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The Use of E-Commerce in the Textile and Apparel Supply Chain

Lucy Daly and Professor Margaret Bruce
Department of Textiles, UMIST

ABSTRACT

Diverse e-commerce applications are being implemented in the textile and apparel supply chain. This paper includes case studies of small global companies' use of e-commerce, with analyses of the use and impact of e-commerce. Benefits of e-commerce include global marketing opportunities for products and markets. However, a key limitation of e-commerce is the risk of channel conflict between existing customers and new profile customers. With the continued globalization emphasis of the textile and apparel supply chain, analyses and creative implementation of e-commerce applications may offer unique product and market opportunities.

KEYWORDS: e-commerce, supply chain, marketing, channel conflict, global companies

Introduction

E-commerce is a new and exciting technology, attracting much interest. It has the potential of fundamentally changing the ways in which companies do business, thus having a profound effect on the management of the supply chain. Aspects of e-commerce will be discussed, including the impact on industry as a whole, descriptions of aspects associated with e-commerce, Business-to-consumer (B2C) e-commerce, business-to-Business (B2B). Through case studies this paper identifies a number of small companies in the textiles and clothing supply chain and analyses their use of e-commerce and the impact that this has had on the company and also on communication within the chain.

Hines (2001) argues that the 'e-revolution' is transforming how business-to-business markets are interacting. This change has occurred not only because of technological advances, but factors such as globalisation, organisational restructuring, information and communication technologies, increased focus on differentiation over cost-cutting, and the rise in consumerism.

E-commerce for business-to-business activities

McGuffog and Wadsley (1999) argue that e-commerce is set to revolutionise the way in which most businesses conduct their business and administrative processes. Companies can utilise activities such as collaborative event management, the structuring and synchronisation of master data, and the sharing of customer data. Although consumer web businesses rarely make any profit from advertising, sales or subscriptions, the use of e-commerce for business-to-business purposes appears much more promising (Klein and Quelch 1997), and business-to-business e-commerce is set to far exceed business-to-consumer e-commerce financially (Barnes-Vierya and Claycomb, 2001). It is expected that, by 2004, in excess of one fourth of all business-to-business purchases will be carried out over the Internet (Kuechler et al, 2001). E-business enables companies to enhance information exchange, by breaking down communication and coordination barriers (Cheng et al, 2001), although this may not actually lead to an increase in the number of transactions (Ratnasingam 2001).

McGaughey (1999) highlights the ways in which Internet and Intranet technologies can enhance co-operation within the supply chain, and interaction between organisations. Companies are able to communicate easily and share knowledge and experiences, thus facilitating long-term relationship building (Wang et al, 2000). Interaction and partnering within the supply chain can enable companies to optimise performance (Wong 1999) and reliable products (Desbarats 1999). The Internet facilitates communications between parties and has been referred to as a 'universal medium for business interaction' (Preiss et al, 1996, cited in McGaughey, 1999). The Intranet is used to facilitate communication within companies, and the Internet to aid in communication and interaction with the rest of the world. It is suggested that the use of e-commerce in B2B transactions adds value to the supply chain, by empowering the buyer through a bigger selection, better control and increased competition. However, suppliers are also able to see benefits in the form of greater market opportunities, the elimination of the middleman resulting in a stronger link with the customer, improved marketing abilities and dynamic trading capabilities (Meeker et al, 1999).

E-commerce in the supply chain

The Internet is likely to have a considerable impact on supply chain management (Falcioni 1999), with the supply chain becoming much more tightly connected, and thus supply chain management needing greater coordination in terms of time and resources (Angeles and Nath 2000). In addition, the flow of power has been reversed, and customers now dictate terms and conditions to suppliers. However, there are problems to be associated with using e-commerce in the supply chain. For example, getting the information systems to work between companies is one challenge, as systems must enable each company to add, change or delete any information without first having to contact all parties involved (Falcioni 1999).

E-commerce as a facilitator of supply chain relationships

Gilbert et al (1999) suggest that world-wide 60% of large companies and 30% of medium sized companies now use the Internet for marketing and business activities. They argue that setting up a web site is easily affordable for companies, and that it provides 'a more or less level playing field for all' (Berthon et al, 1996, cited in Gilbert et al, 1998). From a marketing perspective, the Web allows greater interactivity, thus allowing visitors to only select and retrieve information that holds some interest. Loughlin (1999) however, argues that for the supplier to be an active partner in the supply chain, a complete change of attitude amongst buyers and suppliers must take place. Relationships must be less confrontational and more collaborative, and 'change from being a Rottweiler to a St Bernard'. In other words, the supplier must nurture the supplier as opposed to apply pressure to constantly lower prices (Loughlin 1999).

It is becoming apparent that it is important that entering into partnerships are of paramount importance when developing business-to-business e-commerce operations (Angeles and Nath, 2000). However, although this may sound simple, in reality it is likely to be much more complex. Relationship literature poses the view that through entering into partnerships it is possible for organisations to access new markets, introduce new products and overcome trade barriers. Trust and commitment is key within a partnership, and these take time to build. In addition, partnerships are not without their problems, including an inability to meet the expectations of collaborating parties and reduced control.

The Textiles Supply Chain

The supply chain in the textiles industry is complex, with many different parties being involved, and may vary considerably from the supply chain that is shown here. Fashion and textiles is a volatile industry, and getting the right product in the right place at the right time can be difficult to achieve (Fernie 1994).

It is common practice for retailers to deal with manufacturers, with centralised buying and considerable negotiation on prices, quality and delivery schedules (Bruce and Moger, 1999). However, Popp (2000) suggests that in addition, in many chains there is an intermediary – often an import or export agency – acting as a significant figure within the chain. The addition of the intermediary has come about as a result of increasing globalisation within the industry. The textile and clothing supply chain is currently becoming more global, with many companies either sourcing components from overseas, or moving manufacturing to countries with lower labour costs. This is resulting in a diminished UK manufacturing industry, and a more adversarial chain, as companies are unable to collaborate to the same extent.

A number of strategies have been employed in the textiles and clothing supply chain in order to improve management, these include Quick response and accurate response (Chandra and Kumar, 2000). Quick response is used to improve competitiveness through improvements in collaborative and technological capabilities, and allows the speed-to-market of products by allowing them to move rapidly through production and delivery. Accurate response in an approach to forecasting, planning and production, which enables the company to build in its quick response capabilities, allowing companies to postpone the decision making process until forecasts can be validated by point of sale data.

Hines (2001) poses the Iceberg Theory, which identifies a number of hidden costs associated with overseas sourcing, including travelling and subsistence costs of buyers; increased time taken by managers pre-acquisition, during acquisition and post-acquisition; and the cost of lost sales as a direct result of late delivery of merchandise (fig 1).

It is important to question though, whether Quick Response and Just In Time are indeed completely achievable within the industry, or whether the reductions in stock holding enjoyed by one company are achieved at the expense of another. In addition, ICT plays an important role, by facilitating efficient ordering and tracking of goods within the supply chain, particularly when the supply chain is operating on a global basis. The Internet is a powerful new commercial medium, used for communication, cost reduction, management of suppliers, streamlining logistics and reaching the consumer. Within B2C e-commerce, consumers are able to gain easy access to information, and to search for a product. However, the effectiveness of the website itself is crucial, and this can be difficult to measure and determine. B2B e-commerce is the fastest growing segment, and allows companies to reduce purchasing costs, reduce inventory, lower cycle time and lower costs of marketing. The Internet has been described as the world's most important network, and allows companies to build links directly with customers, suppliers within the supply chain, whilst at the same time being flexible, dynamic and affordable for companies of all sizes. This is having a considerable effect upon the management of the supply chain, enabling collaboration and sharing of data.

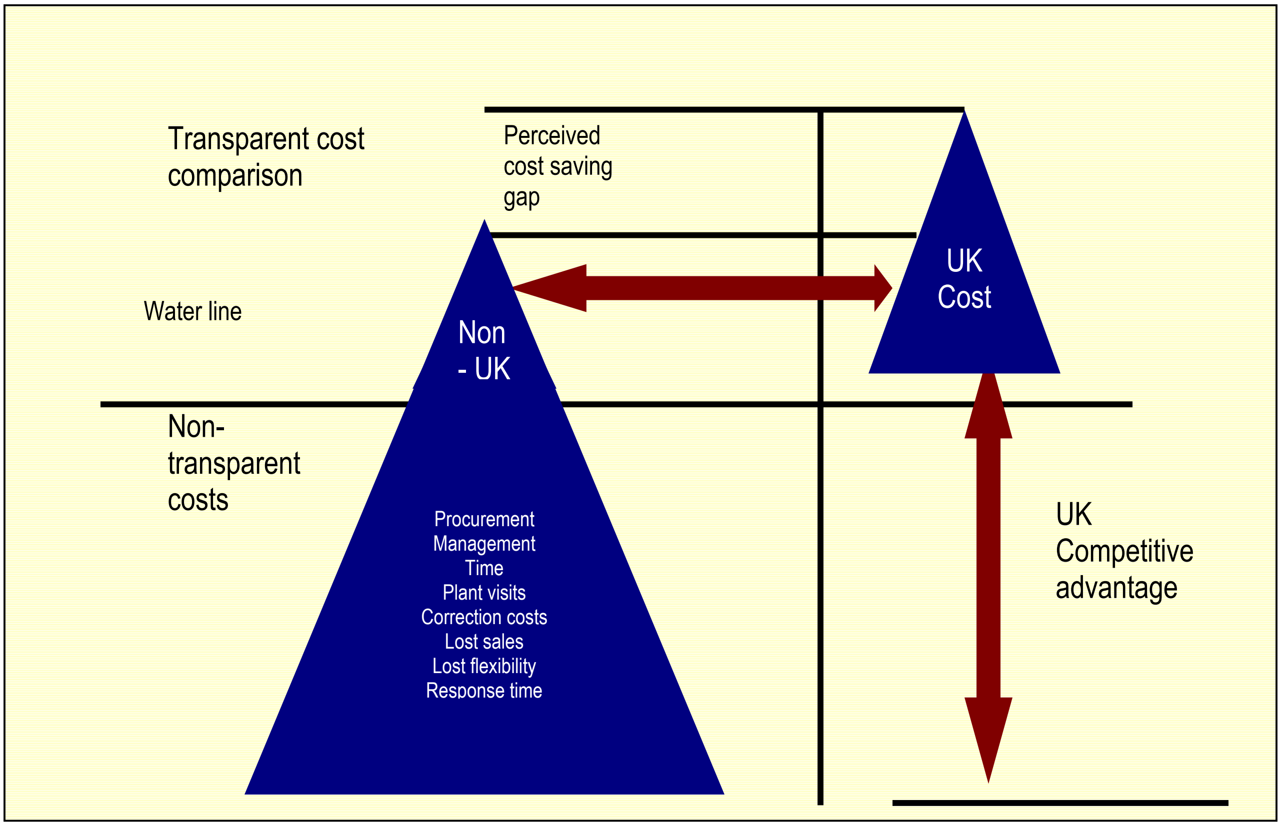

Figure 1: The Iceberg Theory of Cost Comparison (Source: Bruce and Hines, 2001)

Supplier - customer relationships in the textiles supply chain

Jones (1997) suggests that the textiles/clothing supply chain has three different levels, fabric manufacture, garment make-up and retail to the consumer. Bruce and Moger, (1999) suggest that there are three retail-supplier relationships to be found in the textile and clothing industry – co-partnership – close, well established relationships with key suppliers; ad-hoc relationships – less trust between parties and a reluctance to share ideas, no key suppliers; and small networks of independents – independent retailers sourcing innovative ideas from creative suppliers.

Perry and Sohal (1999) argue that co-operation within the chain is a key factor to efficient delivery of products. Included within this are improved relationships between partners, improved responses to orders and reduced pipeline wastage and delay. It is also argued that improved planning with all parties within the chain would result in an improvement in on-time delivery (Perry and Sohal 1999).

Relationships within the textiles and clothing supply chain can often be uncertain. Bhamra et al (1998) highlight that often manufacturers can put substantial effort into working with a retailer to then find that the product is sourced elsewhere. This creates a lack of congruence in commitment and adherence to common goals throughout the chain. Popp (2000) argues that within a textile and clothing supply chain with an intermediary, barriers to communication can be easily recognised. This has the effect that, rather than add value to the chain, the intermediary is adding cost. Cost can be found in terms of distance, culture, volatility, and can relate to both supply and demand (Popp, 2000). Often retailers hold the power in the supply chain, and building partnerships can be complex and fraught. Often the retailer will place a considerable part of the marketing, servicing and cost burdens on the manufacturer, and small companies in particular are not able to absorb such costs (Lewis, 1997).

The main aims of the research:

1. To identify how companies in textiles and clothing are using e-commerce
2. To identify how e-commerce benefits such companies
3. To identify salient issues facing companies moving into e-commerce

This paper illustrates three case studies from the companies involved in the study. The study was carried out with 10 companies, both in the UK and the US, but due to limitations of space only a small sample will be discussed.

Results

Case 1

Company 1 is a US based global producer of womens clothing. They produce 5 different and have just acquired licensing rights to DKNY Active and Jeans.

Company 1 has recently established a new department, concerned with design technologies, such as the use of CAD for surface design. The company has had to restructure to integrate different departments. CAD was first introduced into the company in 1995, but it took the company 2 years to fully convert from doing hand painted textiles to using the CAD system. The company has over 40 users of CAD and 50 workstations. Through the use of Style Manager the company has moved from doing specification packages by hand to on-line and now all the designs are now transmitted through the company electronically. This was a huge initiative for the company, and was a complex process. One of the main challenges was teaching people who could hand-paint to paint on the computer. 75-100% of all textiles in the company are designed on the CAD system.

The company uses the Internet for B2B transactions, Specnet being one of the applications. They have Lizlink, which is available for vendors to access, and small companies are able to order online via EDI systems. They are currently in the process of considering using the Internet for B2C activities. In consumer markets their products are available on line through department stores that sell their products and also sell online. Company 1 does not have input into their section on any of the customer's websites. They see one of the greatest challenges of the Internet as being inventory.

The company has an Intranet site, which is not accessible to manufacturers, and is just used as a corporate communication tool. It has been in operation since November 1999 and is used to communicate trends and colour information throughout the company to designers. Designers are able to access inspiration for designs through this, and there are different inspirations for each month. Offshore offices are able to access the information, as they help the company to source. These offices are in Hong Kong and Taiwan. They also have agents, Egypt, Israel, Sri Lanka, Japan, and Korea. The Intranet is also used to publish all of the company newsletters, and is used as a corporate communication tool. The system has been operating since November 1999.

The company finds that one of the major benefits of using the Intranet for such purposes is reduced cost. They have found that there is less copying of resources such as mood boards, a better sell through, improved communication and reduction in the time needed to do certain activities. They are now able to move the conceptual design phase much closer to the end of the process.

Case 2

The Company 2 is the world's largest manufacturer of apparel, with revenues in 1999 approximately $5.6 billion. They have a number of global brands. They are also the largest supplier of work wear in heavy industry, special products such as space suits and fire fighters uniforms, and uniforms for the postal service and Federal Express. The philosophy of the company is growth by acquisition on a global basis, and then to implement common strategies and processes.

Company 2 sees e-commerce, as a major step forward – for them B2B is a major priority, whereas going directly to the consumer is not, and includes customer/retailer affiliations as part of B2B. They feel that retailers need some solutions and services from them as a company – there is a role for them to play. Their business model concerning e-commerce has not yet emerged, but could possibly include inventory holders, fulfilment and ownership of customer care.

In April 1998 Company 2 had their first e-commerce venture. They had a lot of individual brands with informational sites. They then carried out some research into what competitors did, and then moved forward to decide what the role of Company 2 should be. They identified one of their Brands, which had numerous small accounts, and so less dependence on one major company therefore reducing channel conflict, and decided to offer the brand to the end consumer over the Internet. The site offers full retail opportunities for visitors. This is contracted through Yahoo and AOL. This has seen some success, although it has not yet reached the purchase goals that were initially predicted.

Presently Company 2 does not use e-commerce in their supply chain at all with suppliers. They are starting to use e-commerce supply purchase in the next few months, and then move into direct purchasing. The company found that they could not convince themselves that there were true gains for them in the B2C area of e-commerce. The company feels that they are 'past driving on the edge', and feel that they are ahead by not spend large amounts on money producing websites for all of their brands. They have seen a huge move towards B2B, and can see a lot of change.

Company 2 feels that they rely less on the 'first mover advantage' and more on doing something correctly when it is done. To Company 2, 'correctly' will bring a lot of change to the company. They feel that they need to fully understand the company, what makes them successful, and then to capitalise on these strengths. This might include brands, technical expertise. They want e-commerce to enhance what they are currently offering, not to replace. They also feel that there is no point in rushing the process, but prefer to take a considered look at the whole of the business. They feel that they have learnt from their experiences of AOL – and that the main lesson from this is to take the process much slower.

Company 2 feels that the business model and e-commerce are closely linked and that e-commerce is intrinsic to the business model. Company 2 does not regard e-business as something separate, but as something that is intrinsic to the business model.

The company would like to take part in a partnering venture with a retailer, rather than attempt this alone, so that they do not miss out on the e-commerce market. Research has projected that overall, apparel sales via the Internet will still be less than 10% of the apparel market in the US – the project is around 8%. Company 2 is trying to keep this in perspective.

Case 3
Company 3 was formed in 1995 and arose from an opportunity to supply a variety of sofa beds to a disparate group of independent retail outlets. The company employs 8 people and has a turnover of approximately half to one million pounds per annum.

The customer profile has changed somewhat with the introduction of e-commerce. The company has three sites – www.sofabed.co.uk, www.'company3'.com and www.just4kidz.co.uk. The Company 3 site is designed for organisational customers, consisting of major furniture retailers. The sofabed.co.uk site has been developed for the consumer direct sales aspect of the business, as is the just4kidz site. The major difference for Company 3 is that the direct sales side of the business is a new venture, as previously they supplied only retailers. The current customer profile for the business is 33% consumers, 33% catalogue customers such as Scotts of Stowe, and 34% to retailers such as John Lewis.

Company 3 Sofabeds consider that currently e-commerce is a tool by which they are able to effectively and easily show their product offering to a potential customer. The move into e-commerce has taken considerable planning, and more is still required, but time is a major constraint. Currently e-commerce is not fully used as business-to-business tool, although occasionally the direct sales site generates enquiries from retailers. The business-to-business aspect is not seen as a priority at present, at it is felt that the greatest financial returns are to be gained from the business-to-consumer site.

As a result of going online, the company is now receiving request from overseas, from America and Australia. These are coming from the sofabed warehouse site, which can receive up to 20 enquiries a week from the US. It was felt that this was likely to be an inevitable outcome of promoting the company online. However, currently the company does not feel in a position to be able to supply overseas due to costs of shipping large objects such as sofabeds.

The company has three websites. They decided to do three separate sites as they recognise that e-commerce is a powerful tool for a business, and felt that they were missing out on sales in all areas of the business. The sites have been live for six months. Currently the direct consumer sales site receives six to ten enquiries in a day, and approximately thirty over a weekend. The conversion rate of these enquiries to sales is 20-25 percent. Time was a major barrier to the company going online at an earlier stage.

Company 3 receives a report each month detailing who uses the site. This provides information on where enquiries are coming from, whether they are hyperlinked in, from Yell, or by the address being keyed in. This is considered to be critical information. Feedback about the website is of paramount importance. Each customer that rings the company is asked to give feedback with regards to how they were introduced to the site. It is rare that the company employed to maintain the site will give feedback on any problems occurring with the site – customers communicate these.

It is felt that a major benefit of the site so far has been that it enables the company to immediately show products to potential customers, without the time delays associated with a traditional brochure. This makes them more of a captive market, and also enables the company to sell to customers that want to order quickly, and are not prepared to wait for a brochure to arrive in the post. A major benefit to Company 3 is the ability to sell directly to the end consumer, rather than only through retailers. Benefits of this are that they are able to command a greater price, and thus an improved profit margin when selling to the consumer, and that they do not have to wait for payment as when they are selling to retailers. Company 3 find it much harder to quantify how the business-to-business site benefits the company at this stage. It is felt that within the industry there is reluctance by retailers to move into new communication technologies such as e-commerce.

The sofabedwarehouse site has been backed up by an extensive Yellow Pages advertising campaign, with the company site listed in

Yellow Pages nationwide. This has cost the organisation £30,000. this is considered to be a crucial means of advertising for the company. The site is also promoted through banner adverts on other websites, such as www.yell.com. The business-to-business site is promoted on the back of the company promotional literature. However, as this is not seen as a site that will provide substantial benefit for the company, it is not actively promoted in the same way as the sofabed warehouse site.

Company 3 considers that interaction with their customers is crucial and that this can be lost with e-commerce. Therefore, the company has made the decision not to become totally e-commerce enabled, but instead to use the site purely as a promotional tool, and a means by which to make customers aware of products. It is felt that one-to-one contact with customers is a crucial element of the sales process, and that would be lost if customers were able to order online. This personal contact is important, as it allows Company 3 to sell additional products such as anti-stain treatments.

It is felt that the online ordering set up by the customer has disadvantaged the relationship with that company. It is now a faceless operation, and the general consensus within Company 3 is that it is important for an SME to maintain a system of close contact within the supply chain, and not to lose the interaction. One way of doing this is through talking directly with customer. It is felt within the company that e-commerce removes a great deal of the interaction within the supply chain, and that thus this jeopardises relationships. From the perspective of the company, it is felt that although the website enables the customer to get an impression of what the company is able to offer, it is crucial to allow the customer to also be able to contact the company and speak with someone, as they may have different requirements, which the company is still able to meet, but which are not shown in detail on the site.

Case 4

Currently UK based Company 4 has 67 employees, and has been operating for 22 years. The company produces work-wear for the catering and hospitality industry, and sees its main competitors as Simon Jersey and Alexandra. The business is family owned. The majority of their customers are large restaurant chains. They operate within a saturated industry, and being able to differentiate from competitors is crucial. In addition, many of the larger companies now import from low-labour cost countries, resulting in longer lead times and less reliable delivery. Company 4 manufacture on site, so are able to offer customers reliable service and quality, and short lead times, but are unable to compete on cost alone. They feel that their reputation is based on quality, so as a result are reluctant to move manufacturing overseas.

It is felt that IT and e-commerce has changed the philosophy of the business, and the company now actively employs computer literate staff, as it is such an important part of the business. Company 4 is strongly oriented toward IT and e-commerce, as the director studied software engineering at University and was keen to get the company moving forward into the next generation. They were the first company in their industry to offer products to customers online, and also to offer the facility to make on-line credit card payments.

The company website has been live for the last 3 years, and people have been able to undertake online ordering for the last 2 years. Customers are moving more into online ordering and using e-mail as a communication tool. Often orders are attached to e-mails, and telephone ordering is not longer available, as it is felt that this is not secure. It is much easier to keep records if orders are not verbal. Within the organisation all forms are now stored electronically, and e-mailed between personnel. This makes sharing information and completing documents much faster.

When deciding upon the e-commerce strategy for the company, certain things were rejected, as it was felt important not to jump to quickly into the area, but to take it at a manageable speed and ensure that certain aspects work before moving on to the next stage. A number of resources were required to move into e-commerce, including people and money. Training was also a key issue. No new staff were recruited.

When the company moved into e-commerce company objectives included increasing market awareness, to provide customers with a purchasing facility, and to provide relevant and up-to-date information for existing customers. These objectives have since been met, and the company is seen as one of the most forward thinking and proactive in their field. The company has since set new objectives, including providing customers with more information, and make the site more interactive between Company 4 and each individual customer. This would include allowing customers access to levels of stock holding for their own products, which would then enable to inform Company 4 if manufacturing levels needed to be increased to meet demand.

Company 4 website is managed by Company 4 itself, not outsourced, and is viewed as a central aspect of the company. The site is updated on a regular basis, often once a week. In addition, the whole appearance of the site is changed approximately every nine months, in order to keep people interested, and also when the new brochure is produced. Important points are seen as being easy navigation and interest to customers. Use of the website is tracked, although currently Company 4 is unable to determine where people come from when they access the site. However, the company does know how long people stay on the site. They find that often people will just visit the 'news' page or the 'communications' page to get contact details.

Company 4 feels that the key aspect of their site is that it serves a definite purpose. Regular customers who visit the site, and order large quantities are able to see keep records of past orders, place new orders and make payments on personal pages within the site. Recently the company has introduced a facility that allows a customer to track the status of their order, and print invoices and statements.

One major benefit is the increase in business. Company 4 has found that international presence of the company has increased as a direct result of having the site, and requests have come in from agents worldwide. It is felt that the website has gone some way towards enabling the company to operate on a global basis. Without being online the company would not have been able to carry out any form of international marketing.

Building a website has enabled Company 4 to achieve considerable promotional cost reductions. Producing brochures can cost up to £1.30 per brochure, which makes them costly to both produce and update. By using the website as a promotional tool, they are able to provide customers and potential customers with up-to-date information at a much lower cost. In addition, the company is able to reach overseas customers much more easily.

The site has enabled Company 4 to offer improved service levels to their customers by providing them with access to account information as and when they require it. It is felt that this has improved the company's profile and increased customer confidence in the company. It is also felt that although face-to-face contact has been removed, there is more collaboration within the supply chain, as companies are able to feel more involved.

Initially there was some degree of resistance from people working within the company, particularly amongst older people, although they could see that there was a need for change. However, with both internal and external training this problem has been overcome. This process took 6 months, and now people who initially were wary, are developing new ideas and requirements for their departments. The only problem, as far as Company 4 is concerned, with dealing electronically, is the lack of personal contact with the customer. They feel that this discourages relationships with customers.

Conclusions

Literature suggests that e-commerce is a useful tool for communication, education and entertainment, and an invaluable mechanism for disseminating information and facilitating collaboration between companies (Leiner et al, 1997). It has also been cited as a medium by which to target new markets (Al-Moumen and Sommerville, 2000). This was a major benefit for the small companies that took part in this study. Companies felt that they were able to target new markets both domestically and globally by having an Internet presence. In addition, benefits were recognised from the fact that the Internet has a potentially infinite audience, in that the company does not restrict this by promoting in a trade magazine for example. However, a disadvantage of this was noted to be that often requests did not develop into contracts, as marketing was not targeted in any way.

Tracking was considered by companies involved in the study to be an important factor of having an Internet presence, fitting with themes highlighted in e-commerce literature (Studt 1996). Methods cited include tracking the number of hits that the site receives in a given period of time, associated sales from the site, links from other web pages, and references to the site. These compare to the methods by the UK companies in this study. However, tracking is not solely involved in collecting this information, it is important to actually use the information collected to modify and improve the site.

Rose (2001) suggests creating personalised experiences for different customer segments in order to build loyalty. This was an issue for the UK companies involved in the study, three of which had separate websites for different target markets, in order to minimise factors such as confusion and channel conflict. However, Rose (2001) argues that this will build loyalty amongst customers, but this study has indicated that loyalty is built upon trust of the brand and the company, and also by the company addressing issues such as fulfilment. One of the companies in this study felt that trust and confidence in the company is built by providing the customer with contact details and the opportunity to speak with the company, rather than just a faceless website.

O'Keefe et al (1998) suggest that IT provides small companies with the opportunity to gain competitive advantage, but that such companies are likely to be forward thinking and less likely to find the demands of the web inhibiting. Research carried out as part of this study would suggest that this might not always be the case. One company only went online during the course of this study, not as a result of not being forward thinking, or finding the demand inhibiting, but merely because the owner-manager was too involved with other aspects of the business to find the time to devote to online activities. Small companies face many constraints, including skills, time, resources and finance, and the companies in this study indicated that these were inhibiting factors to building and online presence.

E-commerce literature suggests that through e-commerce sellers are able to take advantage of additional channels with little disruption to existing distribution, and achieve a way of disposing of surplus inventory. Although physically this may be possible, research carried out with companies in the US has indicated that in reality this is not possible due to the risks of channel conflict between existing customers and new profile customers. Company 2 cited the example of a traditional manufacturer selling to retailers and using e-commerce to also sell directly to retailers to illustrate this point, indicating that a major issue would be becoming a competitor to your customers.

Globalisation has been cited as an issue in both supply chain and textile and apparel industry literature, with the move to sourcing overseas. E-commerce enables the small company to become involved in this, and opens the global market up to companies other than large international corporations. All of the companies involved in this study cited one of the major outcomes of having an internet presences as being the increased interest from potential overseas customers – something that many of them they had not experienced before building their site.

References

Angeles and Nath (2000) The importance of congruence in implementing electronic data interchange systems, Supply chain management: An international Journal, Volume 5, number 4, pp 198-205

Barnes-Vierya and Claycomb (2001), Business-to-business e-commerce: Models and managerial decisions, Business Horizons, Volume 44, issue 3, pp 13-25

Bhamra T; Heeley J; and Tyler D; (1998) A Cross-sectional approach to new product development, The Design Journal, Vol 1, Issue 3, pp 2-15

Bruce M and Moger S (1999) Dangerous Liaisons: An Application of Supply Chain Modelling for Studying Innovation within the UK Clothing industry, Technology Analysis and Strategic Management, Vol 11, No 1,

Chandra, Charu; Kumar, Sameer (2000), An application of a system analysis methodology to manage logistics in a textile supply chain, Supply chain management, an international journal, Vol 5, number 5, pp 234-244

Cheng, Li, Love and Irani (2001) An e-business model to support supply chain activities in construction, Logistics Information Management, Vole 14, Number 1 /2, pp 68-77

Desbarats, G (1999) The innovation supply chain, Supply Chain Management, Vol 4, No 1,

Falcioni (1999) The Business to Business Internet (Editorial) Mechanical Engineering – CIME

Fernie, J. and Sparks, L. (eds.), (1998), Logistics and Retail Management, insights into current practice and trends from leading experts, Kogan Page Ltd., London, UK.

Gilbert, Powell-Perry and Widijoso (1999) Approaches by hotels to the use of the internet as a relationship marketing tool, Journal of marketing practice: applied marketing science, Vol 5, no 1, pp21-38

Hines (2001) From analogue to digital supply chains: Implications for fashion marketing, Fashion Marketing, contemporary issues, ED Tony Hines and Margaret Bruce, Chapter 2 pp 34-36, Butterworth and Heinemann, Oxford

Hines (2001) Globalisation an Introduction to Fashion markets and fashion marketing, Fashion Marketing, contemporary issues, ED Tony Hines and Margaret Bruce, Chapter 1 pp 1 -24, Butterworth and Heinemann, Oxford

Jones, Richard (1997) Stock Changes in UK Manufacturing with reference to the Clothing Manufacturing Sector Journal of Fashion and Marketing Management p201 – 215, Vol. 1, No. 3,

Klein and Quelch (1997) Business-to-business marketing on the internet, International marketing review, Vol 14, no 5, pp 345-361

Kuechler W; Vaishnavi V; Kuechler D (2001) Supporting optimisation of business-to-business e-commerce relationships, Decision Support Systems, Vol 31, pp 363-377

Loughlin (1999) Viewpoint: E-commerce strengthens suppliers' position International Journal of Retail and Distribution Management Vol. 27, No 2

McGaughey (1999) Internet Technology: contributing to agility in the Twenty-first century International Journal of Agile Management Systems 1/1

McGuffog and Wadsley (1999) The general principles of value chain management, Supply chain management: An international journal, Vol 4, Number 5, pp 218-225

Meeker, Edwards, Sherrick, Phillips (1999) A Framework for B2B, Net Market makers Ground Zero 2, November 29th

Perry M and Sohal A (1999), Improving service quality within the supply chain: an Australian study, Total Quality Management, Vol 10, No 4&5, pp 673-678

Popp A (2000), "Swamped in information but starved of data": information and intermediaries in clothing supply chains, Supply Chain Management: An International Journal, Vol 5, No 3, pp 151-161

Ratnasingam (2001) Inter-organizational trust in EDI adoption: the case of Ford Motor Company and PBR Limited Australia, Internet Research: Electronic Networking Applications and policy, Volume 11, Number 3, pp 261-268

Wang, Head and Archer (2000) A relationship-building model for the web retail marketplace, Internet Research: Electronic Networking Applications and Policy, Vol 10, Number 5, pp 374-384

Wong, A (1999) Partnering through co-operative goals in supply chain relationships, Total Quality Management, Vol 10, No 4 and 5,

AUTHORS' INFORMATION

Lucy Daly
Professor Margaret Bruce
Department of Textiles, UMIST
PO Box 88, Manchester, M60 1QD

Lucy.daly@umist.ac.uk

margaret.bruce@umist.ac.uk