

March 2003

## International Examples of Large-Scale Systems - Theory and Practice III: Competition and Strategy in Electronic Marketplaces

Christopher P. Holland

*Manchester Business School, University of Manchester, c.holland@fs2.mbs.ac.uk*

Follow this and additional works at: <https://aisel.aisnet.org/cais>

---

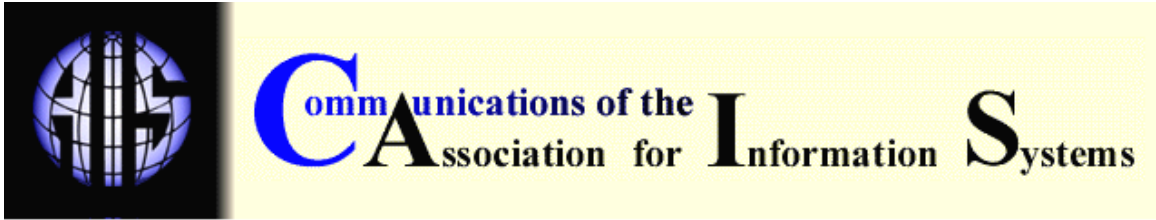
### Recommended Citation

Holland, Christopher P. (2003) "International Examples of Large-Scale Systems - Theory and Practice III: Competition and Strategy in Electronic Marketplaces," *Communications of the Association for Information Systems*: Vol. 11 , Article 22.

DOI: 10.17705/1CAIS.01122

Available at: <https://aisel.aisnet.org/cais/vol11/iss1/22>

This material is brought to you by the AIS Journals at AIS Electronic Library (AISeL). It has been accepted for inclusion in Communications of the Association for Information Systems by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).



## INTERNATIONAL EXAMPLES OF LARGE-SCALE SYSTEMS - THEORY AND PRACTICE III: COMPETITION AND STRATEGY IN ELECTRONIC MARKETPLACES

CHRISTOPHER P. HOLLAND  
 Manchester Business School  
 University of Manchester  
[chris.holland@mbs.ac.uk](mailto:chris.holland@mbs.ac.uk)

### ABSTRACT

Electronic marketplaces are evolving in both business to business, and business to consumer contexts. Although the initial hype surrounding all types of marketplaces appears to overstate their short-term impact, established companies across all types of industrial sectors are entering into collaborative, industry-wide initiatives to agree on common technical and trading standards to improve the effectiveness of the interactions between buyers and sellers on a global scale. An overview of contemporary developments is presented, and common patterns across different sectors are identified. Three case studies are presented in the areas of automotive, banking, and consumer markets. It is shown that product-market characteristics affect the formation of business relationships and market structures, and the design of information flows and shared systems is a reflection of typically strong business relationships and hierarchical market structures.

**Keywords:** electronic marketplaces, automotive, banking, consumer markets, strategy

### I. INTRODUCTION

The purpose of this paper is to synthesise contemporary developments in business-to-business exchanges and associated theoretical developments in order to identify the strategic implications for individual companies. The opportunities are huge to exploit the communication capabilities of shared information systems to achieve cohesive management systems that span organisational boundaries. This gain already happened in many industries, notably financial services and the automotive industries, which invested early in internal, enterprise-wide systems. In addition to integrated strategies, some electronic commerce systems focus on minimising the cost of individual transactions (often referred to as 'electronic markets' or 'perfect competition'), and these situations are also considered.

On the stock markets, the high-tech investment bubble burst, and hit Internet companies focused on retail markets especially heavily. However, on-line consumer markets and financial services, and Business to Business (B2B) exchanges are still moving ahead quickly, supported by leading companies across all types of industries. In the automotive sector, Ford and GM were instrumental in setting up a trading hub to combine their respective supply bases into one huge trading hub estimated to be worth as much as a trillion dollars annually, involving over 60,000 suppliers world-wide. Similarly, the large European retail companies co-operated to set up a trading hub to connect Sears, Carrefour, and their alliance partners to suppliers forming another large trading community. In the aerospace industry, Boeing, Lockheed Martin, British Aerospace, and Raytheon also organised an e-marketplace to connect themselves with suppliers in a seamless electronic web of integrated systems and business processes. These patterns of co-operation, often between fiercely competitive companies and their suppliers, are repeated in the energy, financial services, electricity, forestry, manufacturing, and information technology industries.

In this paper, an analysis of business-to-business exchanges is presented from a management, rather than a technical, perspective. It is designed to help managers think through the key issues facing them in an electronic trading environment. It attempts to explain and predict the evolution of such marketplaces, and identify the likely strategies that will dominate B2B trading. To illustrate the ideas, three case vignettes will be described: Covisint; Barclays virtual global bank; and contemporary developments in consumer electronic markets.

Information technology is a key driving force but the developments in Internet technology, rapid increase in raw processing power and the concomitant decrease in costs, the widespread availability of broadband telecommunications networks, mature enterprise wide applications such as SAP, Intenia, and Oracle, and sophisticated trading technology such as Ariba and i2 need to be placed in a broader market context to gain a better understanding of electronic commerce strategy. For example:

- Does a traditional brand count for anything when there is much better market information available to a sophisticated group of customers?
- Do electronic marketplaces encourage new entrants because of lower barriers to entry?
- What will happen to established pricing structures? There appears to be the possibility of achieving almost perfect pricing information that could lead to Adam Smith's notion of a perfect marketplace in which transactions between multiple customers and multiple suppliers are carried out automatically by matching bids and offers, and even without the identities of buyers and sellers being known to each other?
- How do B2B exchanges affect the extent of vertical integration between customers and suppliers?
- Will the ease of trading electronically lead to networks of companies competing much more effectively than large companies that have traditionally exploited their size, wealth and established distribution channels to deter new entrants and lock out competitors?
- Are B2B exchanges likely to encourage adversarial behaviour between buyers and sellers or support increased collaboration based on co-operation and trust?

These are all significant issues that are of paramount importance to leaders faced with the task of developing appropriate strategies and systems for their companies.

Business-to-business accounts for approximately 80-90% of economic activity in most markets, the remainder being consumer markets. Historically, business and retail markets were very different from each other regarding the value and frequency of individual transactions, the knowledge that customers and suppliers have of each other, the information exchanged, and perhaps most importantly the level of interdependency with one another. It is fairly obvious that

business-to-business trade between say, an automotive company and its suppliers, is composed of high-value transactions conducted on a regular basis. The economic partners' knowledge of each other is very high, and they may share production, forecasting, and design information electronically. If the supplier fails to deliver its products, then it has an immediate effect on the automotive company, especially in a Just-In-Time environment where there are no 'safety' levels of stock. In other words, the outcome matters to both parties, and there is a high level of interdependency. This interdependency is why initiatives such as six sigma quality programmes, time-based competition and co-operative strategies to manage investments that are specific to particular economic partners received so much management attention over the last four decades.

In a retail context, say in a large grocery retailer, the transactions are characterised by high volume, low value transactions, and historically (that is, before smart cards and the Internet) the consumers' knowledge of the supplier is typically fairly low and vice versa. Whilst retail markets will always be characterised by high volume, low value transactions, marketing led companies such as Yahoo! and Amazon demonstrated that many of the marketing strategies typically employed between businesses such as customer relationship management and one-to-one marketing, can be employed in retail markets because of the low cost of computing power. This point will be returned to later in the discussion where it asserted that some of the innovations in the retail markets will be exploited in a B2B context.

Although B2B and B2C are often considered to be totally separate, a better model may be to consider the supply chain as a whole, that is, B2B2C. Dell is a superb example of how B2B2C works in practice. By taking the concept of a supply chain and focusing on the information flows, Dell created a virtual demand chain. It takes information from individual consumers and businesses, and then uses it to drive the operations of the assembly and component suppliers. Work in progress is claimed to be only 8 days, compared with much higher figures quoted for competitors such as Compaq and IBM. However one may have to be cautious in making straight comparisons because some of the responsibility and stock may be passed on to suppliers. Even so, Dell exploited the power of the Internet to trade directly with its customers. It also developed the capability to include customers in the design of their own products – customisation on a mass scale. There is not a single 'standard' Dell computer. Customers specify their own requirements and effectively customise their order (albeit within a strict configuration model). A traditional supply chain model would collapse under the product variety imposed by this system, but a build to order system copes quite effectively as long as the customer is prepared to endure a small time delay before receiving the product (approximately two weeks).

## II. ECONOMIC SIZE OF B2B AND B2C MARKETPLACES

Goldman Sachs [2000] estimates that electronic B2B trade was \$135 billion in 1999. They predict that it will be \$4.5 trillion in 2005, and will ultimately grow to 80% of all B2B worldwide trades. Similarly, Gartner group predicts \$4 trillion of B2B trade in 2004, compared to \$400 billion for B2C markets. Goldman Sachs is heavily involved in technology companies and its staff is generally considered to be leading investment bank analysts. Banks such as Goldman Sachs could be said to have a vested interest in the B2B marketplace because of the interests of its clients. However they may actually *understate* the scale and growth of B2B activity. In 1999, General Electric carried out B2B trade using Electronic Data Interchange (EDI), (the precursor to web-based B2B trading) to the value of approximately \$100 billion dollars with its own supply base (See [www.ge.com/plastics](http://www.ge.com/plastics) for an example of how B2B worked in a particular product segment). Similarly automotive companies, such as Ford and Chrysler which led the way in early EDI initiatives, conducted almost 100% of their trade with suppliers using EDI links. The cumulative spend of just three large companies GE, Ford, and Chrysler easily amounts to several hundred billion dollars, more than most estimates of B2B commerce happening *now*. One explanation for this understatement is that many commentators view B2B using Internet technology as being totally novel, and do not recognise that Electronic Data Interchange (EDI) systems are also examples of e-commerce because they represent electronic trading across organisational boundaries [Holland, et. al., 1992]. Because most of the issues of EDI strategies are very similar to e-commerce using web technologies, it is possible to learn from earlier company examples of

strategic innovation in EDI, notably Chrysler [Mukhopadhyay et. al., 1995] and Motorola [Holland et. al., 1994].

### III. ECONOMIC THEORY OF ELECTRONIC MARKETS

The seminal work in this area from an information systems perspective is that of Malone [1987, 1989], By reducing barriers to market entry, opening up new markets, and increasing price transparency, the web will, it is claimed, enable smaller and more innovative companies to compete on a level playing field and redress the balance of market power in favour of consumers. In effect, the web is expected to move businesses and markets closer towards something resembling “pure competition”. Although some evidence points to a move towards electronic markets, strong evidence supports the hypothesis that electronic communication technologies will forge closer relationships rather than create more fragmented ones. This assertion is particularly true in business-to-business markets where the levels of interdependencies between buyers and sellers are typically extremely high compared with business-to-consumer markets [Johnston and Lawrence, 1988; Konsynski and McFarlan, 1990].

Holland *et al.* [1992] proposed that Electronic Data Interchange enabled much closer integration throughout the supply chain between successive stages of manufacture and distribution. This concept is also supported by more recent analyses of developments in supply chains, notably Rayport and Sviokla [1995] who argued that the extent of collaboration between separately owned companies constituted a virtual supply chain that behaved as if it were owned by a single organization. Dell is an exemplar of a company that achieved virtual integration with its suppliers, which enabled the company to achieve remarkable growth and customer service levels [Magretta, 1998]. Similarly, in business markets, CISCO systems found massive cost savings and strategic benefits from linking closely with customers and suppliers [Klineberg, 1998].

It is clear that developments in business to business markets will continue to create new methods of working (see Fulk and DeSanctis [1995] for a review of organization theory developments, and Kalakota and Whinston [1997] for an overview of the effects of electronic commerce on different market sectors). The announcements of companies from different sectors that they will develop electronic marketplaces to support transactions within a range of vertical markets (e.g. Ford, GM and Daimler Chrysler, Citigroup, British Aerospace, Boeing, Lockheed Martin and Raytheon) are testament to the economic and strategic significance of business-to-business electronic commerce. In the business-to-consumer market, a similar set of issues is facing electronic commerce companies involved in retail markets. Issues of particular significance include how to identify the best strategy for creating a customer base, how to develop and maintain relationships with individual consumers, and how to link electronically with suppliers to ensure a fast and in some cases customised response to consumer demands.

It is clear that companies face many different issues beyond the pure technology ones in developing an electronic commerce strategy. Although the differences between B2B and B2C relationships are huge, especially in terms of the scale and nature of investments, and the level of interdependency, some themes are common. The technology is broadly similar, the amount of knowledge that the partners have of each other is high (in retail markets this level is now made possible by increases in the power/cost ratio of computing), and all types of markets are attempting to offer customised products and services.

### IV. ELECTRONIC MARKETS: THEORETICAL CONSTRUCTS AND COMPANY EXAMPLES

Electronic markets are classified using three theoretical constructs:

- relationship strategy and market structure;
- information flows; and
- the nature of the information technology to integrate separate companies and individuals.

Each of the constructs is defined, and applied to three case examples (Sections V, VI, and VII).

### **RELATIONSHIP STRATEGY AND MARKET STRUCTURE**

Relationship strategy and market structure are concerned with the type of relationship that exists between two economic partners and the resulting patterns of interaction between buyers and sellers. Relationships vary from adversarial through to very close integration of business processes and systems based on mutual trust and co-operation. Is the relationship focused on individual transactions, and achieving the best price in a single instance, or is it focused on achieving high quality, and repeat transactions which form the basis of a closer relationship where both partners gain from each other over a longer period of time?

Market structure, the pattern of interactions amongst economic units, is at the centre of the debate over whether electronic commerce will lead to open electronic markets that enable customers to transact with more suppliers who must continuously engage in price competition, or co-operative relationships based on integrated business processes and systems that actually reduce the level of traditional competition between customers and suppliers. The latter leads to integrated supply chains, in which competition takes place among separate supply chains.

### **INFORMATION FLOWS**

Information flows are the information that the partners share with each other. Is it relatively simple logistics and finance information such as purchase orders, invoices, advice of deliveries, or is it more complex such as shared production schedules, or design databases? The early EDI systems enabled relatively simple, structured data exchange but leading companies such as Motorola also used the EDI infrastructure to share large data sets such as production schedules.

### **INFORMATION TECHNOLOGY**

The current technical standards being developed around web technology are XML based which is easier to manage, but draws heavily on the earlier EDI standards for designing basic standard message types. As business processes become more integrated in some situations, and the number of collaborating companies increases, simple, shared data systems can be expected to be replaced by shared information systems in which all the economic partners, regardless of their organisation, will share a common system. Such a shared system is already evident in the virtual organisation example of Barclays virtual global bank presented next.

## **V. CASE EXAMPLE 1. BARCLAYS VIRTUAL GLOBAL BANK**

Banks were traditionally vertically integrated and all aspects of their business were controlled under the single ownership of one company. Everything from managing the relationship with the customer, delivery of the service (either physically through a branch or electronically), designing the product and associated risk, and the information technology infrastructure and processes were owned and managed by individual banks. With developments in Internet banking, and increased competitive pressures from new entrants, banks are seeking new organisational arrangements that reduce costs and give them more flexibility for introducing new products and services. A particularly difficult area for medium sized banks is that of foreign exchange and international payments. As well as the front-end systems to capture the trades and link with the bank's customers, the bank must also manage the back-office IT infrastructure and processes, including 'correspondent' relationships with banks around the world. This case discusses the development of Barclays virtual global bank. It is an example of how a large bank exploited its investments in systems, and also its investment in business relationships, to offer a new service to other banks that enabled medium sized banks to behave as if they were global banks themselves, and offer a full range of foreign exchange and multi-currency payment services to their own customers.

### **RELATIONSHIP STRATEGY AND MARKET STRUCTURE**

A schematic diagram of how international payments works in practice is shown in Figure 1.

The example shown is that of a French customer paying a U.S. supplier. The customer instructs their bank to pay the supplier a certain amount in U.S. dollars. The bank must perform a foreign exchange deal from Euros to dollars, and then instruct their correspondent bank in the supplier's

country to pay the supplier's bank through the local clearing system. Country specific regulations prevent direct payment between the customer's bank and the supplier's bank. Although the system is relatively simple in principle, its operations are very costly for the originating bank and require a large volume of payments to be economically viable. The customer's bank must operate a foreign exchange desk, and maintain correspondent relationships with banks around the world (traditionally banks have managed several relationships within the same country in order to encourage incoming, as well as outgoing, payments but the value of this 'reciprocity' strategy is now being questioned, particularly by smaller banks).

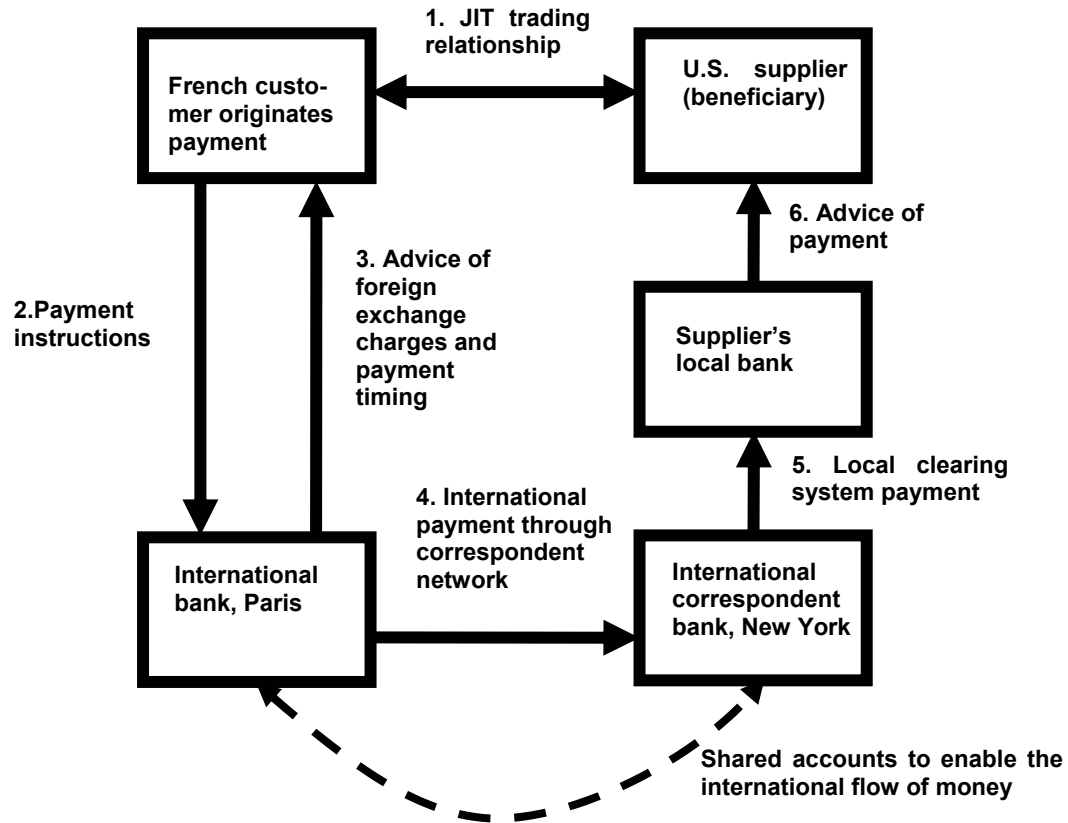


Figure 1. Correspondent Bank Relationships to Support an International Trading Relationship

#### INFORMATION FLOWS FOR BARCLAYS VIRTUAL BANK

Barclays is recognised as being the most international of the UK-based banks, with an unparalleled global network of correspondent banks. It also has the information systems expertise in foreign exchange (through a system called TAG), and in payments (Multi-Currency Payments System MCPS). By offering an integrated version of these systems directly to bank customers, a medium sized national bank can achieve the global reach and range of payment/foreign exchange services of global rivals. In other industries this strategy is often termed 'white labelling' in which an organisation buys a product/service from a supplier and then re-sells the service using its own brand and to its own customer base. The shared information systems allow Barclays to share not only its systems, but also its market network, hence the virtual organisation. Figure 2 shows details of the organisation and technology arrangements. (For operational details of how the system works, see [Lockett and Holland, 1996]).

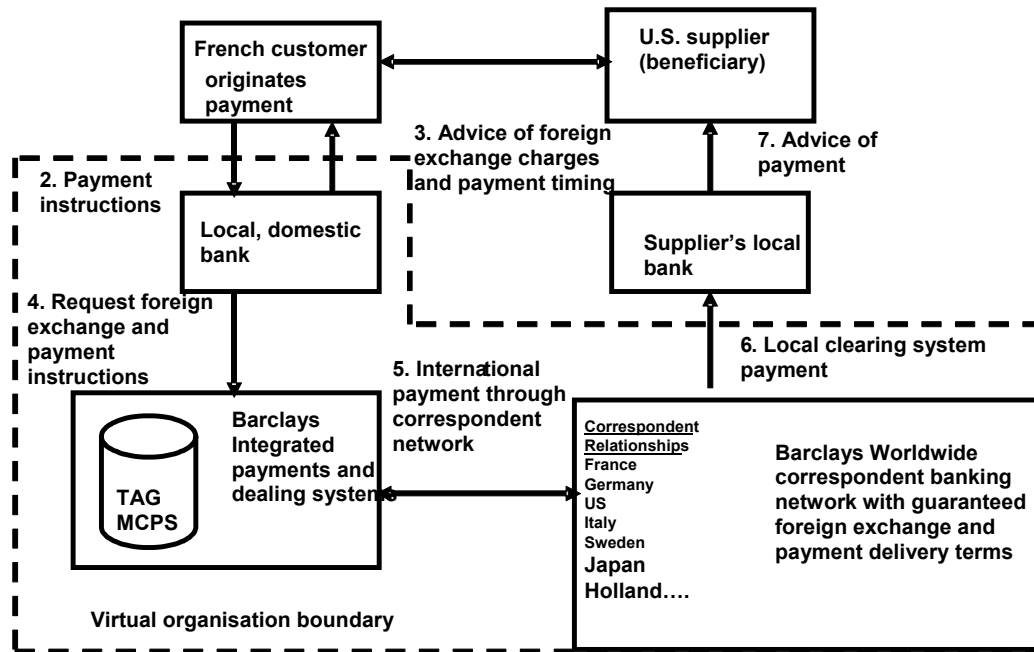


Figure 2. Barclays Virtual Global Bank

### INFORMATION TECHNOLOGY

The Barclays systems are composed of two main components that were developed separately and only combined when it was realised that bank customers would value their integration. TAG is Barclays proprietary foreign exchange system, and is a sophisticated on-line dealing system that provides the full range of foreign exchange services such as spot deals, forward deals, FX swaps, and extension deals. It also provides management information including trade figures, fiscal news, interest rate movements, currency rate comparisons, and government policy details. It is particularly valuable for small deals because a bank trader can tidy up their correspondent accounts without having to deal with a Barclays trader who would normally only be interested in larger, more complex deals. The Multi-Currency-Payment-System is composed of the information systems capability, and the market network of correspondent relationships around the world. Barclays has always had an international tradition, and it is able to leverage its heritage and brand to offer medium sized banks access to its systems *and* its market networks. This is what makes it a virtual organisation. Barclays' medium sized bank customers can brand the product using their own identity to their own customers, and behave with the capabilities of Barclays' systems and market networks.

### VI. CASE EXAMPLE 2. COVISINT.COM, AN ELECTRONIC MARKETPLACE FOR THE GLOBAL AUTOMOTIVE INDUSTRY

Covisint is the strategic alliance between Ford, GM, and DaimlerChrysler to form an electronic marketplace in the global automotive industry to link the car companies with suppliers on a world-wide basis. It is incredible that fierce competitors such as Ford and GM chose to collaborate on such a venture, and reflects the importance of such initiatives to the industry as a whole, rather than to the advantage of an individual company. It may also be a result of competitive pressure from suppliers who do not want to deal with complex, multiple electronic marketplaces to manage business and technical relationships with different customers. It is very difficult at this stage to assess the strategic objectives of Ford and their partners in setting up such a venture. Is it to



establish an oligopoly in which the large car companies force suppliers into a price taking position, or is it to foster closer, collaborative relationships in which buyers and suppliers cooperate with each other to form a cohesive organisational unit that is able to respond in a co-ordinated manner to external market changes. A good way of exploring how the situation is likely to develop is to examine how the car companies changed as a result of using their current electronic data interchange systems. Chrysler and Ford are both well documented [Mukhopadhyay et. al., 1995]. Clearly great gains are to be made when it is estimated that of the total cost of a car to the manufacturer, only 70% is contained in the actual production of the vehicle, the remainder being the information handling and physical costs of managing the supply chain.

### **RELATIONSHIP STRATEGY AND MARKET STRUCTURE**

To assess the impact of EDI on the performance of Chrysler, Mukhopadhyay et. al. [1995] undertook a detailed study of Chrysler's production and supplier relationships over a ten year period. The study offers great insights into the strategies and likely benefits to accrue from the more ambitious Covisint project, and also highlights the implementation issues that will arise. It was demonstrated that direct benefits of \$100 per vehicle can be attributed to EDI systems, \$60 from improved production management, and \$40 from efficiency gains in information handling. This equates to annual savings of \$220 million for the company as a whole. A major source of savings is from an increase in inventory turnover as a result of improved information exchange between Chrysler and its suppliers which allows a closer coupling of production systems, and smaller, more frequent deliveries. Asset turnover increased from 10 to 50 times per year equating to a reduction in stock from 1 month's stock to 1 week's stock for a medium sized plant. Over the same period, EDI penetration with suppliers increased from nothing at the start of the programme to 100%, and there is a very close, positive correlation between EDI penetration and inventory savings arising from improvements in turnover.

The largest savings arise from co-operative information exchange strategies that increase asset turnover and reduce the need to use premium freight because of improved knowledge of each other's operations. The single largest cost saving category is a reduction in the information handling cost. The automotive industry is a prime example of an information intensive problem, and by improving the administrative processes through a process of automation and integration both within Chrysler, and also with their suppliers, direct savings of \$220M per year resulted. Production management in a low parts variety plant is easier than in a high parts variety plant, and it is therefore possible to achieve higher asset turnover levels. The main factor is the minimum stock requirement for individual parts. For a high parts variety plants there are often components that are only used infrequently, and it is difficult to manage a high throughput on these parts.

### **INFORMATION FLOWS**

The information flows to support EDI logistics transactions are relatively simple and consist of structured messages to support standard message types such as purchase order, order acknowledgement, advice of delivery, invoice, and remittance advice. A typical transaction based on EDI standards in the automotive industry published by ODETTE (Organisation for Data Exchange by Tele-Transmission in Europe) might be: invitation to tender; quote; purchase order; advice of delivery; invoice; and payment. ODETTE standards imply that open market competition will take place in which multiple buyers and multiple sellers exchange bids and offers electronically. In practice the logistics and financial message types are used extensively, and the bids and invitation to tenders are rarely employed. Instead annual or longer-term contracts are negotiated face-to-face. In general, competition does not take place electronically.

### **INFORMATION TECHNOLOGY**

Covisint is attempting to develop a strategy that enables data to be exchanged amongst its alliance partners and their suppliers. The main problem of message types was largely solved by the earlier efforts involved in industry-wide EDI standards bodies such as ODETTE, and will be made much simpler with the emergence of XML as the global standard for sharing business and

other information between different information systems. However Covisint is faced with the intractable problem of legacy systems before it even starts. Ford's preferred software for the exchange is Oracle, and GM's chosen platform is CommerceOne. The situation is further complicated by the request from DaimlerChrysler that it should be able to exploit its internal investment in SAP. SAP was originally an inward looking enterprise computing platform that dominated the enterprise market in most industrial sectors over the last few years. It is now evolving into a more outward facing system, and the combination of three potential systems would make the technical implementation almost impossible.

Looking ahead, the focus will be on the ability of the exchange to share systems, rather than just data, between customers and suppliers. For example in a joint product design, with shared project management, and the involvement of multiple partners for a new product, would require shared business processes and common systems. It is not clear how such an initiative would, or needs to, rest within the confines of an electronic marketplace. It also raises questions over the longer term potential of the electronic marketplace concept when it is applied in areas outside straight commodity markets which do not already enjoy global economies of scale and scope.

### **VII. CASE EXAMPLE 3. ELECTRONIC COMMERCE RETAIL MARKETS**

Internet retail markets are often considered to be the closest to perfect competition that can be achieved in real markets. There are multiple suppliers and multiple customers in all the major product categories that are adopted by consumers: books; CDs; travel; banking; and brokerage. For commodity products such as books and CDs, it should be possible using the power of the Internet to compare information about competing suppliers such as price, availability, and ability to deliver, and make an optimum decision for each purchase transaction. Historically the costs of collecting and comparing information from competing suppliers would be costly, and often outweighed the advantages of marginally lower prices that might be gained. (Typically in markets where there is high variability of pricing, it is more worthwhile to compare a large number of suppliers, than in those markets with low variability, but as the cost of searching tends to zero, as in the case of the perfect market, then it should in principle be possible to compare all potential suppliers for each transaction). In a study of over 600 retail companies in the UK Internet retail market, Ennew et. al., [2000], investigated the relative performance of individual Internet companies, and explained their differences in terms of price, site content, speed, freshness and the location of the site which was represented by the number of other Internet sites that referred to the Internet retailer in question.

#### **RELATIONSHIP STRATEGY AND MARKET STRUCTURE**

The electronic markets and relationship model are the two principal, competing, explanations of how business-to-consumer commerce will evolve. The most widely held view amongst academics and business writers is the electronic markets hypothesis, even though most of the evidence to date supports the importance of relationships. In the IS literature, the seminal work of Malone et. al., [1987; 1989] predicted that as information systems became pervasive, the co-ordination costs, particularly those associated with information collection and evaluation, of managing multiple relationships would reduce, and encourage firms to buy in more products and services from electronic markets rather than produce them internally where the spur for innovation and cost reductions were low compared to the external marketplace.

Three important implications of the electronic markets hypothesis arise because of a move towards perfect competition:

1. price variance between competing suppliers will decrease because the Internet will move consumer markets towards a model of perfect competition;
2. barriers to entry will decrease allowing a continuous flow of new competitors;

3. no one company should dominate any particular market segment because rivalry and innovation amongst existing suppliers and new entrants should ensure that customers search for the best deal and consequently change suppliers frequently.

Swann [2001] presents an economic analysis of the impact of the Internet on the price strategies of suppliers and the associated behaviour of consumers. Using the notion of price discrimination [Salop, 1977] whereby suppliers vary the price along the dimensions time, space, buyer characteristics, and product differentiation, Swann shows that the Internet does not automatically lead to a reduction in price discrimination, and indeed may even add to the competitive armoury of the suppliers in some instances. A crude form of price discrimination is 'noisy pricing' in which prices vary randomly between distribution channels and along time. The purpose is to filter markets into two components: those who are cash rich, and time poor, and will therefore not bother to evaluate the market, thereby paying more for products, and those whose opportunity costs for their time are low, and will therefore choose to invest their time to find the best deal. Swann [2001] demonstrates that consumers can use the Internet to reduce some of this noise, but it is not always clear cut, and in some cases suppliers can use the power of the Internet to create even more sophisticated pricing strategies to increase their total revenues.

An example of where consumers win using the Internet is the case of varying prices amongst different store locations, but even here a determined supplier can vary prices using complex tariffs that are changed almost on a continuous basis so as to confuse even the most determined of price-conscious consumer. For example the airlines' revenue management systems (now also used by some train companies such as SNCF) and the retail mobile phone companies both exploit complex pricing arrangements designed to maximise revenues that are difficult to overcome using the Internet.

The dimensions buyer characteristics and product differentiation give the supplier the most scope for creating pricing schemes, and hence profitability, that are not easily reduced by consumers because it focuses the consumer's attention on other attributes such as convenience to use, and unique product characteristics. Yahoo! and Amazon both offer customised product services to individual customers which makes the product unique from their competitors. They do this by gaining information about the customer about their preferences and previous buying behaviour, and then align specific product offerings or information according to these stated preferences. This strategy is an example of exploiting customer behaviour to differentiate the product – mass customisation to a market of one. Godin [1999] terms this collection of techniques "permission marketing" and outlines how Yahoo! developed their marketing strategies based on building a close relationship with individual customers based on trust and mutual benefit, normally concepts reserved for a B2B relationship.

Barriers to entry are normally considered to be low in a B2C context because anyone is able to set up their own web site. However this view does not consider the marketing barriers to entry which may be different to those encountered in retail stores (pure bricks and mortar), but are nonetheless significant. With the general move to "clicks and mortar" – hybrid Internet and traditional retail outlets, it is clear that the hybrid firms are relying on traditional barriers to entry combined with marketing barriers that have been created on the Internet.

Table 1 shows the relative size of the top 10 U.S. companies in B2C markets based on data from Nielsen in March 2003. Nielsen's data shows that the top company is over five times larger than the tenth ranked company and over twelve times larger than the 25<sup>th</sup> ranked company. B2C internet sites are dominated by a small number of very large companies, a middling number of middle sized companies and a large number of small companies. Beyond the top sites, over 30 million sites compete for our attention. The top 10 sites are dominated by search engines, portals and software companies with the significant exception of Amazon and the US Government. One might think that the situation would change significantly in a particular product segment such as banking. The study by Ennew et. al. [2000] examined individual product sectors: books; CDs; travel; retail banking; and retail brokerage. In the book market the distribution of the top sites is shown in Figure 3.

Table 1. Top US Internet Sites March 2003,

Parent	Unique Audience	Reach %	Time per Person
1. AOL Time Warner	50,565,742	60.00	2: 06: 13
2. Microsoft	45,762,800	54.30	0: 40: 06
3. Yahoo!	40,007,700	47.47	0: 50: 19
4. Google	15,743,742	18.68	0: 08: 17
5. eBay	12,709,551	15.08	0: 53: 44
6. RealNetworks	11,270,957	13.37	0: 11: 16
7. United States Government	10,975,098	13.02	0: 14: 47
8. Amazon	9,248,764	10.97	0: 09: 04
9. Terra Lycos	8,829,727	10.48	0: 10: 30
10. Sharman Networks	8,760,009	10.39	0: 50: 22

Source: <http://www.nielsen-netratings.com/>

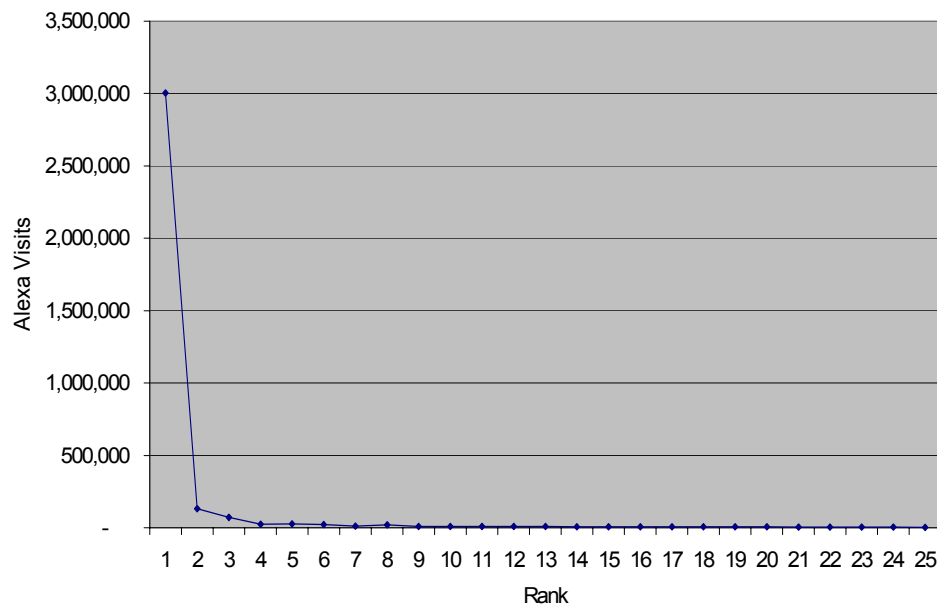


Figure 3. The Distribution of Visits to the Top 25 Internet Book Sites

The concentration of sites headed by Amazon is truly remarkable, especially considering that the study examined 174 books sites, and this pattern is closely mirrored in all the leading market

segments of CDs, travel, banking and brokerage [Ennew et. al., 2000]. Damsgaard [2002] identified similar market domination as a specific objective for individual portal companies and outlined product-market strategies to create lock-in and community building which makes it difficult for new entrants to compete and entrenches the position of the leader.

### INFORMATION FLOWS

The most important aspect of a web site is generally thought to be its information content. Secondary attributes are speed and freshness. Whilst content, speed, and freshness are undoubtedly necessary, they are not sufficient to create a web site that attracts viewers, and hence customers. The other factors are the brand of the site, and the number of information links (hyperlinks) from *other* sites. The e-commerce juggernauts of Yahoo!, Amazon, eBay, and in financial services Wells Fargo, MNB, Smile, and Egg all developed e-brands through a remarkably similar pattern of activities [Holland and Westwood 2001]. These factors are:

1. Start early – achieve first mover advantage and hence gain valuable free publicity and coverage. This tactic is especially true of Amazon.
2. Advertise heavily, often at a loss, to achieve brand recognition and market share.
3. Cross-sell products from the initial category. For example Amazon moved effortlessly from books to CDs, and Egg is moving from a simple deposit account to banking and an investment supermarket.
4. Build links from other sites to drive traffic to your own, either through paid advertising or reciprocal traffic sharing agreements with other large sites.
5. Continue to build content, and develop relationships with consumers through repeated transactions to gain knowledge of the customer and also build trust through delivering consistently over a period of time.

### INFORMATION TECHNOLOGY

The technology for Internet marketing is available to everyone, and is dominated by a fairly small number of standards (e.g. XML, RealPlayer [www.realplayer.com](http://www.realplayer.com), Shockwave). It is almost certain that competitive advantage will derive from additional factors that can be leveraged by IT, notably an e-brand, broad product categories, existing customers and market share, geographic coverage, implementation experience and knowledge, alliances with other sites, and also with brick and mortar outlets, business processes that connect the relationship management with the 'back-office' systems of credit approval, physical delivery, and management information systems that can analyse consumer behaviour.

## VIII. DISCUSSION AND CONCLUSIONS

The central B2B electronic commerce question is how will it affect competition? The focus on price alone is misplaced, and also misleading because it suggests that the major benefit of trading in an electronic marketplace will be lower prices. Lower prices may happen to a certain extent, but it is clear from company examples such as Chrysler that the major benefits accrue from increased co-operation, rather than from a simplistic notion of increased competition. Of course, in some fragmented markets where suppliers exploit a lack of customer knowledge about differences in price across different locations and through time, the power of Internet technology applied to B2B exchanges will reduce the prices. However in most B2B markets, even in commodity ones such as bulk chemicals, the size of the transaction costs is tiny in comparison with the overall cost of the deal, which in turn is almost trivial compared with the consequences of poor delivery or poor quality. In this context buyers can spend a good deal of time studying the market and gain an excellent understanding of a relatively small number of suppliers, and the B2B exchange will not add much value in this dimension. In more specialised markets, such as speciality chemicals, bespoke designs, the B2B exchanges will have even less impact on pricing.

So where should companies focus their efforts to gain from the potential of increased efficiency from electronic trading? Wilson and Jantrania [1996] proposed a value model of business relationships which was applied to electronic trading by Naude et. al., [2000]. The business benefits are in three distinct areas:

- economic;
- strategic; and
- behavioural.

Economic benefits are those gained from streamlining administrative and production systems and integrating business processes across organisational boundaries to achieve benefits in such areas as stock turnover, reduced staffing, and improved quality of logistics operations. From the Chrysler case study it is clear that most of these benefits are best achieved by sharing production data, and the potential to achieve very high levels of stock turnover whilst maintaining product and logistics quality is best achieved by working with fewer suppliers, and with low parts variety. The organisational arrangements that are best suited are therefore sole or, at most, dual, supply arrangements, often using system suppliers who are able to provide a set of separate components integrated into a single system. For example an automobile dashboard supplier would integrate all the suppliers required to provide the separate components, such as plastic, electronics, and dials, required to make up the dashboard system. These co-operative organisational arrangements would be almost impossible to manage using an adversarial relationship focused on activating the economic price mechanism.

The Barclays virtual global bank example illustrates the strategic benefits from e-commerce, particularly in the formation of close relationships which tie-in customers and lock out competitors by creating benefits for both Barclays *and* their medium sized bank customers. Barclays gains market share and transaction volumes which in turn allows them to contain the unit price of services and maintain their extensive technology and correspondent banking infrastructure. Customers gain access to a virtual bank network that enables them to exploit Barclays global reach and systems expertise for their own, local customers without the huge risk and capital expenditure that would be required by building the capabilities internally to the organisation. For these types of close, co-operative relationships to work, shared information and mutual trust must be developed over time. This area receives relatively little attention compared to the pure economic benefits. However, it seems that the most potential for achieving business benefits is to use shared computer systems to improve the exchange of information amongst value chain companies who are then able to co-ordinate their economic benefits in a much more effective manner than is the case using traditional atomistic models of competition that are implicit in the early strategy literature of Porter and others. Most product-markets change quickly, and demand a co-ordinated response from integrated value-chains of companies involved in servicing those markets. The capital expenditure in industries such as microelectronics, aerospace, financial services, and even some forms of retailing, mean that it is very rare for one individual company to be able to manage the whole set of value chain activities under common ownership.

The business to consumer examples in the paper served two purposes. The first is to question the economic logic of a move towards pure competition. The framework and analysis of price discrimination by Swann [2001] casts serious doubts on the validity of the impact of the Internet on improving the performance of the price mechanism. Together with the industry data and analysis of content, speed, freshness, and links by Ennew et al., [2000], it seems that the B2C environment is much more complex than perfect competition, and that relationships between an Internet retailer and its customers, and between different Internet retailers are of much more importance than price per se. Some evidence suggests that the price noise identified by Swann [2001] that splits customers into the two groups of cash-rich, time-poor and time-rich, cash-poor may not apply so neatly to the B2C juggernauts. These firms instead chose a middle-ground and offer prices that are certainly not the cheapest, but which will never be the most expensive either. These companies can rightfully claim that for those customers who want to share some of the benefits from trading electronically whilst not wishing to risk failure of delivery, will always opt for

the safe company that can be trusted. In other words, the companies who invested in their brands, built market share, developed relationships with their customers, cross-sell other products, and develop links from and to other sites, and overall offer exceptional value taking into account their levels of service and price.

All of the case examples, including the B2C findings, question the move towards perfect markets. The trading requirements of B2B exchanges mean that reductions in the cost of handling price information are relatively unimportant compared with the need to co-ordinate complex design, shared production and marketing strategies between groups of separately owned companies organised into an integrated value chain. By co-operating with one another and building trust within a network of companies, it is possible to adapt better to changes in the external environment, ensure that quality levels are constantly improved, implement time-based strategies for design and logistics, and also share the risk inherent in investments in assets that may be of limited short-term value outside the integrated value chain.

The thrust of this discussion paper is to emphasise the importance of relationships over pure market competition in most instances. There are some significant exceptions, particularly in areas where companies are trading with commodity items and excess capacity, where a relationship is neither sought nor valued. The examples of [www.freemarkets.com](http://www.freemarkets.com), and [www.chemconnect.com](http://www.chemconnect.com) are good examples of where companies are happy to deal with a 'spot' price for a given commodity. However even in these markets, it is not clear what proportion of the total trade they actually command. Do companies use these markets to gain a quick idea of indicative prices, and then transact most of the business through established contacts and relationships? These are questions that need further research and study.

The product-market characteristics of the construction industry are of a complex, often bespoke product, that is designed and managed by a web of separate companies undertaking a range of different roles from prime contractor to specialist service provision. The current UK and EU regulations appear to favour competitive tendering for each individual project, regardless of the potential benefits of building closer relationships over a period of time involving a *series* of projects whereby the customer would benefit from increased knowledge of the prime-contractor, and in turn, the prime-contractor would be in a position to build more stable, and adaptive relationships with their economic partners. Coupled to the competitive tendering requirements imposed by regulations on competition, the construction industry is an adversarial culture, rather than a co-operative one. It seems likely that the strategic benefits of electronic commerce, and the capabilities of virtual organisations, will only become possible when both private and Government customers become more sophisticated in managing relationships with the construction industry, and the industry changes its culture to enable increased trust and information sharing amongst its members.

The challenges to companies are therefore to form both technical *and* organisational linkages with their economic partners, and manage the associated business and technology disruptions that will inevitably occur. In markets with a significant level of product-market complexity, the pressures arising from shared investments and risks, the inevitable requirements for quality, shared business processes and trust, will inevitably lead to the joint development of information systems to support integrated value chains rather than pure market competition.

## ACKNOWLEDGEMENTS

The author acknowledges the contribution made by Ian Blackman, Andrew Lockett, and Christine Ennew in discussions regarding the Alexa data on electronic consumer markets and Andrew Lockett for permission to publish the graph on the UK Internet book market.

*Editor's Note:* This article is one in a series of four papers on International Examples of Large-Scale Systems: Theory and Practice. This series was assembled by CAIS Senior Editor Christopher P. Holland and Pieter Ribbers and is based on papers presented at the Hawaii International Conference on System Sciences, 2002. This article was received on September 17, 2002 and published on March 12, 2003.

## REFERENCES

EDITOR'S NOTE: The following reference list contains the address of World Wide Web pages. Readers who have the ability to access the Web directly from their computer or are reading the paper on the Web, can gain direct access to these references. Readers are warned, however, that

1. these links existed as of the date of publication but are not guaranteed to be working thereafter.
2. the contents of Web pages may change over time. Where version information is provided in the References, different versions may not contain the information or the conclusions referenced.
3. the authors of the Web pages, not CAIS, are responsible for the accuracy of their content.
4. the author of this article, not CAIS, is responsible for the accuracy of the URL and version information.

Damsgaard J. (2002), "Managing an Internet Portal", *Communications of the Association for Information Systems* (9) pp. 408-420.

Ennew, C., A. Lockett, C. P. Holland and I.D. Blackman (2000), *Predicting Customer Visits to Internet Retail Sites: A Cross-Industry Empirical Investigation*, Nottingham University Management School Working paper series.

Fulk, J. and G. DeSanctis (1995), "Electronic Communication and Changing Organizational Forms", *Organization Science*, Focus Issue, (6)4, pp. 337-349.

Godin S. (1999), *Permission Marketing*, New York: Simon and Schuster.

Goldman Sachs (2000), [www.gs.com/hightech/research/](http://www.gs.com/hightech/research/)

Holland C. P., A. G. Lockett and I. D. Blackman (1992), "Planning for Electronic Data Interchange", *Strategic Management Journal*, (13), pp. 539-550.

Holland C.P., A.G. Lockett, J. Richard and I.D. Blackman (1994), "The Evolution of a Global Cash Management System", (36), , pp. 37-47.

Holland C.P. and J.B. Westwood (2001), "Product-market and technology strategies in banking", *Association for Computing Machinery. Communications of the ACM*, New York; June, (44)6, pp. 53-57.

Johnston, H. R. and P. R. Lawrence (1988), "Beyond Vertical Integration, the Rise of the Value-Adding Partnership", *Harvard Business Review*, (66)4, pp. 94-101.

Kalakota R. and A.B. Whinston (1997), *Electronic Commerce, A Manager's Guide*, Addison-Wesley.

Klineberg, A. M. (1998), "Electronic Commerce at CISCO Systems", in Lloyd, P., P. Boyle and P. Boyle (eds) *Web-Weaving, Intranets, Extranets and Strategic Alliances*, Butterworth-Heinemann: Oxford.

Konsynski B. R. and F. W. McFarlan (1990), "Information Partnerships - Shared Data, Shared Scale", *Harvard Business Review*, (68)5, pp. 114-120.

Lockett A. G. and C. P. Holland (1996), "The formation of a virtual global bank", *European Journal of Information Systems*, (5), pp. 131-140.

Magretta J. (1998), "The Power of Virtual Integration: An Interview with Dell Computer's Michael Dell", *Harvard Business Review* (76)2, pp. 73-84.



Malone, T. W., J. Yates and R. I. Benjamin (1987), "Electronic Markets and Electronic Hierarchies", *Communications of the ACM*, (30)6, pp. 484-497.

Malone, T. W., J. Yates and R. I. Benjamin (1989), "The Logic of Electronic Markets", *Harvard Business Review*, (67)3, pp. 166-172.

Mukhopadhyay, T., S. Kekre and S. Kalathur (1995), "Business Value of Information Technology: A Study of Electronic Data Interchange", *MIS Quarterly*, (19)2, pp. 137-156.

Naude P., C.P. Holland and M. Sudbury (2000), "The Benefits of IT-Based Supply Chains-Strategic or Operational?", *Journal of Business-to-Business Marketing*, 7(1), pp. 45-67.

Powell, W. W. (1990), "Neither Market Nor Hierarchy: Network Forms of Organization", in Staw, B. M. and L. L. Cummings (eds.), *Research in Organizational Behavior*, (12), London: JAI Press Limited, pp. 295-336.

Rayport, J. R. and J. J. Sviokla (1995), "Exploiting the Virtual Value Chain", *Harvard Business Review* (75)6, pp. 75-85.

Salop S. (1977), "The Noisy Monopolist: Imperfect Information, Price Dispersion, and Price Discrimination", *Review of Economic Studies* (44), pp. 393-406.

Swann G.M.P. (2001), "Will the Internet Lead to Perfect Competition?", *The Business Economist*, (32)2, pp. 6-14.

Wilson D. and S. Jantrania (1996), "Understanding the Value in a Relationship", *Asia-Australia Marketing Journal*, 2(1), pp. 55-66.

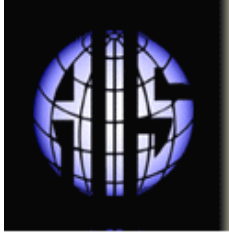
## ELECTRONIC MARKETPLACE LINKS

[www.amadeus.com](http://www.amadeus.com)  
[www.buildpoint.com](http://www.buildpoint.com)  
[www.chemconnect.com](http://www.chemconnect.com)  
[www.clickpaper.com](http://www.clickpaper.com)  
[www.clickplastics.com](http://www.clickplastics.com)  
[www.construction.com](http://www.construction.com)  
[www.cpgmarket.com](http://www.cpgmarket.com)  
[www.eastman.com](http://www.eastman.com)  
[www.elemica.com](http://www.elemica.com)  
[www.forestexpress.com](http://www.forestexpress.com)  
[www.freemarkets.com](http://www.freemarkets.com)  
[www.gepolymerland.com](http://www.gepolymerland.com)  
[www.globalnetexchange.com](http://www.globalnetexchange.com)  
[www.gnx.com](http://www.gnx.com)

## ABOUT THE AUTHOR

**Christopher P. Holland** is Professor of Information Systems at Manchester Business School, University of Manchester. His research interests include information technology strategy, electronic commerce, large-scale systems implementation and financial services. His papers in these areas in management and academic journals appear in *Strategic Management Journal*, *Sloan Management Review*, *Organization Science*, *Communications of the ACM*, *The Banker*, *Journal of Strategic Information Systems*, *IEEE Software* and *Communications of the AIS*. Christopher consults with a wide range of organisations in manufacturing, banking, information technology, and retailing industries in the areas of electronic commerce, information technology strategy, and implementation. He teaches in Europe, South Africa, the US, and regularly presents at international business and academic conferences.

Copyright © 2003 by the Association for Information Systems. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and full citation on the first page. Copyright for components of this work owned by others than the Association for Information Systems must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists requires prior specific permission and/or fee. Request permission to publish from: AIS Administrative Office, P.O. Box 2712 Atlanta, GA, 30301-2712 Attn: Reprints or via e-mail from [ais@gsu.edu](mailto:ais@gsu.edu) .



# Communications of the Association for Information Systems

ISSN: 1529-3181

## EDITOR-IN-CHIEF

Paul Gray  
Claremont Graduate University

## AIS SENIOR EDITORIAL BOARD

Cynthia Beath Vice President Publications University of Texas at Austin	Paul Gray Editor, CAIS Claremont Graduate University	Sirkka Jarvenpaa Editor, JAIS University of Texas at Austin
Edward A. Stohr Editor-at-Large Stevens Inst. of Technology	Blake Ives Editor, Electronic Publications University of Houston	Reagan Ramsower Editor, ISWorld Net Baylor University

## CAIS ADVISORY BOARD

Gordon Davis University of Minnesota	Ken Kraemer Univ. of California at Irvine	Richard Mason Southern Methodist University
Jay Nunamaker University of Arizona	Henk Sol Delft University	Ralph Sprague University of Hawaii

## CAIS SENIOR EDITORS

Steve Alter U. of San Francisco	Chris Holland Manchester Business School, UK	Jaak Jurison Fordham University	Jerry Luftman Stevens Institute of Technology
------------------------------------	--	------------------------------------	---

## CAIS EDITORIAL BOARD

Tung Bui University of Hawaii	H. Michael Chung California State Univ.	Candace Deans University of Richmond	Donna Dufner U. of Nebraska -Omaha
Omar El Sawy University of Southern California	Ali Farhoomand The University of Hong Kong, China	Jane Fedorowicz Bentley College	Brent Gallupe Queens University, Canada
Robert L. Glass Computing Trends	Sy Goodman Georgia Institute of Technology	Joze Gricar University of Maribor Slovenia	Ruth Guthrie California State Univ.
Juhani Iivari University of Oulu Finland	Munir Mandviwalla Temple University	M. Lynne Markus Bentley College	Don McCubbrey University of Denver
Michael Myers University of Auckland, New Zealand	Seev Neumann Tel Aviv University, Israel	Hung Kook Park Sangmyung University, Korea	Dan Power University of Northern Iowa
Nicolau Reinhardt University of Sao Paulo, Brazil	Maung Sein Agder University College, Norway	Carol Saunders University of Central Florida	Peter Seddon University of Melbourne Australia
Doug Vogel City University of Hong Kong, China	Hugh Watson University of Georgia	Rolf Wigand University of Arkansas	Peter Wolcott University of Nebraska- Omaha

## ADMINISTRATIVE PERSONNEL

Eph McLean AIS, Executive Director Georgia State University	Samantha Spears Subscriptions Manager Georgia State University	Reagan Ramsower Publisher, CAIS Baylor University
---	--	---