Business to Business E-Commerce Case Study

Transport and Logistics – Australia

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Introduction

This case study outlines the impact of business to business e-commerce in the crucial transport and logistics sector of the Australian economy. The Australian Government is actively facilitating e-commerce uptake in this sector in partnership with industry. This paper briefly outlines:

- the role of the Government’s chief body for information economy matters;
- why there is a concern over e-commerce uptake in the transport and logistics sector;
- projects aimed at facilitating the uptake of business to business e-commerce in road and rail freight;
- examples of important business to business e-commerce links between transport and other sectors such as retail and health; and
- finally the relationship of this work on business to business e-commerce in the transport sector with broader research on economic impacts of e-commerce in the Australian economy.

The National Office for the Information Economy

The National Office for the Information Economy (NOIE) is Australia’s leading Federal body for information economy issues. It comes under the ambit of the Federal Department of Communications, Information Technology and the Arts, reporting to the Australian Minister for Communications, Information Technology and the Arts, Senator Richard Alston.

NOIE’s role is to help ensure an integrated policy to enable Australia’s full participation in the information economy. NOIE is tasked to raise public awareness and stimulate thought and discussion about the benefits and issues involved in the transition to an information economy.


Approach to Electronic Commerce Uptake

For the purposes of this paper, electronic commerce (otherwise referred to as e-commerce) covers every type of business transaction in which the participants (ie. suppliers, end users etc.) prepare or transact business or conduct their trade in goods or services electronically. The scope of e-commerce is wide, covering all forms of electronic processes. Online technologies are the most significant facets of e-commerce and include Internet retailing, Electronic Data Interchange, Internet banking, electronic settlements and browsing and selection of products and services over the Internet.
E-Commerce is not new and is taken for granted through current high usage in Australia of EFTPOS (Electronic Funds Transfer at Point of Sale) in retail transactions and Automatic Teller Machines. What is new is the emergence of Internet commerce, which is the great leveller as it enables the benefits of e-commerce to be more widely available through industry and the economy, especially to the large numbers of Australia’s smaller firms.

The Australian Government promotes e-commerce as a key business issue rather than an information technology issue. It is just one tool that should be carefully integrated into any business strategy and is not the sole domain of information technology departments of firms.

While there is considerable publicity around business to consumer e-commerce, the key area of action for Australia is in business to business transactions. Higher rates of uptake in these transactions carry considerable benefits for Australian business in terms of lower costs, increased cashflow and other supply chain management efficiencies. This is reflected in NOIE’s strategic approach and priorities to increasing the uptake of e-commerce in Australia, in particular the emphasis on maximising the efficiency dividend from e-commerce for the economy at large. These priorities are outlined below.

1. Establishing the environment conducive to the widespread adoption of e-commerce
   Initiatives are being pursued to ensure a balanced and predictable legal and regulatory environment for e-commerce. Also, Australia seeks to participate in a range of international fora such as the OECD and APEC.

2. Demonstrating the business case
   Demonstrating the business case is the next step beyond initial awareness raising activities conducted last year to educate business and consumers of the benefits of doing business electronically. The Federal Government is partnering with industry and State governments in Australia across a range of collaborative projects designed to provide business solutions.

3. Targeting barriers to the development of e-commerce
   Barriers, such as bandwidth capacity and the impact of incompatible information technology systems on business efficiencies, are being addressed to stimulate the growth of business-to-business e-commerce.

4. Maximising the efficiency dividend from e-commerce for the economy at large
   The Government is partnering with industry to ensure widespread returns from e-commerce uptake are maximised throughout the economy in areas such as exemplar supply chain management models and key enabling business-to-business e-commerce projects. In addition, the Government is developing business friendly e-commerce systems to improve the efficiency and quality of service to the community and industry.
Why Transport and Logistics?

Australia maintains one of the most extensive road networks in the world, in one of the most challenging environments. For each kilometre of road in Australia, there are approximately 23 people. This compares with 41 in the United States, 110 in Japan and 1123 in China. This dramatically illustrates the high priority of efficiently running this sector. Also, the total freight task in Australia has grown significantly over the last twenty years. In the period 1973-93, the overall number of tonne-kilometres annually undertaken has risen from 166.1 billion to 289.9 billion. Road freight as a proportion of total freight has almost doubled from 18 per cent to 34 per cent.

Therefore, transport and logistics has been identified as a key sector of the Australian economy in which to facilitate business to business e-commerce for a number of critical reasons identified below.

Importance to the broader Australian economy

The transport industry provides the logistical operations for Australian business through the movement of goods in the supply chain and to market. These key horizontal linkages across the economy mean that transport makes a significant contribution to the Gross Domestic Product. Its direct contribution alone is 6 per cent. Transport activities underpin the effectiveness of hundreds of thousands of small businesses in Australia –

- it is a sector that cannot be disintermediated in the supply chain for goods;
- it accounts for a high proportion of transaction costs; and
- its adoption of e-commerce is likely to drive e-commerce uptake in the many sectors it services (such as manufacturing and tourism) with consequent benefits for those sectors.

Importance to Australia’s export sector

The efficient transport of goods also has a direct effect on the export sector and Australia’s national income levels. Austrade (the Australian Government’s export and investment facilitation agency) have identified the inefficiencies in Australia’s freight distribution as one of the most significant impediments to the export of goods¹.

Clearly if Australia’s rural and regional exporters are to remain internationally competitive it will be necessary for the logistical operations of this business to improve. For example, transport is crucial in ensuring that agri-food exports arrive at their markets on time and in the best condition. Increased use of e-commerce is crucial in promoting efficient and effective logistical operations throughout all elements of the supply chain.

¹ Department of Foreign Affairs and Trade, Submission to the House of Representatives Standing Committee into Rural and Regional Infrastructure, April 1999.
Road transport plays a crucial role in bringing exports to market, especially for rural and regional Australia.

**Incompatibility of proprietary information technology systems**

The use of ‘on-forwarding’ in Australian freight transport, where several carriers may be used to move goods from origin to destination is a source of inefficient intra-modal and inter-modal links that adversely affect the efficient delivery of goods to market. The use of proprietary information technology systems exacerbates these inefficiencies and results in barriers to the widespread utilisation of technology. Internet-based electronic business systems could fundamentally alter the way the transport sector operates in Australia by addressing these inefficiencies.

**Industry dominated by many small players**

Unpublished data from the Australian Bureau of Statistics indicate that the road transport industry in Australia is dominated by a large number of single owner-operator businesses. Around 72 per cent of operators are running a single vehicle, while an additional 17 per cent operate only two vehicles. Most of these operators have not embraced e-commerce in the form of electronic data interchange (EDI) because of the expense and system complexity. Internet commerce, therefore, provides a relatively simple and cost-effective solution for the bulk of Australia’s road freight operators.

**Low access, high potential**

Recent surveys of Australian business use of information technology by the Australian Bureau of Statistics and Telstra Corporation Limited have found that the transport sector is amongst the lowest users of Internet commerce, yet has significant potential to conduct business electronically.

Against this background of the importance of the transport sector to the Australian economy a number of projects are underway to maximise the efficiency dividend from business-to-business e-commerce in this sector.

**Road Freight Transport Project**

Common technologies relevant to e-commerce in the road transport industry are mobile phones, faxes, computers, EDI, the Internet, global positioning system (GPS) and satellite navigation, barcodes and on-board weighing. Commonly used transport and trading documents, for supply, distribution and logistics management, are purchase / sales orders, dispatch advice, transport instructions, advance notice of delivery, transport status, goods receiving notices, invoices and remittance advices. These processes are illustrated in Figure 1.

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2 Australian Bureau of Statistics, Business Use of Information Technology 1997-98 (Cat. No.8133.0)

3 Telstra Corporation Ltd., Yellow Pages Small Business Index, May 1999.
Trucks online

The Trucks Online project was completed in 1998 with the release of a report for the road transport industry (http://www.noie.gov.au/downloads/domedi.pdf). This project established the standards for the development of an e-commerce system for the transport sector based on standard messaging and labelling systems for companies wishing to manage logistics and information in an EDI environment. By exchanging information between logistics providers and their customers electronically, physical goods movement processes can be monitored and managed and paperwork can be reduced or eliminated.

These processes are illustrated in Figure 2.

The technology components for effective implementation of these standards in EDI environments include EAN structure and application identifiers; bar code technology; and fixed-bed or mobile scanners to read and interpret bar-codes.

Typical results of this implementation of business to business e-commerce are:
- inventory reductions;
- improved and more efficient capacity utilisation of assets and warehouses;
- timely delivery of goods;
- reduction in processing errors; and
- lower administrative overheads.

Figure 2: Road Freight Transport – information exchange
The uptake of EDI in transport has been haphazard and slow principally because of the absence of standards. The Trucks Online project has provided guidelines, in conjunction with EAN Australia, for standard labelling and numbering. Several larger road carriers have subsequently implemented these standards.

National road transport scoping study

Qualitative research with key road transport operators has found that, as the majority of road transport companies are small enterprises, they are mostly incapable of doing e-commerce, particularly expensive and cumbersome EDI. Therefore a project has commenced, which will use qualitative and survey research to scope:

- the current use of e-commerce in road transport;
- opportunities to use e-commerce;
- impediments to greater use; and
- a cost-benefit analysis of e-commerce in road transport.

The study, to be available by late June 1999, will provide a basis for developing further action to increase the uptake of business to business e-commerce, particularly amongst smaller operators in the transport industry.
The study will also examine the interactions between trucking companies and:

- customers of transport services, including loading and unloading points, contractors, expediters and end-customers;
- operators of other transport modes, such as rail, sea and air;
- suppliers, such as fuel companies; and
- regulatory bodies at all levels of government.

Rail Freight Transport Project

The Railhub project will enable rail carriers and their business customers (as well as other contractors such as marine terminals, consolidators and container storage yards) to exchange information about equipment and cargo in a managed Internet environment. The Railhub project is initially being run as a pilot in New South Wales (the most populated of Australia’s eight jurisdictions) and is jointly funded by NOIE and FreightCorp (New South Wales’ rail freight carrier). It has been designed with the intention of making services available throughout Australia, providing a single community-based information service for users and providers of rail freight transport.

Online access for small business

RailHub will deliver online access to small enterprises to enable the booking, receipt and dispatch of rail consignments, and reporting the status of their movement (‘consignment tracking’). As such it will significantly streamline paperwork associated with the movement of goods, gradually revolutionising the current ways of doing business to the benefit of all players in the trading chain. In other words, it is aimed at constructing a comprehensive Internet-based ‘one stop shop’ for small traders, as well as many smaller forwarders, consolidators and other contractors.

The message switching hub

RailHub is a means of delivering a ‘window’ to the transport process for small users - particularly regional exporters – to speed the movement of goods and improve the ability to respond to overseas customer requirements, both in terms of physical delivery and provision of consignment information.

To achieve this, the project will establish a ‘hub’ through which all business-to-business messaging exchanged by transport operators and other contractors in relation to rail cargo will be channelled. The Hub will provide an interoperability solution for business to business e-commerce. The Hub will:

- assume management of complex ‘many-to-many’ trading partner relationships, allowing a single user to send one message to the Hub and have it delivered to all interested parties in whatever format the receiving party requires;
- accept data into the Hub via a Web interface, and translate this data into the format (message or Web screen) that receiving parties require;
• translate data received in a variety of formats from a variety of sources and deliver it to smaller users via a Web interface; and
• log and track messaging transactions between all participants, providing greater audit control including acknowledgment and ‘proof of delivery’.

Proof-of-concept pilots found that a Hub is an essential component of any complex ‘many-to-many’ Internet trading environment and can perform the above tasks without detracting from message transit times.

The RailHub service will feature a ‘human interface’ on the Internet in the form of user software and ultimately a website attached to the Message Switching Hub, presenting a number of screens to enable small rail customers to participate in the exchange of electronic information. Initially, this will be screens enabling receipt and display of inbound Train Consists (for approaching trains), editing and transmission of outbound Train Consists (for departing trains).

Neutral community-based management

An important aspect of this project is the management by a neutral community-based facilitator - Tradegate ECA (http://www.tradegate.org.au). Surveys of FreightCorp clients conducted in 1998 uncovered a strong reluctance to use ‘yet another’ service, and showed support for the establishment of an independent service delivering a ‘window’ to a variety of services - not just rail but also road and sea transport.

Benefits

RailHub will deliver benefits to a large number of players who rely on the transport sector.

Benefits for Rail Users (Import, Export and Domestic)

• Improved documentation accuracy and cost savings in document checking
• Cost savings by minimised rekeying of data
• Timely documentation; better control over the transport process leading to improved customer service
• Centralised coordination of documentation assisting with better controls and tracking of the process

Benefits for Carriers and Other Contractors

• Receipt of electronic instructions from all clients
• Replacement of handwritten documents (bookings, train consists etc) with electronic data
• Cost savings due to elimination of multiple data entry keying
• Cost savings due to centralised processing of documentation
• Improved customer service due to faster and more accurate turnaround
• More automated processing of cargo throughout the transport chain
• Faster transport processing at entry to regional depots, terminals and wharves
• Reduced errors in documentation of receivals

Timetable

Development of the Railhub project is planned in two phases:

Phase 1 – train consist

This phase will bring the Train Consist message online for the use of small shippers and consolidators. RailHub aims to provide message switching and web screen services to support the automation of Train Consists on a prime supply corridor between Sydney and a country centre from June 1999 onwards, with other corridors to follow.

The first half of this phase was completed in January 1999 and the detailed technical specification completed in April 1999. Development of software to generate Train Consists and installation of the switching hub, as a production service, will be complete by August 1999.

Phase 2 – enhancements

This phase will develop any enhanced services and build on the infrastructure put in place during Phase 1. Possibilities include rail bookings and rail cargo status reports. The schedule for this phase will be developed during a review at the conclusion of Phase 1.

Business to Business E-Commerce Links to Transport

There are several examples in the Australian economy of other work in business to business e-commerce with important links to transport and logistics, some of which are identified below.

The retail supply chain

Australian Supermarket Institute and Food and Grocery Council of Australia

Until recently, each supermarket chain used different standards and software to manage their inventory and required their suppliers to comply with these systems. This meant that suppliers who dealt with more than one chain had to maintain several systems, which proved expensive and led to costly errors.

The Australian Supermarket Institute, whose members comprise the major supermarkets and distributors, and the Australian Food and Grocery Council, which represents the suppliers to supermarkets, are co-operating to address the issue. A recent tracking survey reports reductions in inventory of around 19 per cent and savings in operating costs of 5.7 per cent. This is on top of substantial savings already achieved through e-commerce supply chain management.
At the core of the new arrangements is e-commerce. Suppliers, distributors and retailers will work off a common catalogue, which will have a unique code for each item. In addition, the catalogue will include information such as dimensions, weight, pallet size and delivery requirements for truck drivers. An Internet connection and standard web browser are all that are necessary for authorised participants to access the information.

Software has been developed allowing new product details and changes in product specification to be uploaded from standard electronic buying forms to the industry’s electronic product catalogue bypassing the need to prepare a multitude of hard copy forms previously required. This will considerably reduce the burden on suppliers and minimise the likelihood of errors.

The developing systems will ultimately permit the use of sales data derived from checkout scanners to automate the reorder process. This will reduce inventory and maintain the freshness of stock. The supply chain should become paperless.

Woolworths Limited

Woolworths Limited (http://www.woolworths.com.au) is one of Australia’s major national supermarkets and general merchandiser groups. It is an example, as one of the Australian Supermarket Institute members, whose use of e-commerce is having an impact on the transport and logistics sector of the Australian economy.

From the moment a pallet of goods is delivered to Woolworths’ warehouse in Sydney to when a customer purchases an item at the supermarket checkout, ‘license plates’ are used. ‘License plates’ are barcodes read by scanners at every point in the supermarket’s supply chain - dispatch points, packing lines, warehouses during delivery, and at point of sale.

The benefits of utilising this technology have included fast retrieval of merchandise, while eliminating the need to store large quantities of stock. Barcodes have:

• increased the speed at which information is passed;
• ensured greater control over the distribution of goods;
• reduced errors along the supply chain; and
• allowed for better demand forecasts, including the availability of real-time data.

Woolworths is a good example in Australia’s retail industry that has devoted significant resources to developing ‘back-end’ systems to ensure its business to business operations run as smoothly and efficiently as possible.

Also, Woolworths’ use of barcode technology involves a ‘customer pull’ effect. Woolworths is not alone in the retail industry with many retailers now demanding that suppliers barcode their goods, which will result in greater uptake of business to business e-commerce in Australia. This will have a significant impact on the transport industry as a key player in this supply chain.

Pharmaceutical Extranet Gateway
The Pharmaceutical Electronic Commerce and Communications for healthcare (PECC) Project is one of the leading edge examples of Internet, business-to-business e-commerce projects in Australia (http://pecc.org.au). The project aims to assist the introduction of e-commerce into the supply chain for hospitals and retail pharmacies based on common numbering for all products and the distribution of orders between manufacturer and wholesaler. The project is a grouping of the five major pharmaceutical wholesalers and 700 suppliers who are trading $A5 billion worth of business annually.

The implementation of extranet gateways in an Internet trading environment can significantly lower transaction costs and increase market share and employment growth for small to medium enterprises.

The Pharmaceutical Extranet Gateway (PEG) is the latest extension of the PECC project. PEG allows wholesalers and suppliers to send purchase orders and receive Electronic Funds Transfer (EFT) responses over the Internet and aims to have 400 of the 700 supply companies trading electronically by the end of 1999. The project will also enable electronic trading between transport and logistics companies and the PEG trading platform. This will be ‘a first’ in Australia, and is considered world’s best practise in business-to-business e-commerce.

With this single common electronic ordering system, supplier or manufacturer can trade with wholesale customers without the need to implement an expensive EDI system. The benefits of this total integration between pharmaceutical wholesalers, suppliers and the transport and logistics sector on the Extranet Gateway are lower transaction costs and improved cashflow benefits.

It is estimated that the movement to electronic transactions utilising the Extranet Gateway will reduce average costs per transaction from A$50 to A$5. Ninety per cent of the 700 participating suppliers to the wholesalers are small to medium sized firms. The PEG project will create a quicker payment from the big buyer to the small supplier. The five wholesalers are committed to reducing the practise of ‘60 plus days’ manual payments to 20 days via EFT. It is estimated that the time/payment ratio will be reduced by up to 40 days. This will have a significant benefit for smaller firms’ cashflow.

The Economic Impacts Pilot Project

The Economic Impacts of E-Commerce project will pilot the modelling of impacts in specific sectors of the Australian economy, one of which is transport and logistics. This project will involve a rigorous economic analysis using a general equilibrium model of the Australian economy. The ‘Monash’ model is an internationally leading economic model, which is well suited to assessing dynamic flows through the economy from business changes such as e-commerce. These typically include process efficiencies; process transformation; new products and services; and industry restructuring. The transformation of an economy through the ‘disintermediation’ effects of e-commerce is graphically illustrated in Figure 3.
Figure 3 – E-Commerce effects on traditional intermediaries

The Economic Impacts of E-Commerce project will use input / output industry data from the Australian National Accounts to measure the flow-on effects of e-commerce uptake against a range of scenarios (short-, medium- and longer-term) for sectors such as transport and logistics. Other sectors to be modelled include retail, finance, health and agriculture. In addition, the project will assess the macro-economic effects of e-commerce against indicators on the Australian economy such as Gross Domestic Product, employment and productivity.

The project has commenced and will be completed by October 1999.