via the Internet.

3.12 Performance Gains

However, within the issue of performance gains, improved customer response and an expanding customer base were seen as most significant. As a measure of its success and acceptance, this e-business solution is expected to include the B2B e-procurement of office equipment and supplies. Table 10 shows the similarity of the expected benefits from two different business networks.

Table 10: Integrated Enterprise Systems Benefits Scorecard

PCsell.com Benefits	Customer.com Benefits
<ul style="list-style-type: none"> • Presentation of configurable products on the Internet • Control and standardize procurement process • Increase order accuracy and efficiency • Reduced order cycle times • Provides a model for use with all customers with ERP systems 	<ul style="list-style-type: none"> • Available 24 hours a day, 7 days/wk. • Simpler ordering, resulting in savings in cost and time • Automatic online information on order changes and delivery acknowledgements • Extend existing infrastructure to the web for use by all our suppliers

The performance gains for e-procurement were achieved from two sources; 25% cost savings, and reduced cycle time from 2 weeks to 2 days, and access to (real-time) customer data via ERP technology. The project enabled efficiency gains from minimising of delays in customer orders, and effectiveness gains from optimising employee/staff time. For example; fewer complaints, improved management of the customer, increase to 50% with online orders (sales), and a growth in corporate sale of 45%. Also, online access to real-time data for deciding on the optimal employee

orders. The cost savings through operational efficiencies of all equipment resourcing, compare favourably to those cost savings (efficiencies) in other e-procurement case studies. In the *Biotech.com* case study, the gains appear to be less; 20% cost savings, and reduced cycle time from 2 weeks to 4 days. However, improvements for staff 'quality of work life' appear the same.

In maximising the benefits and minimising the barriers, the focus has move beyond **self-service and care** issues to **customer and employee empowerment** (Markus et al, 2000):

- Empower customers with more effective and efficient ordering using the more visual and up-to-date power of the Web.
- Empowering customers through the development of an e-community.
- Empowering employees with decision-making skills

4. Summary of Findings

The findings are analysed according to the stages of sophistication of the e-business interaction models. Collectively they demonstrate that greater benefits flow from increased level of e-business interaction. Figure 9 is developed as a conceptual model to bring together the key elements and their relationships of this study into e-business interaction (Ash and Rossouw, (1999). This model illustrates how change in industry practices and e-ERP developments relate to the B2E and the B2B sub-models; B2B^S and B2B^C. It identifies that there is an accelerated symbiotic relationship between e-business technologies and business improvement caused by a shift in customer demand. The arrows connecting customers, employees, suppliers indicate the business interactions through self-service, care and empowerment.

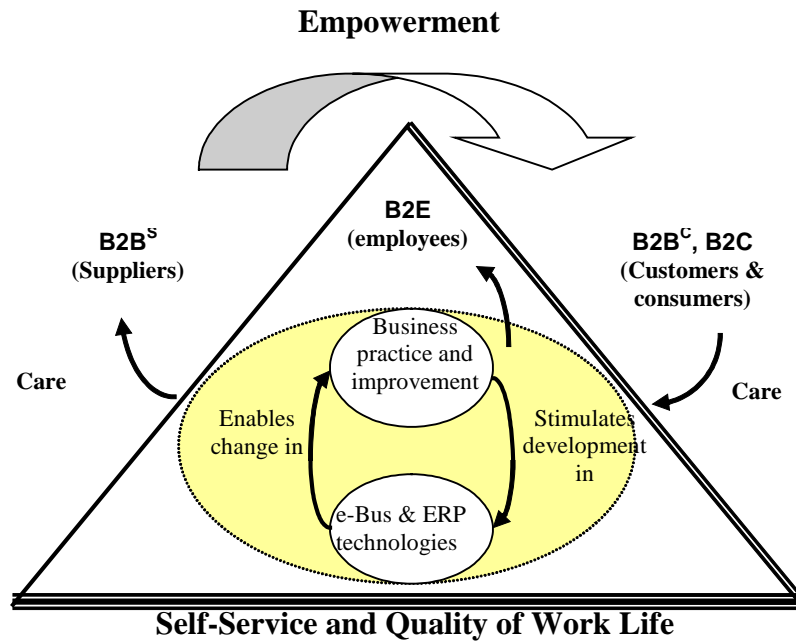


Figure 9: The Benefits Cycle from Staged Growth of e-Business

5. Conclusions

The early adopters of e-business applications show a trend towards realizing benefits from e-procurement and self-service applications, for customers and employees. Standardisation of both business processes and vendor catalogues is a way to drive cost reductions in supply chain management. Two cases of B2B e-business integration with a global computer supplier and its largest corporate customer are analysed in the context of a more complex model. The cases demonstrate the integration of ERP and non-ERP systems, using Web-based technologies, to provide the infrastructure required to optimise the overall B2B value chain. Also, the study is used to emphasize the synergistic benefit stream from B2B integration, the interaction of inter-organisation e-business solutions.

The overall findings from the set of e-business cases demonstrate that three stages of the business interaction model (B2E, B2C and B2B^S with B2B^C) provide a framework for studying e-business benefits. These three stages typically progress through three levels of benefits: **self-service, quality of work life and care, and empowerment**. While this research found an important role for ERP in support of e-business, the message from these case studies is that the business model should drive an e-business implementation, not the technology (Fan et al, 2000).

More recently, organisations that have begun to undertake e-business initiatives to meet strategic goals, recognise that they will only accomplish their objectives through people. Therefore placing importance on improving the quality of work-life issues. If effectively managed, employees should ultimately be more productive in their work tasks and better able to serve customers, suppliers, and business partners. The key performance improvements issues are; efficient company resourcing, quality of employee work life, and customer satisfaction (Venkatraman et al. 1998).

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