What Brown Does For E-Commerce

A UPS Case

William V Rapp
Presenter

The New Jersey Institute of Technology
School of Management

University Heights
Newark, NJ 07102, USA
973-596-6414 (Fax: 3704)
E-mail: rappw@adm.njit.edu

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Abstract

This paper assesses the realities and policies behind UPS's stated e-Commerce initiative. People involved in both B2C and B2B e-commerce know that UPS plays a very active and critical role in facilitating the actual translation of a virtual purchase into the delivery of a real product as well as in tracking those deliveries and facilitating returns. Yet, how many are aware of UPS's actual e-commerce strategy, how this is implemented in terms of their commitment of resources to this effort, and how this may affect the evolution of e-commerce both in the US and globally? NJIT’s School of Management has been developing a series of on-line cases on UPS with their active cooperation and participation. The cases directly consider these and related questions. They include consideration of UPS's evolving system requirements, their stated and implicit e-commerce strategies and their connected partnerships such as the one with 7-Eleven in Japan and other parts of Asia. This paper in particular addresses "What Brown Does For E-Commerce" in terms of the way it actually supports e-Commerce through its IT and physical infrastructures, it connections and interactions with e-commerce customers (B2B or B2C) and its constant cost reductions through user economics and economies of scale.

What Brown Does For E-Commerce

Introduction and Background

Retailing entered a new era in July 1995 when Jeffrey Bezos opened a web site to sell books. Naming his online store after the mighty Amazon River, it was the first serious effort to sell products directly to consumers using the Internet, often referred to as B2C business-to-consumer as compared B2B, business-to-business e-commerce. This paper considers in detail an important part of the virtual and physical infrastructure needed to successfully help realize the potential of e-tailing whether B2C or B2B, including its development in countries outside the United States.
As an introduction, the paper begins by looking at some e-commerce players in the late 1990s, with particular attention to factors creating initial difficulties such as the failure to add much value to the marketing-distribution chain or not achieving economies of scale or scope. It then shows how delivery services and particularly UPS have developed their physical and virtual capabilities to help solve many of these issues and rapidly advance the growth and sophistication of e- and m-commerce.

**Early E-Commerce**

During its infancy in the 1990s, e-Commerce can be usefully analyzed by distinguishing between two types of companies, pure start-ups and forays by established firms.

**Start-up “Clicks”**

Amazon.com started as an electronic emulation of catalogue retailing where the web site substitutes for a traditional paper presentation. Because the US catalogue segment was well developed, consumers or businesses readily understood substituting the Internet for a catalogue. The perceived advantages included the real-time availability to freely browse information on promotional sale prices or out-of-stock items while not having to make a phone call. Added to this was the convenience of 24-hour shopping.

Numerous online start-ups followed Amazon. Some had viable business plans, but many were organized primarily to respond to the rapidly inflated demand for Internet-related IPOs that encouraged Internet entrepreneurs to raise hundreds of millions of dollars. Most new online sellers had rapid “burn-rates” (negative cash flow) and quickly used the billions raised from venture capitalists and IPO investors. This was due to large initial investments in hardware, systems and web site development. On top of this came marketing costs to attract customers away from the reassurance of a “real” store or outlet if there were purchase problems. Many offered steep price discounts and absorbed shipping costs. They also spent lavishly on advertising to develop brand recognition and make consumers aware of their web sites.

"Bricks" Strike Back

The perceived threat to traditional retailers of B2C and B2B e-tailing start-ups created by Wall Street and media hype shook these industries. Under pressure to be part of the “new economy”, many traditional sellers moved aggressively to enter e-Commerce. Several created web sites and many established e-Commerce tracking stocks so they too could raise capital quickly and cheaply or make acquisitions for stock on a comparable basis to the “Click” start-ups. (In mid 1998 Amazon.com had a stock market capitalization exceeding traditional bookstores Barnes & Noble [BKS] and Borders Group combined despite having sales of only some 20% of BKS.)

These established firms’ foray into e-commerce is popularly known as “bricks-and-clicks” because of the firms’ existing physical infrastructures. A good example is Barnes & Noble, a bookseller with large stores across the United States. BKS launched the barnesandnoble.com web site in 1997 and established a separate tracking stock (BNBN) for its dot.com affiliate in 1999.

Over time, these established firms displayed some clear advantages over the start-ups. First, most effectively managed to leverage their existing brands and name recognition, permitting them to spend less on advertising compared to start-ups. Because they typically had existing capital and cash flow from their regular stores to invest in their e-Commerce ventures, they were less VC or IPO dependent. This gave them better control over their business operations.

In addition to leveraging name recognition for greater consumer confidence there was the convenience of ordering online and taking delivery (or making returns) at a nearby store, saving shipping charges and having to make trips to the post office or schedule delivery services. Complaints could be handled in person if necessary. They accepted payment for online purchases in their retail establishments, reassuring customers reluctant to give credit card information online. Yet, customers still had the benefits and convenience of 24-hour access and the ability to conveniently browse for information in their homes.
To emulate these advantages, some start-ups began building their own physical infrastructure, such as selling booths in shopping malls. Further, during the dot.com mania, some used their inflated stock values to acquire established firms. They also worked with delivery services such as UPS to reduce or even eliminate many of the costs and hassles related to shipping and returns such that even for established retailers it is now more convenient and cheaper to use UPS than to drive to the mall. Indeed as we shall see below this is a critical aspect of both UPS’s basic business strategy and how it supports e-Commerce

Survivors

Overall, some combination of bricks and clicks has emerged from the 1998-2001 period as the e-Commerce approach most likely to be successful in the “new economy.” This is especially true when one recognizes another key competitive advantage of traditional firms - their management’s knowledge of their customers and their industry’s particular economics since it has generally proven easier for those with industry supply, marketing and distribution knowledge to learn or buy IT expertise than vice-versa (Rapp 2002).

Factors in e-Commerce’s Initial Difficulties

Still, even most established firms lost money during this period on their e-Commerce activities as they encountered significant problems. Four factors seem especially important, with the last two being especially fatal for start-ups.

1) Customers did not flock to online purchasing to the extent, or with the rapidity, the industry expected. Though it is often easier to order online and get delivery than go to a store, many online browsers went to stores or business outlets for the actual sale. Factors contributing to this included concerns with the security of online payments, limited Internet access, and delivery times.

2) Advertising costs associated with trying to build a customer base were large, especially for start-ups. As creative as some of the campaigns were, they were not enough to ensure success or even survival.

3) In most cases, 3rd-party shippers such as UPS or FedEx deliver the merchandise. But customers have often resented having to pay a shipping charge, partly because they generally under-estimate the out-of-pocket and opportunity costs of going to a store.

4) Start-ups rarely had a proprietary interest in the products they sold and, given consideration 1, could achieve volume purchases that would give them any advantage over large established players in their product category.

Need to Add Value and Spread Costs

The last two factors were aspects of a broader problem: the typical start-up occupied a relatively small part of the value chain between the production of a good or service and the customer. So it added little value.

Amazon.com started in Seattle to be near an established book distributor Ingram. But Amazon itself does not produce what it sells, and third parties provide delivery and credit card payment services. Therefore to amortize the high fixed cost of its hardware and software systems, it has had to generate economies of scope by dramatically expanding the range of goods and services it offers. Selling and shipping CDs or DVDs is thus very similar to marketing and shipping books. While established firms generally could capture a larger part of the value-added stream, they are not well positioned to develop economies of scope when the “bricks” part of the business is specialized. Thus the successful B2C or B2B e-commerce firm is one that can create economies of scope that traditional sellers cannot match. But this success has depended on advances in the delivery infrastructure that have reduced the costs and frustrations associated with e-commerce’s initial development. The leader in this effort in terms of money, commitment and infrastructure has been UPS.
UPS Supply Structure

UPS Support For E-Commerce Activities

This section describes how UPS supplies critical virtual and physical support for e-Commerce whether it is just “Clicks” or “Bricks and Clicks” and whether those businesses are B2C, B2B, or a mix of the two. It does this by describing how UPS has developed and is currently managing its IT support for its customer facing applications including relationships with e-Commerce clients. The focus for this effort is UPS’s public website, ups.com [see Appendix].

Management responsibilities for the software development for this website covering applications such as shipping, cost and time quotes, and registering for ups.com is split between Maryland and New Jersey. In this regard one major software application development responsibility is the PC based shipping system that relates the PC desktop with the Internet that includes the printing of shipping labels at the warehouse (backroom) that are put on the boxes or in the customers’ home or office in terms of returns.

In this respect the systems is blind as to the customer’s actual business. So a shipper could be either e-commerce (virtual) based or mortar based or a combination and the system would handle the production of the label and the subsequent shipment to the final recipient in the exactly same manner. The “Worldship” system is both domestic and international. This organization is critical to understanding that UPS is essentially supplying a black box physical delivery and virtual package tracking system into which any client shipper can plug. This generates tremendous simplicity to its operation as UPS need not distinguish in its operations and support systems between e-Commerce shipping clients and any other shipper. It also generates economies of scale and scope where the increased number of users lowers the average fixed cost of its extensive investments in IT, service centers, and transport equipment (planes and trucks).

Some large shippers use both “Worldship’s” domestic and international components. Once a shipment has been picked up and begun its journey, the physical piece is tracked by the virtual system. In this sense the physical and virtual aspects of the UPS delivery and tracking system can be separated even though from a customer service perspective the two are closely integrated and make possible the tracking and completion of the e-Commerce sale.

Still from a strategic and operational viewpoint it is critical to realize that despite their advertising, UPS information technology does not really distinguish between B2C and B2B commerce or between e-Commerce, “clicks and mortar” commerce, and regular commerce. As explained in more detail below, once they enter the system all packages are handled pretty much the same.

For example, tracing a hypothetical on-line order one finds that the seller (shipper) acts pretty much the same regardless of the order. First they help the final customer complete a connection to the system with the information flowing back to this customer in terms of transit times, cost, etc. UPS provides the client shipper (seller) with the software development tools to make this connection work smoothly.

After the client shipper has completed the connection, UPS then supports this in order for the final customer as well as the client shipper to know when a particular package has entered the physical shipping system and to then track it through delivery. Indeed, there is a suite of tools available to the client shipper in order to ask these questions on behalf of the final customer. XML APIs are used to integrate the shippers and final customers into the UPS system.

The client shippers can also use these tools to support their own customer interface in terms of shipping options. This is because these tools will help the client shippers to specify delivery options and times as well as rate quotes for each of these shipping options. The clients can then indicate these to their final customers whether they are regular or e-Commerce

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1 The author wants to thank the many people at UPS that have tried to help him understand how UPS supports the customer interface including those in e-Commerce. However, any errors in comprehension remain those of the author.
customers for both B2C and B2B transactions. Further, once the client shipper knows their customer’s shipping delivery choice such as surface or next day air, they can use the tools provided by UPS to commit to a particular shipping method via UPS. In fact the e-commerce shipper can invoke a tool that commits UPS electronically by getting back a label that can be put onto the package to be shipped.

For really big retailers or shippers, they have an added wrinkle to the “Worldship” system. In this case they link the client with certain UPS facilities that are close to the shipper or the shipper’s customers. They then combine these links with a sophisticated logistics system that routes the client’s packages optimally in terms of timing and efficiency. Further, UPS may make several pick-ups a day at the client’s shipment point or may leave trailers there that the client loads for a UPS pick-up. The client can notify UPS as late as the afternoon or evening before that they will need a pick-up or several pick-ups. This service can also be adjusted for seasonal variations such as at Christmas or Mother’s Day. The client shipper in these cases prepares a closeout shipping manifest for the trailer or other prepackaged shipment that is then cross checked at the UPS facility as it enters each package into the system for ultimate distribution.

That is after UPS picks up the shipment or trailer they take it back to a UPS facility where it is unloaded. The smart label that the shipper has put on to each package is scanned and the information is checked automatically by the system against the shipper’s manifest and any problems of too many or too few packages is identified. Once the shipping information on the smart label is entered into the system, a logistical algorithm will plan how the package will actually be routed through the UPS network and sorting centers.

For some very big shippers these manifests are sent to UPS via an EDI feed. There is another service called “Quantum-view” where shippers and/or receivers can see not only what they have shipped but also a timetable on what they are going to receive. The latter can be very important for customers involved in just-in-time type of production systems. That is, this is designed for clients for whom the shipping status is very important. Someone like Dell might be an example of this type of “in-bound” client that are getting several large critical deliveries every day. Actually because shippers and final customers can both track on-line where the package is at any point in time, this optimization process is actually visible to the UPS client. Client shippers also have the option of having package tracking automatically made available to their customers, so that they can anticipate when a package is in the system and is going to be delivered.

Because UPS maintains the shipment manifest information, which it gets from the shipper, as well as the current status and delivery information, clients can always link to the UPS website to find the relevant shipping information [Appendix]. In the case of shippers, UPS has devised systems that leave the option to the shipper as to whether their clients (final customer) can track their packages via the shipper and the shipper’s website, via UPS and its website (ups.com) or both.

So for example, if one purchases a gift for another person through an e-Commerce website, either the shipper and/or UPS can provide tracking and package location notification to the shipper, the person that bought the gift, and the person receiving the gift through the whole shipping and delivery process. This includes transit, indication of time of delivery and if someone signed.

UPS also uses historical data to help them anticipate the needs of particular customers at certain times of the week, month or year. So they know their seasonal customers and their requirements. Indeed, for some customers they can preview for that customer its likely requirements a year in advance. This is also how they anticipate their own needs for added IT systems, physical infrastructure capacity, or additional transport equipment. However, their recent experience has been that IT system and other capacities added to handle the volumes at peak times such as Christmas are actually being fully utilized a few months later.

So they have been fairly aggressive over the last few years in adding capacity, especially IT systems, without worrying that it might be idle or under-utilized for some period of time. Another important aspect of the system centers around the need to handle returns, an issue as noted above that has been particularly sensitive for e-Commerce companies and their customers.
Here as in the e-Commerce shipper’s case, UPS’s actual relationship is strictly with the original shipper and that shipper pays UPS not the ultimate customer or the one doing the return. In the same manner the shipper or e-Commerce firm deals with the credit card companies to have the final customer’s account credited. Thus, UPS never gets between the client shipper and its customer. So when the ultimate customer pays for a product including shipping and their credit card is charged the total cost is paid to the shipper and the shipper then pays UPS whatever their shipping agreement with UPS specifies.

This actually makes perfect sense because many retailers and e-Commerce firms charge a rate that covers shipping and handling but does not correspond with what they pay UPS while conversely e-Commerce firms that include free shipping as part of their service can handle their payments directly to UPS as well. Since UPS’s objective is to give its major shipper relationships the best service and flexibility, this approach serves both UPS’s and the shipper’s interests. In addition, it means that for payment the ultimate customer is only dealing with one entity, the seller shipper, and UPS does not get between the seller and their ultimate customer.

As an indication of how flexible UPS is on this issue, in the case of some customers that do a lot of shipping, they can actually have their own account with UPS that they use when ordering as opposed to using the shipper’s account. Some users of E-bay and Pay-Pal for example have their own UPS account and UPS has provided E-bay and Pay-Pal the tools necessary to integrate this into their offerings. But as noted above such services are not just for e-Commerce clients but these tools are also available to their traditional and “bricks and clicks” clients too. In sum, the tools and design are the same and are available to any client to use.

Conclusions

If there is a differentiator from UPS’s perspective, it is based on size in terms of the number of packages shipped and the data needed to support this scale. But many larger shippers need and are using “Worldship” while the physical goods themselves move through UPS facilities and its physical shipping system and infrastructure including sorting, plane and truck. In this way UPS is providing the virtual and physical infrastructures that support all kinds of commerce including e and m-Commerce.²

Furthermore because these shipments use the existing UPS virtual and physical networks, UPS realizes economies of scale and scope that it can pass along to all its customers. For instance, they their IT network and related database to collect and track over 200 data elements for every single package shipped. Considering the fact that the company ships 13.6 million packages each business day, the network has had to be very efficient and robust to hold and quickly provide that large amount of data on a real-time basis. Given their larger scale (UPS handles over 50-53 % of net purchases while the US Postal Service is about 30% and FedEx roughly 11%) they have an advantage relative to other shippers while from their employees’ standpoint as all customers and their packages are handled in the same manner this creates learning by doing and further cost reductions.

UPS’s global strategy is to be a business partner for companies worldwide and to be successful by making their customers more successful through enabling global commerce no matter on what basis. The company works hard to be within reach of every customer worldwide by every means possible. Many activities and acquisitions are aimed to make customer access to its services as easy as possible. They utilize access through many different channels and devices, including wireless technology and the Internet. The idea is to be easily accessible by whatever devices a shipper or final customer uses so as to connect the physical and virtual world seamlessly. Thus it has extended its reach globally directly and through partnerships in Asia, Europe and Latin America such as their relationship with 7-Eleven Japan (Rapp and Islam 2003).

Further, UPS uses an automated package-tracking system in a new $1.1 billion hub in Louisville to specifically speed delivery of international shipments by allowing U.S. Customs

² In 1989 UPS used a paper based tracking system when it strategically committed to switch to an IT based system. Between 1991 and 2001 they spent over $12 billion on this conversion and have continued to spend $2 to $3 billion annually since (Rapp & Subramanian 2004)
Service to process shipments by using any search query Customs officials choose. They can also use filters to scan for patterns that require further inspection. The system gives new tools to Customs officials to identify and stop potentially dangerous or illegal imports. The system’s features allow sorting capacity of 304,000 packages an hour, thus speeding international shipments. According to UPS, it has been able to save approximately $70 million by eliminating the need for a separate Customs Service building. As system tracks the packages as they move through the sorting process the hub qualifies as a “controlled building” required by federal law.

The UPS Network, which is a global electronic data communications network, has links to 1,748 UPS distribution sites in 200 countries and the system tracks over 13 million packages daily. UPS online tracking software launched in 1996 provides a real-time image of receiver's signature and allows a customer to track up to 100 packages at a time.

For these reasons the information systems have to be very powerful and reliable to process the data related to these shipments as they move on time all over the world. For packages and documents get where they need to go on time, the information must flow seamlessly. So the technology must be highly reliable, scalable and cost-effective as well as available 24 hours a day, seven days a week (24X7). Further it should support the growing needs of shippers and final customers plus shifts in market demand such as those generated by the rapid growth in Internet shopping, especially at peak seasons such as Christmas.

In sum, the company has realized to remain dominant in package delivery they have to strategically and competitively respond to rivals such as FedEx in the use of computer technology and the complementary development of their physical infrastructure. More importantly to continue to be leaders they have to be even better in using IT to achieve similar or superior express tracking services compared to competitors. It is in this way that they will continue to gain share and lower costs and to demonstrate “What Brown Can Do For E-Commerce.”

References
Appendix