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JANICE HAMMOND

Amazon.com's European Distribution Strategy

In January 2003, Tom Taylor, Amazon.com's Director of European Supply Chain Operations, sat in his office in Slough, United Kingdom, and pondered what changes Amazon needed to make to sustain its growth in Europe.

Established in the fall of 1998 through the acquisitions of two on-line booksellers, Bookpages.co.uk in Britain and Telebuch.de in Germany, Amazon Europe had developed into three strong, independently run, country-based organizations in the UK, Germany, and France. Amazon International, comprising Amazon Europe and Amazon Japan, now represented 35% of Amazon revenues and was the fastest growing segment of the company (see **Exhibit 1**). To sustain its growth, Amazon Europe faced multiple expansion options: it could replicate the broad array of product lines Amazon offered in the US, launch new Marketplace[a] activities, or expand into other European countries. In addition, Amazon Europe had to decide which of its activities it should coordinate or consolidate at the European level.

Tom Taylor had been transferred from Amazon US to Europe in June 2002 to address some of these issues and, in the words of his then boss, Senior VP of Operations Jeff Wilke, help Europe "catch the US in five years." Taylor felt that a lot had been accomplished since his arrival six months earlier. His team had managed to standardize and improve supply chain processes across Europe in the areas of vendor management, sales and operations planning, customer backlogs, and inventory management. Taylor believed that Europe would exceed Wilke's growth expectations; he expected Europe to surpass the US in revenues as early as 2004. However, many decisions were up in the air. A particularly pressing issue that Taylor had to analyze was how to configure the distribution network that would most appropriately support Amazon Europe's growth.

[a] Marketplace was the umbrella under which Amazon operated its auction, Z-stores, used-goods trading businesses and major partner alliances (Target, Toys'R Us).

Professor Janice Hammond and Research Associate Claire Chiron prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

Evolution of Amazon's Supply Chain and Distribution Systems in the US

1995-1998: Establishing Amazon.com

Jeff Bezos founded Amazon in July 1995 with a mission to "use the Internet to transform book buying into the fastest, easiest and most enjoyable shopping experience possible."[1] Initially a pure online book retailer with a selection of 1 million titles, Amazon quickly increased its selection to 2.5 million titles to become the "Earth's Biggest Bookstore," a claim that Amazon would use to differentiate from its brick and mortar competitors.[2]

From its outset, Amazon relied on a distinctive procurement strategy: hold modest inventories and rely on wholesalers – primarily Ingram Book Company and Baker & Taylor – to build its online book catalogue and source its vast selection. For example, in its early years, Amazon offered 2.5 million titles, yet stocked only 2,000 titles (comprising about 5% of its orders) in its own warehouse – a small (50,000 square-foot) facility in Seattle.[3] The rest of its titles were sourced on an as-needed basis only after receipt of a customer order. When Amazon received a customer order for a title that was not in its own stock, it would submit a purchase order to a wholesaler. The wholesaler would typically fill Amazon orders quickly, with shipments arriving at Amazon's distribution center within two to three days. As volume increased, Amazon opened direct accounts with publishers to obtain better purchasing discounts. (Amazon would typically receive a 48% discount off a book's cover price when buying direct from publishers vs. a 41% discount from wholesalers[4].) However, publishers were not as operationally efficient as wholesalers and could take weeks to fill Amazon's orders.[5] Once the necessary titles were received in Amazon's warehouse either from wholesalers or publishers, Amazon employees would pick and pack the order and ship it to the customer. This process enabled Amazon to fulfill the vast majority of customer orders within four to seven business days while keeping inventory turns high – 70 turns per year in 1996.[6]

In 1996 and 1997 Amazon grew quickly. To support the increased traffic and sales while continuing to meet outstanding service levels, the company built up its infrastructure and systems[7]:

- Distribution center capacity grew from 50,000 to 285,000 square feet, including a 70% expansion of the Seattle distribution center (DC), and the launch of a second DC in Delaware in November 1997. The new DC positioned Amazon closer to its East Coast customers and publishers, which enabled the company to decrease order fulfillment lead times and lessen its dependence on its main supplier Ingram.[8] "Now, with distribution centers on both coasts, we can dramatically reduce order-to-mailbox time for Amazon.com customers everywhere," Bezos noted at that time.[9]

- Amazon increased the number of titles held in its DCs to over 200,000 at the end of 1997 and reduced promised delivery times on those titles.[10]

- In parallel, major efforts were made in software development to support back-office operations. According to Jeff Bezos, "80% of the company's investment in software development since its founding in 1994 has not gone into its famously user-friendly screens, but on back-office logistics."[11]

In 1998, Amazon expanded its product lines, launching its Music store in June 1998 and Video and DVD stores in November 1998. For these new categories, Amazon relied on the same procurement model, establishing relationships with music, video, and DVD wholesalers. Nonetheless, with the additional product lines, the inventory turns dropped from 56 in 1997 to 24.8 in 1998 (see **Exhibit 1**).

1999: Building additional fulfillment infrastructure

By late 1998, the company was beginning to face tougher competition from players like Buy.com (which aggressively undercut prices), BarnesandNoble.com and CDNow, all of which offered similar features as Amazon. To remain the "e-tailing" leader, Amazon decided to pursue a "Get Big Fast" strategy intended to increase its revenue per customer. Amazon started adding new product lines and features at a fast pace (**Exhibit 2** provides a timeline of key developments). To support its transformation and its projected triple-digit growth, Amazon adapted its supply chain and distribution network.

Amazon first had to decide how many DCs it should have and where to locate them. Amazon executives turned to outside experts and used i2 Technologies' Supply Chain Strategist software package[12]. This software identified regions to consider for its distribution facilities based on factors such as supplier and customer locations, inbound and outbound freight rates, warehousing expenses, labor, and other cost factors. After selecting the major regions, Amazon's management narrowed its search based on additional factors such as tax rates, employment levels and the availability of suitable distribution facilities to lease.[13]

Amazon's first pick was a DC near Reno, Nevada, intended to serve the southern California market with two- to three-day lead-times. It leased a 322,560-square-foot highly mechanized facility in Fernley, Nevada, formerly used by Stanley Tools.[14] (See **Exhibit 3** for a map of distribution center locations.)

Amazon next leased a DC in Coffeyville, Kansas, intended to serve customers in the Chicago, St. Louis, Dallas, and Minneapolis areas. The company expanded the existing facility, previously used by Golden Books, from 460,000 square feet to 750,000 square feet.[15]

Three other facilities were added in 1999 to reduce shipping times to key markets in the Midwest and the Southeast: a 770,000-square-foot facility located in Campbellsville, Kentucky, previously used by Fruit of the Loom; a 600,000-square-foot DC in Lexington, Kentucky previously used by W.T. Young Storage Co. and an 800,000-square-foot DC located in McDonough, Georgia.[16]

The addition of 3.2 million square feet of distribution capability cost Amazon $320 million, but increased its capacity to pack, wrap and ship to nearly a million boxes a day. According to Jeff Bezos, "This has been the fastest expansion of distribution capacity in peacetime history."[17]

Next, Amazon had to decide which product types each of the new DCs should carry. By the end of 1999, Amazon offered its customers a range of merchandise that had very different characteristics. For example, some items (such as barbeque grills) were quite large whereas others (such as CDs) were quite small; some items had mainly regional demand whereas others had broadly distributed, nation-wide demand; and some had strong seasonal demand patterns, whereas others had more uniform demand patterns over the year. Toys were a particularly challenging category: new toys had to be ordered from suppliers as early as eight months before their release dates, demand for many toys was highly unpredictable, and seasonality was extreme: approximately 65% of toys were sold in the Christmas season compared to 30% of books. However, the executives decided that rather than create specialized distribution facilities for different product categories, for the most part, each DC would handle the full array of items. Tom Taylor noted, "The decision that distribution centers should carry a mix of products was based on transportation cost, time to deliver to consumers, and the cost of dealing with multi-item orders." [18] (About 35 percent of Amazon orders included multiple items,[19] for example, a multi-category order might include a book, a CD and a toy.) Taylor continued, "All distribution centers carry all type of product categories, apart from the Delaware distribution

center which could not handle large sized products like toys. And, since Lexington and Campbellsville are not far from each other, we decided. to put the smaller sized items in Campbellsville and the larger ones in Lexington. This made sense, since larger sized items are never shipped with smaller sized items. For example, a barbecue grill and a CD will always be sent to the customer in two separate shipments."

Another decision regarded the equipment in new DCs. Amazon's operations team decided to take advantage of some of the latest materials-handling technologies for its warehouses. Each DC was equipped with a "pick-to-light" system, which employed lights that were sequentially illuminated to show workers which items to pick next, and how many. In addition, the DCs were equipped with radio-frequency technology, which directed workers to warehouse locations via radio signals sent to the worker's handheld terminal. Voice technology, which allowed computers to "verbally" communicate instructions to workers, was tested in a trial phase. The DCs also maintained "pick profiles" for the fastest-selling items based on item size, velocity and location, pick rates, pick zones, and picking and storage patterns. The pick profiles were used to build pick lists for employees that specified optimal combinations of customer orders for picking and shipping.[20] Each pick profile contained approximately 100 items, each identifiable through its title, Amazon Standard Identification Number (ASIN), and storage-slot location. All items contained on the same pick profile were stored and located in the same zone in the DC; zone sizes varied based on the DC's volume.

The system created two types of pick lists: one type containing only items for single-item orders and the other type containing only items for multi-item orders. Single-item orders were relatively simple to process: each item on the pick list was picked in the specified sequence and placed in a bin with its associated paperwork; then the full bin was sent directly to packaging, where each item was packaged individually. Multi-item orders required an additional step: after the items in the orders were picked and placed in a bin (the "pre-sortation" step), the items in the same customer order were grouped (the "sortation" step). To group the items into orders, sorters placed the items into sortation slots temporarily assigned to the customer orders on the pick list; then the items in each slot were withdrawn from the slot and packaged together.

Finally, to maintain high levels of quality and productivity in its distribution centers, Amazon developed key metrics to measure worker performance, including number of items picked per hour, free replacement rate[b], inventory accuracy, number of hours from order confirmation to shipment, and cost per unit shipped. Performance information was routinely shared with individual workers.

Just before the Christmas 1999 season, the new distribution center network was up and running. Using the new network as well as the help of all employees from nonessential activities at that period like Marketing, Editorial and Catalogue, Amazon delivered more than 99 percent of its orders in time for Christmas 1999. In the fourth quarter alone of 1999, Amazon shipped about 20 million items and acquired more than 2.5 million first-time customers.[21]

The company's mantra "deliver at any cost" allowed Amazon to achieve its growth but at great expense: it lost $323 million on $676 million in revenues in the fourth quarter.

[b] Free replacement rate refers to the percent of all shipments that Amazon had to resend (free of charge) because a previous shipment either did not arrive or contained the wrong items.

2000-2002: Optimizing the customer fulfillment network

In early 2000, Wall Street began to put profit pressure on all dotcoms, including Amazon. Amazon's stock price, which had reached a record high of $106.69 in December 1999, began to fell dramatically (**Exhibit 4** details Amazon's stock price history). In this context, Jeff Bezos acknowledged the need for profitability and "a stronger focus on operational excellence, which means treating customers right but at lower cost."[22]

In September 1999, Jeff Wilke was hired to the position of Vice President of Operations at Amazon. Wilke, a graduate of MIT's Leaders for Manufacturing (LFM) Program, had been an Information Technology consultant with Andersen Consulting and a VP and general manager of Allied Signal's Pharmaceutical Fine Chemicals unit before joining Amazon in 1999. At Allied Signal, he gained experience in management techniques such as "Six Sigma" and "Total Quality Management." In his new position at Amazon, Wilke noted that Amazon had a "unique opportunity to combine principles of world-class distribution with key concepts from world-class manufacturing because they 'assemble' so many orders with so many SKUs as part of such a complex network."[23] He thus quickly launched several initiatives to reduce costs associated with stocking and shipping goods (**Exhibit 5** reports the evolution of fulfillment and shipping costs).

Streamlining US distribution centers' processes

Wilke's first achievement was to teach the US DC's staff to use Six Sigma DMAIC (Define, Measure, Analyze, Improve, and Control) reviews as a tool to reduce variation and defects. In 2001, this approach was used to improve inventory-record accuracy. For example, a DMAIC review enabled Wilke to discover weaknesses in the way temporary employees' work was supervised. In the past, when temps were brought into Amazon's fulfillment centers to stock items, there was no extra layer of verification to make sure they were putting things in the right place. The DMAIC review led to changes in the fulfillment auditing process to cut temps' mistakes. This was just one in a series of improvements that helped reduce inventory-record accuracy errors by 50 percent in a year's time.[24]

Second, Wilke encouraged DC staff to simulate holiday season conditions. For example, during non-holiday periods a DC might close 15 out of the 20 doors available for supplier truck deliveries or use only part of the available automated equipment to simulate high-pressure holiday conditions. The experience gained from such practice enabled Amazon to identify process bottlenecks and achieve a more continuous flow across the Receive, Picking, Sorting, Packing and Shipping areas. This led Amazon to create a new "Flow Manager" position in each DC to redesign major distribution processes and to reconfigure DC layouts to make it easier to locate, sort and ship customer orders. For example, to reduce picking time, items frequently ordered together were placed close to one another and a specific area dedicated to bestsellers was created.

In addition, in 2001, Wilke made arrangements for additional storage capacity to be added to the system during the holiday season. For example, he leased six off-site facilities totaling approximately 1.1 million square feet of space to support the storage and fulfillment functions of the US DCs.

Inventory costs

Another focus of Wilke's team was inventory optimization in the fulfillment network. Having products at the right place, in the right amount and at the right time would decrease Amazon's inventory carrying costs significantly and prevent the company from making split shipments. A split

shipment occurred when a customer order contained multiple items and Amazon was forced to send the order in two or more separate shipments because the items ordered were not all located in the same fulfillment center. Since Amazon typically paid for the additional shipment costs, it avoided split shipments whenever possible.

To improve inventory management, Wilke's team:

- Refined the software used to forecast customer demand by improving its ability to anticipate seasonal and regional demands, thus reducing the risk of buying too much or too little merchandise. "We rewrote much of the software so that we could pinpoint demand in different regions," noted Cayce Roy, VP of US Fulfillment.[25]

- Established buying rules to better allocate volumes among wholesalers and direct vendors. Mike Siefert, General Manager for the books product line at that time, noted: "wholesalers were now used as a safety net for out-of-stock items, for slow velocity titles and to respond to a quick surge in demand on a specific title."

- Integrated its suppliers' management systems with its own inventory, warehouse and transportation systems. For instance, Amazon introduced "available-to-promise"[c] capabilities to its customers by tying Ingram's inventory to its customer interface. Available-to-promise functionality allowed Amazon to display on its website an accurate time frame for a customer's order to ship. Items in stock at an Amazon DC were listed as available in 24 hours If an item was not in stock at an Amazon DC but was in stock at an Ingram DC, the website would typically display availability in 2-3 days, the time needed for Ingram to ship the order to Amazon and for Amazon to ship to the customer. Upon receipt of a customer order, if an ordered item was not in stock at one of its own DCs, Amazon would send it to Ingram electronically; Ingram would then ship the item, usually the same or next day, to an Amazon distribution center. Piloted with Ingram, the available-to-promise functionality was later rolled out to other wholesalers and publishers that had the ability to give information on their inventory, at the item level, every hour.

- Implemented a set of "cascading" buying rules that determined which supplier offered the best price and delivery options for each item Amazon ordered. Amazon's systems would check product availability at suppliers: If the item was in stock at the supplier offering the best price, Amazon would order it. If not, the system would identify the supplier offering the next best price and check its product availability on that item.

In parallel, Wilke's team considered other options to avoid holding inventory. For each product category, Amazon used its specially tailored software to evaluate multiple fulfillment options, including the following:

- Having wholesalers "drop ship" orders, that is, ship an order directly to the customer without first shipping the product through an Amazon DC. For a drop shipment order, Amazon processed the order and customer payment, and placed an order with a wholesaler that would deliver the products directly to the customer's address. Amazon first developed drop-shipment in the books product line with Ingram for single-item orders in 2001. According to Mike Siefert, "Amazon is good at pooling multiple products and shipping them to customers,

[c] Available-to-promise (ATP) capabilities allow a supplier to provide information on when a customer's order is expected to be shipped and received.

so it made sense from a cost perspective for Amazon to select wholesalers to manage single book orders." Drop shipment enabled customers to get their orders within 2 to 3 days. Next, the program was expanded to other items, such as electronics or computers, which were costly or difficult for Amazon to store or handle. Third, Amazon started using drop shipping as a "capacity valve" to augment Amazon's own DC capacity, and integrated drop shippers in its software. The algorithm allocating volume among drop shippers and Amazon DCs was based on the item price (for items priced under $10, the 7% discount differential between buying direct vs. from wholesalers was considered to be too low to warrant having the wholesaler drop ship), DC variable cost and the cost of shipping to the customer. In the fourth quarter 2002, more than 10% of orders were drop shipped.[26] In some cases, Amazon used a drop shipment even if the necessary inventory was in an Amazon DC – the company's objective was to find the most efficient, effective fulfillment method for each order.

- Partnering with other companies, with Amazon handling order fulfillment in exchange for fees and a percentage of sales, while the partner covered the cost of inventory. For example, in August 2000, Amazon partnered with ToysR'Us and created a co-branded online store selling toys and baby products. Amazon maintained the on-line "store" and handled the order processing, order fulfillment, and customer service; ToysR'Us managed merchandising, buying, and owned the inventory, which was housed in Amazon's distribution facilities. This model allowed Amazon to transfer the financial risk of toys inventory obsolescence to its more toy-savvy partner.

Delivery processes

To reduce shipping costs, Jeff Wilke's team developed a method called "postal injection" or "zone-skipping," in which Amazon arranged for full truckloads of orders to be driven from its DCs to major cities, thereby bypassing the postal service's sorting hubs.[27] Postal injection eliminated processing steps and travel distances for the U.S. Postal Service and UPS, reducing Amazon's shipping costs for orders sent via postal injection by an estimated 5% to 17%.[28]

Other company initiatives to gain profitability

On January 31, 2001, in an effort to reduce costs, Amazon.com announced it would reduce its headcount by 15% – eliminating 1,300 jobs – and consolidate its fulfillment and customer service operations by closing two distribution centers (in Georgia and Seattle) and a call center in Seattle.

Meanwhile, Amazon continued to seek ways to boost customer revenues. Amazon began to offer a 30% across-the-board discount on all books priced over $20 in July 2001, and extended that discount to books priced over $15 in April 2002. It also announced free shipping on all orders over $99 in November 2001, extending free shipping to all orders over $49 in June 2002 and to all orders over $25 in August 2002.[29] In exchange for free delivery, Amazon's customers typically agreed to wait an extra three to five days to receive their orders.

In the fourth quarter of 2001, Amazon had managed to cut $22 million, or 17%, from expenses associated with filling orders and became profitable for the first time. In 2002, Amazon.com reached a record of $3.9 billion in sales, representing an increase of 26% over 2001. Operating income improved to $64 million, or 2% of net sales, compared to a 2001 operating loss of $412 million. Third-party seller transactions (new, used and refurbished items sold on Amazon.com pages by individuals and

businesses) grew to 21% of worldwide units in fourth quarter of 2002. Inventory turns increased to 17 in 2002, up from 14.6 in 2001.

Amazon.com in Europe

Launching Amazon in the UK and Germany

In 1998, Amazon.com entered the European market, targeting the two countries – the United Kingdom and Germany – that represented both the largest online markets and the largest markets for books in Europe (**Exhibit 6** compares European market information). Germany, for example, had approximately 2,000 publishing houses, indicating the significant role books played in German culture.[30] In addition, other country-specific factors made these country markets particularly attractive for Amazon. For example, German customers were accustomed to buying books through mail-order companies. In the UK, the end in 1995 of government-regulated fixed retail book prices and the consequent development of new distribution channels such as specialty stores had spurred remarkable growth in book sales.

To accelerate its European entry, in April 1998 Amazon acquired a leading online book retailer in each country: Bookpages.co.uk in the United Kingdom and Telebuch.de in Germany. The two sites were re-launched in October 1998 under the Amazon.co.uk and Amazon.de brands (see **Exhibit 7**). Like their US parent, Amazon.co.uk and Amazon.de started as pure book retailers, initially offering 1.4 million UK titles plus 200,000 US titles on the UK site and 335,000 German titles plus 374,000 US titles on the German site. In the fall of 1999, duplicating the US "Get Big Fast" strategy, Amazon.co.uk and Amazon.de began incorporating a wider variety of products, including Music in October 1999, and Auctions and zShops in November 1999. Between 2000 and 2002, more product lines were added rapidly to the two sites, as shown in **Exhibit 2**.

Despite competition from Bertelsmann's BOL.co.uk and BOL.de and Barnesandnoble.com, Amazon quickly became the leading online bookseller in the UK and Germany. In 1999, Amazon.co.uk and Amazon.de combined sales reached $167.7 million (accounting for 10% of Amazon's total revenues) and Amazon.co.uk and Amazon.de each had over one million active customers.

Launching Amazon in France

In September 2000, Amazon continued its expansion overseas with the opening of Amazon.fr. To enter the French market, Amazon did not acquire an online bookseller prior to its launch, but built the site from scratch. This included the time-consuming tasks of building a database containing all the products to be displayed on the website, setting up accounts with hundreds of publishers and distributors and setting up the French warehouse. Moreover, unlike in the UK and Germany, Amazon, facing tough competition from already established competitors like Fnac.com (the online site of the leading French retailer of books, media and other consumer products, Alapage.com (a branch of France Telecom) and BOL (the Bertelsmann-owned online bookseller), decided to launch the Books, Music, Video and DVD product lines at the same time.

At the end of 2000, the international segment of Amazon comprising the UK, German and the newly launched French and Japan (launched in November 2000) sites reached $381 million in sales,

accounting for 13.8% of the company's total revenue. International sales grew 74% in 2001 to reach $661 million, or 21% of sales.

Amazon's challenges in Europe: globalization and localization

During its first years in Europe, Amazon had faced several challenges that led to particular operational and organizational choices.

A series of challenges pertained to cultural differences among countries targeted. Explained Diego Piacentini, Senior Vice President and General Manager, Amazon.com Europe:

> The key to achieving international e-commerce success lies in understanding one simple fact: customers everywhere want better selection, more convenience, and better service. After recognizing this fact, online retailers will soon understand that the major challenge to international expansion is the ability to bring these universal benefits to customers around the world while honoring local customs.[31]

As a result, Amazon recognized the European market as an aggregation of regional markets and chose to fully comply with their legal and cultural requirements. In practice, this implied significant tailoring of Amazon.com's traditional value chain to local needs.

First, Amazon decided to maintain dedicated web sites for each of the three customer bases. Although web site functionalities such as browsing and searching were identical, language, editorial content and items displayed online were unique to each country. In addition, Amazon built dedicated 24 hours-a-day customer centers with native-language-speaking customer service representatives who adequately understood the needs of European shoppers.

Second, Amazon needed to address selling regulations in each country. In Germany and France, book list prices were fixed and could not be discounted by retailers. In France, retailers could not sell items at a lower price than their on-invoice purchasing price. In order to comply with the local laws while keeping a competitive offering, Amazon introduced free shipping in 2001. Moreover, taking full advantage of the flexibility of country laws, Amazon set up promotional activities such as clearance sales permitted on "slow moving" book inventory during a specific time frame defined by local governments.

A third critical area was payment options. To reach beyond the 38% of Europeans who used a credit card for online purchases, Amazon chose to offer locally preferred alternatives, such as checks for French customers and postal orders for German customers (see **Exhibit 8**). This decision did not come without a cost, as major software customization and the creation of new processes were required to manage these new payment methods.

Fourth, Amazon quickly found that it could not replicate its US procurement strategy in Germany and France because of a different supplier market factors. Although in the United States, and to a lesser extent the United Kingdom, Amazon could rely on a small number of wholesalers to fulfill most of its orders in a couple of days, France had no wholesalers in media (books, music, and video) markets and Germany had only a single wholesaler in the book industry and a single wholesaler in the music and video markets. Thus, to serve its customers, Amazon had to establish relationships with hundreds of publishers and distributors. Orders placed to direct publishers and distributors typically took five days to get to Amazon's warehouse. Furthermore, Amazon used EDI (Electronic Data Interchange) to communicate with its US suppliers, which allowed for fast confirmation at the item level of purchase orders sent by Amazon. If an item ordered was out of stock or out of print, the

US supplier would electronically send back the information to Amazon (in a "reject file" containing the barcode and reason for the reject). Amazon's buying team would then send the information to the Customer Service to update the customer on the status of his or her order and to the Catalogue department to update the website information. EDI penetration was low among book, music and video distributors in Europe where most vendors still used email and even fax. As a result, Amazon did not know whether all the items ordered were going to be fulfilled until the order was physically received in the distribution center.

Finally, Amazon relied on national postal service carriers in Europe to deliver its domestic as well as international orders. National postal carriers offered excellent coverage and suited well Amazon's fast delivery model by offering next-day delivery in London, Berlin and Paris and two-to-three-day within-country delivery elsewhere, a service comparable to the more expensive Express delivery in the US. In 2000, Jeff Bezos underlined the importance of these partnerships for its then two European subsidiaries: "No country ever appreciates its local postal system, but the Royal Mail and Deutsche Post are among the best in the world."[32] However, Royal Mail, Deutsche Post and La Poste (the French mail service) did not offer reliable cross-border logistics services on a pan-Europe basis. The hand-off between local postal carriers often resulted in delays or lost shipments, affecting negatively customer experience. Finally, the lack of domestic postal competitors or pan-European carriers made it hard for Amazon to decrease its shipping costs or increase its shipping standards.

Organization of Amazon European subsidiaries

To implement these strategic choices, Amazon.co.uk, Amazon.de and Amazon.fr were managed as independent Amazon.com subsidiaries run in a decentralized manner. Each country had its own organization and was headed by a country manager. Local employees in Editorial, Finance, Marketing, Catalogue listing, Supply Chain and Logistics reported to country managers. Local experience was critical in every facet of Amazon's operations. For example, in France where the subsidiary was launched from scratch, Amazon hired senior buyers with previous experience in the French media industry to establish supplier relationships.

Each subsidiary owned and operated a dedicated warehouse. In the United Kingdom, a distribution center located in the Marston Gate logistics park, situated 200 kilometers north of London, delivered all customer orders placed on the UK website. This location was chosen primarily for its low labor costs. Amazon.de's DC was located in Bad Hersfeld near Frankfurt. Centrally located, Bad Hersfeld allowed Amazon to reach any place in Germany in less than 5 hours. This translated into overnight service via Deutsche Post for most German locations. The UK and Germany DCs each had over 400,000 square feet in storage capacity and were highly automated. Amazon.fr's distribution center was built in Orleans, 150 km south of Paris. Its storage capacity was 225,000 square feet and, unlike the other two distribution centers, all tasks were performed manually. **Exhibit 9** shows the locations of the three European DCs.

By 2001, Amazon.com embarked on a major cost-cutting and restructuring effort to reach profitability. One facet of this program was to consolidate certain functions in Amazon's European subsidiaries. In February 2001, Amazon transferred the company's European customer service operation to the Netherlands from existing customer service centers in the U.K. and Germany. An Amazon spokeswoman explained the rationale for this change: "The functions that these people are doing are still needed. We found that we do not need three different centers to serve our customer base. It just made much more sense."[33] During 2001, Amazon decided to unify the marketing and branding functions of the three subsidiaries at the European level, with a purpose to build an identical set of values for the Amazon brand. Other important steps included rolling out common

Human Resource evaluation forms. Finally, Allan Lyall became European Operations Director, a newly created position in 2001. Initially, his role encompassed the management of the three European DCs, but it expanded in 2002 to include Transportation, Supply Chain Operations, EDI, operations excellence and capacity engineering.

Going forward

By 2002, International revenues were $1.2 billion (35% of Amazon's total revenue). International was Amazon's fastest growing segment – its 77% growth rate was fueled by the popularity of free shipping, offered to customers of all three sites, and the launch of marketplace activities in the UK and Germany.

Going forward, Amazon executives in Seattle planned to roll out some product categories and functionalities already available in US. This would include developing marketplace activities, and partnering with merchants in selected categories to increase Amazon's selection. Amazon also was evaluating opportunities to expand in other European countries. Amazon Europe needed to build up its infrastructure to support this ambitious vision.

In June 2002, Tom Taylor was transferred from Seattle to London to address some of these issues. Taylor described his mission simply: "Europe will be where the US stands in 2 years after product category expansion and as marketplace develops. This will require a new organization and a new set of skills."

Tom Taylor's background

Tom Taylor's professional experience started in 1985 at General Motors where he was a Design engineer in the Brake Division. During his frequent interactions with the operations team, he developed a passion for manufacturing. In 1991, he graduated from MIT's LFM program and returned to General Motors as a first line supervisor in a plant of Delphi Systems, a GM subsidiary. In 1992, he was promoted to Manufacturing Planner. In 1994, he decided to join K2, a company manufacturing skis located in Seattle. Initially a process engineer in charge of adapting operations processes to a new generation of skis, he quickly was promoted to Plant Manager. Facing tough competition from countries with lower labor costs, K2 decided to relocate its manufacturing operations in China, and Taylor became Plant Manager in China. Before June 2000, Taylor had attempted several times to join Amazon without success, his manufacturing profile apparently being of little interest to Amazon at that time. In June 2000, having decided to return to the US, Taylor tried once more to join Amazon, this time successfully. He was hired by Jeff Wilke, Amazon.com's SVP of Operations, who was looking to hire manufacturing specialists. Wilke's vision was to apply process improvement and standardization concepts to Amazon's operations. Taylor's first assignment was to manage the two oldest DCs (located in Seattle and Delaware), which were still operated manually. At the end of 2000, Jeff Wilke organized operations into two Eastern and Western divisions (each overseeing four DCs) and appointed Taylor Director of Eastern Operations. In the course of the next year and a half, he focused on improving those DCs' productivity and ensuring they could handle holiday season peaks. In June 2002, Taylor was promoted to Director of European Supply Chain Operations.

Tom Taylor's early focus in Europe was to look for standardization and synergies among operations processes across the three different countries. This first required the critical step of defining and implementing comparable metrics (such as vendor lead-time, fulfillment rate) across

countries to develop better insights into their operations activity. Tom's approach was two-fold: based on his knowledge of US systems and processes, he picked "easy win" areas where porting US techniques to Europe would provide immediate impact. In addition, he leveraged the power of his newly created European Supply Chain Operations Group to obtain adequate resources from the central Amazon IT department in Seattle.

Within a year, Taylor's team had raised the proportion of high velocity items in stock, created and implemented vendor scorecards, improved the accuracy of forecasting tools, reduced suppliers' lead times, decreased customer order backlogs and developed a process that provided the distribution centers with a clear listing of receipts and shipments due in the following weeks. For example, to reduce the customer order backlog (orders for which shipments had not yet been generated), Tom's team first built a comprehensive daily report for each of the three countries presenting a breakdown of backlogs according to the type of issue(s) preventing Amazon from fulfilling orders within the timeframe promised the customer. Issues were classified by type: supply chain type (e.g. a purchase order had been placed to a wholesaler/publisher but the order had not been received by Amazon), DC type (e.g. the item had been received but not yet recorded in stock), or customer type (e.g. the customer had placed an order using a check as payment method but Amazon had not received the check). Tom's team assigned owners for each backlog type who analyzed their backlog type's root causes and defined and implemented standardized processes and tools to resolve the underlying issues.

Assessing the EDN opportunity

In the longer term, Taylor wondered which infrastructure would best support Amazon Europe's growth potential. Amazon's decentralized fulfillment model seemed to offer opportunities for rationalization and cost savings. One of the most obvious targets was redundant inventory of "common" products (such as CDs by international pop and rock stars and U.S. books) currently carried in more than one European DC. The rollout of non-media, less country-specific lines of products (such as consumer electronics, Home and Kitchen products) made this issue even more interesting. Did Amazon need three independent distribution centers in the UK, Germany and France or could it build a European distribution network (EDN) where the location of inventory would be strategically, rather than geographically, determined?

Intrigued by this opportunity, Taylor had laid out possible benefits of an EDN to Amazon Europe. First, it could significantly expand product selection of current sites through fulfillment from other DCs. For example, the French site could add Home and Kitchen products (currently available on the UK site) to its selection and fulfill the orders from the UK DC. Instead of creating a local dedicated buying team and replicating inventory, France could rely on the existing UK buying team and inventory held in the UK. Second, it would facilitate global sourcing from lowest cost vendors and allow inventory planning at the global network level**.** Third, it would reduce the risk of relying on a single DC to serve a large base of customers. Indeed, historical records showed that each European DC had experienced a systems failure at least once. Fourth, it could improve customers' experience by enabling Amazon to select the appropriate DC to fulfill a customer order. For example, orders of UK products from customers located in Switzerland or Spain could have a shorter shipping time if served from the German DC instead of the UK DC. An EDN would help Amazon balance the load across its DCs. As Allan Lyall noted, "If a warehouse had a huge backlog affecting delivery promise times, Amazon could reallocate customer orders to another DC." Fifth, should Amazon decide to expand into other European countries, it could supply them from current DCs instead of setting up local distribution operations.

Facing the map of Europe (see **Exhibit 10**), Tom Taylor considered and evaluated alternatives to design the EDN. One option was to link the different sites to a single European distribution center. Under this option, Amazon would have to determine the DC location, formulate transportation plans and make other implementation decisions. A second option was to keep the three distribution centers and allow them to fulfill customer orders (perhaps using a drop shipment approach) from other country sites. In that case, Amazon would have to determine which products to be drop shipped and when. Finally, a last option was to keep two DCs, one serving North European customers and the other serving South European customers. Again, DC location, transportation plans and other implementation decisions would have to be determined.

The answer to these questions depended in part on the functions of the DCs in the EDN. There were three approaches under consideration: one, Amazon could continue with its current strategy of holding inventory in all three DCs, with the function of the EDN primarily as a back-up in case of a major disruption to another DC. Second, Amazon could selectively share inventory among European sites to reduce inventory-holding costs. For example, a product category, such as consumer electronics, could be served only from a single DC (e.g. the UK DC, thereby reducing stock levels in France and Germany). Third, Amazon Europe's operations could be integrated fully, with the three sites' inventories physically mixed based on demand patterns and inventory and transportation costs. These choices required analyses of demand patterns, costs, transportation options, IT requirements, and current DC capabilities. In addition, Amazon would need to make decisions about inventory ownership under the different options.

Other questions arose regarding the location of the EDN's DCs. With over two-thirds [34]of the UK's orders delivered to customers located south of the Marston Gate DC, should Amazon keep the French DC? If Amazon expanded into other European countries, should it fulfill these orders from an existing DC or should Amazon consider a new location for a new DC or hub?

Tom Taylor also had to define an implementation plan. Would he start by dissociating DCs from country websites? Would he start by doing tests on specific product categories from specific locations?

Taylor also had to consider the impact of the implementation of the EDN on internal departments. For example, to build a sustainable EDN, Amazon would have to redesign its transportation processes and select the appropriate carriers that would meet its delivery-time and price standards. According to Siobhan Farnon, Director, European Transportation: "The immediate impact on transportation would most likely be a reduction in delivery service levels. Most customers located in the UK, Germany and France are used to next-day delivery, even when choosing the standard shipping option."

To address this issue, the transportation team would have to work collaboratively with customer service to educate customers to associate a different shipping price to the delivery service level chosen. Currently, Amazon.fr and Amazon.de offered only a standard shipping option, which promised delivery in two to three business days. Nonetheless, customers in Germany and France were accustomed to getting overnight service due to the proximity of the local DCs to the customer base and the short delivery times by La Poste and Deutsche Post. Amazon.co.uk offered standard and free shipping for domestic deliveries; about 45% of UK customers chose free shipping.

Another opportunity would be to leverage EDN volume to implement "postal injection." Amazon thought it would need to allocate about twelve hours to travel from a hub in Germany to a hub in UK (or from the UK to France or from France to Germany); thus, it expected to be able to fulfill most customer orders between those countries in two, or possibly three, days. Going forward, Amazon

could seek better terms from a pan-European carrier capable of meeting Amazon's delivery time requirements. Allan Lyall expected competitive forces to drive Deutsche Post and/or other carriers to develop capabilities within three to five years that would allow them to provide Amazon with appropriate pan-European services.

Amazon hoped that under an EDN, its procurement department would be able to centralize its purchases and extract higher volume discounts from suppliers. However, suppliers of common media products were extremely concentrated. For example, Universal, Warner, Sony, BMG and EMI made up approximately 80% of total music sales (and about 80% of Amazon's music sales) in UK, Germany and France. Nonetheless, negotiations on terms and conditions with each of these and many other vendors had always been conducted at the country level because the suppliers were organized in country subsidiaries, each managed independently. For example, Amazon's vendor management team in Germany would conduct negotiations with Sony Germany and Amazon's vendor management team in France would negotiate with Sony France. Amazon's relationships with Warner provided another example of this fragmentation – across its global operations, Amazon had six different relationships with Warner Home Video. Mike Siefert, European Buying Manager noted: "Most vendors in Europe are very archaic in the way they are set up, but the good news is that they want to be forward thinking -- probably because Amazon Europe is big enough now to have a negotiation power."

The EDN would also require a better coordination among departments and a clear HR plan. In the short term, people working in the functions affected by the implementation of the EDN would have to learn to work collaboratively to leverage the opportunities and savings the EDN offered. In the longer term, network optimization could lead to reduction of staff in the operations team, comparable to what happened in the US in 2001. For example, Amazon could consider centralizing the buying teams in one location to be in charge of the buying activity for all Europe. This would imply relocating employees to another location and would require training of "European," rather than country-specific, buyers. Centralized buying raised other issues: Would it make sense to implement an infrastructure in which UK suppliers would send items to the German warehouse to ship it back to customers located in the UK?

Making the case for an EDN

Faced with all these options, Taylor realized that his team would have to lay out a strong business case.

Taylor would have to give answers to concerns from managers working in Retail functions at Amazon. Is Amazon doing the right thing for its customers as well as for the company? Would the customer experience deteriorate? Would Amazon be able to detect fast moving items or other demand trends for each country if buying was to be consolidated at the European level?

Moreover, as always for the European subsidiaries, IT resources would be a constraint. IT resources, managed in the United States, limited the number of new projects rolled out by Amazon every year. The project of establishing a European distribution network would be in competition with other cost saving projects. The level of importance given to this project would depend on the return on investment put forth in the project's business case. There was not time to waste. Did the EDN make sense in the context of strong growth? If so, which option should Taylor choose?

Exhibit 1 Evolution of Amazon's key metrics

A. Evolution of Amazon's revenues from 1995 to 2002 (in millions of dollars)

	1995	1996	1997	1998	1999	2000	2001	2002
US Books, Music, DVD, Video [d]	N/A	N/A	N/A	N/A	N/A	1,698.3	1,688.8	1,873.3
Electronic, Tools and Kitchen [e]	N/A	N/A	N/A	N/A	N/A	484.2	547.2	645.0
Services [f]	N/A	N/A	N/A	N/A	N/A	198.5	225.1	245.7
International [g]	N/A	N/A	N/A	N/A	N/A	381.1	661.4	1,168.9
Total Revenue	**0.5**	**15.7**	**147.8**	**609.8**	**1,636.8**	**2,762.0**	**3,122.4**	**3,932.9**

B. Selected metrics, Annual ratio report, from 1996 to 2002;

	1996	1997	1998	1999	2000	2001	2002
Gross margin[h]	22.0%	19.5%	21.9%	17.7%	23.7%	25.6%	25.2%
Operating margin[i]		-19.8%	-17.9%	-36.9%	-31.3%	-13.2%	1.6%
Net Income (in USD millions)		-31	-127	-720	-1,411	-567	-149
Inventory turns	70	56	24.8	10.8	10.7	14.6	17

C. Evolution of number of active[j] customers from 1996 to 2002

	1996	1997	1998	1999	2000	2001	2002
Number of worldwide active customers	180	1,500	6,200	12,000	19,800	24,700	31,180

Source: Amazon.com's annual reports

d Includes retail sales from US and Canadian sites of books, music and DVD/video products. This segment also includes commissions from sales of these products, new, used or collectible, through Amazon Marketplace activities.

e Includes US retail sales of electronics, home improvement and home and garden products, as well as our mail-order catalog sales. This segment also includes commissions from sales of these products, new, used or collectible, through Amazon Marketplace activities.

f Consists of commissions, fees and other amounts earned from services business, such as Toysrus.com store or portions of the Target store at www.amazon.com Also includes Auctions, zShops, Amazon Payments and miscellaneous marketing and promotional agreements.

g This segment includes all retail sales of internationally-focused Web sites: Amazon UK, Amazon Germany, Amazon France and Amazon Japan

h Gross Margin = Net sales - Cost of sales; Cost of sales = cost of merchandise, inbound and outbound shipping cost, cost to package product.

i Operating Margin = Gross Margin – Operating Expenses; Operating Expenses = Fulfillment, Marketing, Technology and Content, General and Administration, Amortization of other intangibles

j An active customer is a unique customer who purchased at least one item in the year

Exhibit 2 Amazon's timeline of key developments

Dates	Amazon.com	Amazon.co.uk	Amazon.de	Amazon.fr
July 1995	Launch of Books category			
June 1998	Launch of Music category			
Oct. 1998		Launch of Books category	Launch of Books category	
Nov. 1998	Launch of Video category			
Feb. 1999	46% stake in Drugstore.com, offering 15,000 healthcare products			
Mar 1999	Launch of Auctions 50% stake in internet pet company Pets.com			
July 1999	Launch of Electronics and Toys 49% stake in internet sports company Gear.com			
Oct 1999	Launch of zshops (third-party sellers selling their products on Amazon.com)	Launch of Music category	Launch of Music category	
Nov 1999	Launch of Software and Video Games categories Launch of Home Improvement, Tools and Hardware categories Acquisition of tools and equipment catalog company Tool Crib of the North	Launch of Auctions Launch of zshops	Launch of Auctions Launch of zshops	
Jan 2000	Creation of a drugstore.com shopping "tab" at Amazon.com			
Mar 2000		Launch of Video category	Launch of Video category	
Apr 2000	Launch of Lawn and Patio categories Launch of Health and Beauty categories			
May 2000	Launch of Kitchen category			
July 2000		Launch of Software and Video Games categories	Launch of Software and Video Games categories	
August 2000	Amazon.com partners with ToysRUs. Under the agreements, ToysRUs identifies, buys and manages inventory, while Amazon handles site development, order fulfillment and customer service			Launch of Books, Music, and Video categories
Sept 2000	Launch of Computer category			

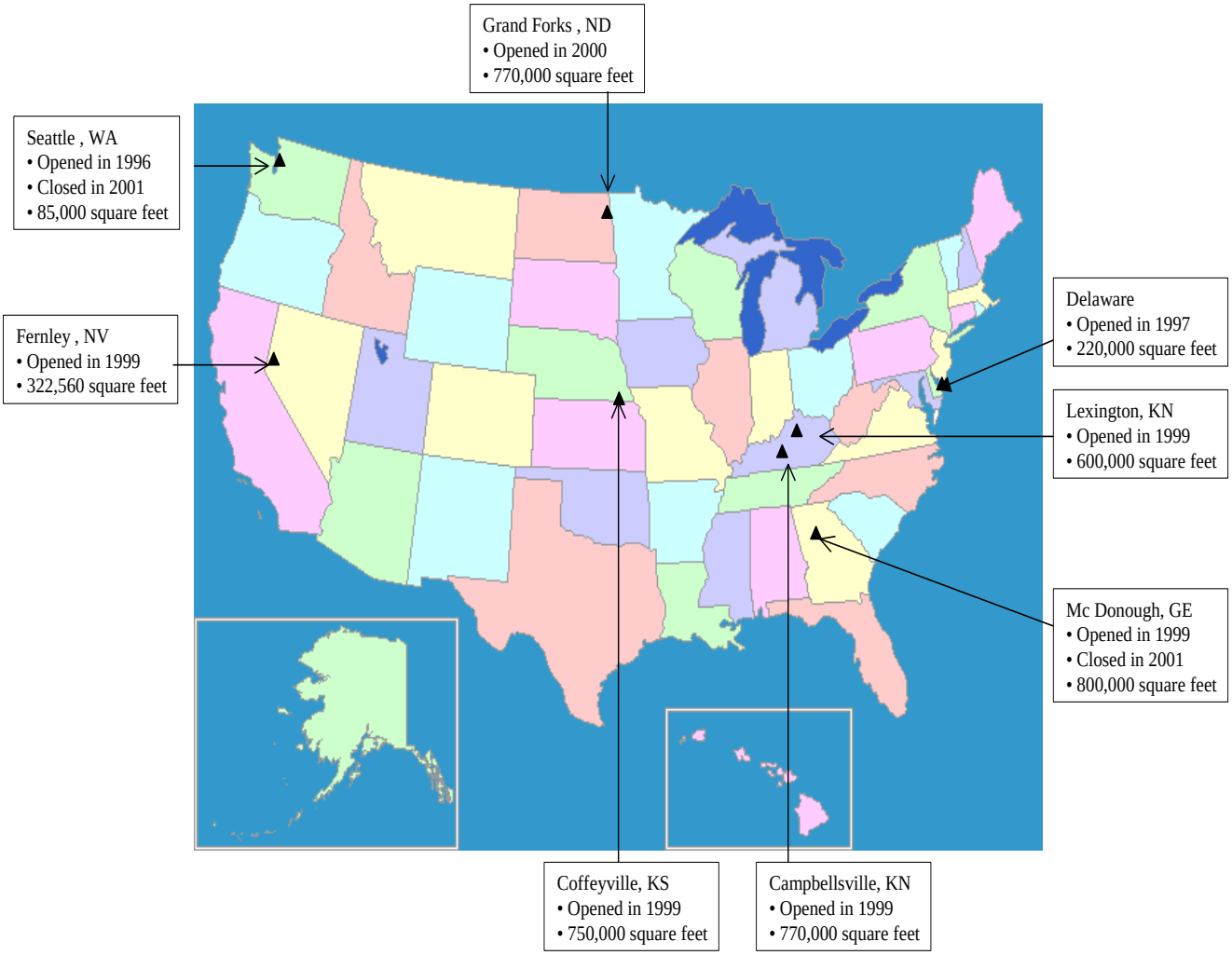
Source: Case writer adapted from OneSource Information Services, Inc. – Amazon.com, Inc.: Significant Developments <http://globalbb.onesource.com/Sharedscripts/Reports/GetReport.asp?KeyID=L741945&Process=CP&Report=sigdev> accessed on February 24, 2005.

Exhibit 2 Amazon's timeline of key developments, continued

Dates	Amazon.com	Amazon.co.uk	Amazon.de	Amazon.fr
Nov 2000	Launch of Cell phones and Services category Launch of Used products Launch of e-books store (electronic books customers can download) Launch of Amazon.jp in Japan			
April 2001	Amazon.com launched Borders.com as a co-branded Website powered by Amazon.com			
May 2001		Launch of Electronics category	Launch of Electronics category	Launch of Software and Video Games categories
Aug 2001	Agreement with electronics retailer Circuit City. In-store pick up available to Amazon customers	Strategic alliance made with UK specialist bookseller Waterstone. Waterstone online books selling relaunched, powered by Amazon e-commerce platform Launch of Toys and Kids store		
Sept 2001	Amazon.com partners with Target to open a Target store at Amazon.com Launch of Travel store	Launch of Travel store		
Oct 2001	Launch of Magazine subscriptions store			
Mar 2002		Launch of Marketplace (used products)	Launch of Marketplace (used products)	
April 2002	Agreement with Borders Inc to provide Amazon customers the option of picking up Books, CDs and DVDs in Borders stores nationwide			
June 2002	Launch of Amazon.ca in Canada			
Sept 2002	Launch of Office products through Office Depot alliance			
Nov 2002	Launch of Apparel category		Launch of Magazine subscriptions store	
Dec 2002	Amazon announced the relaunch of Cdnow web site on Amazon's ecommerce platform.			
April 2003		Launch of Kitchen and Home store	Launch of Kitchen and Home store	

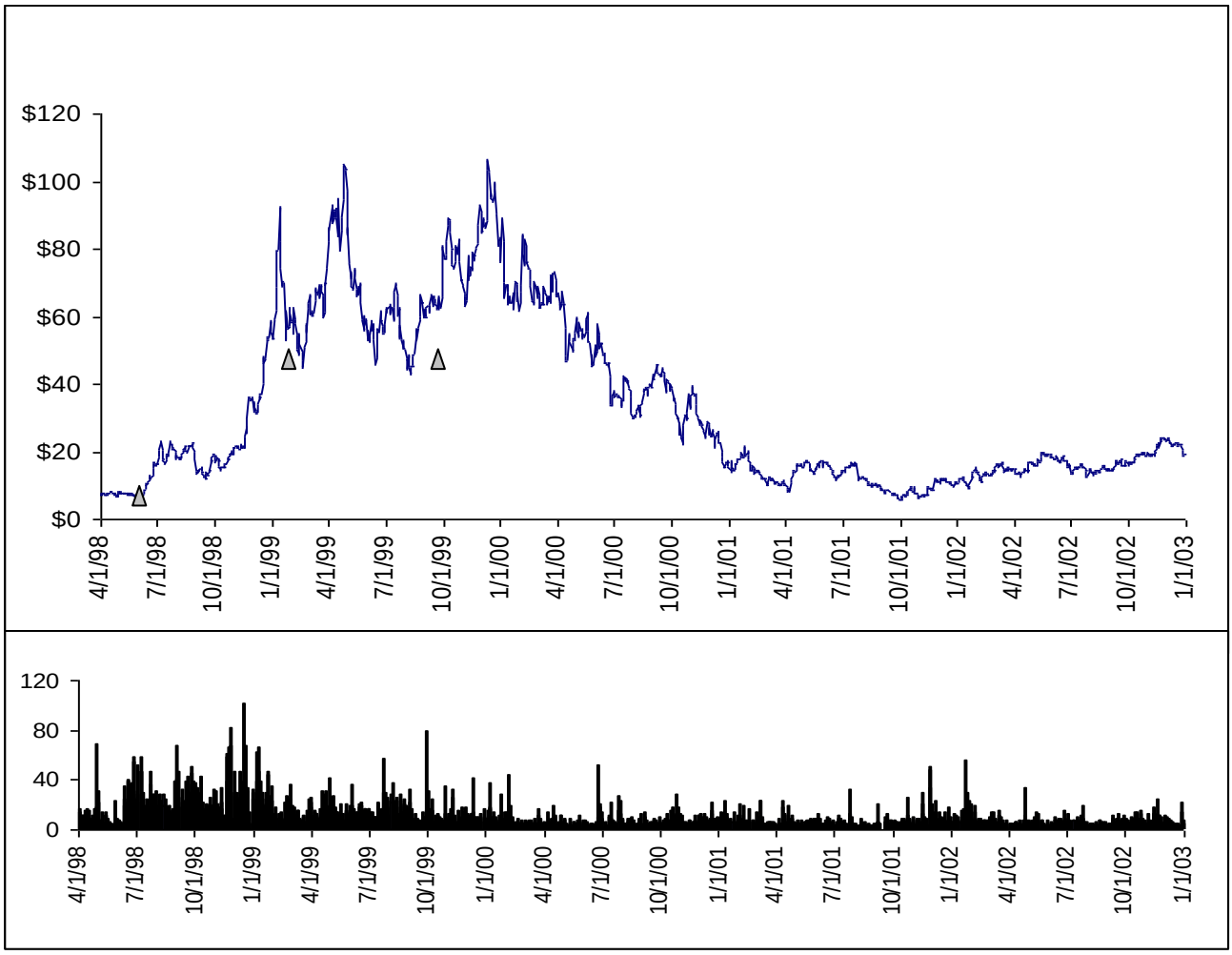
Source: Case writer adapted from OneSource Information Services, Inc. – Amazon.com, Inc.: Significant Developments <http://globalbb.onesource.com/Sharedscripts/Reports/GetReport.asp?KeyID=L741945&Process=CP&Report=sigdev> accessed on February 24, 2005.

Exhibit 3 Map of Amazon's distribution centers location in the US at the end of 2001



Source: Case writer Adapted

Exhibit 4 Amazon's daily stock price history and volume (millions of shares) from March 1998 to December 2002.



Source: Case writer Adapted from Datastream, Datastrream Intrernational.

Exhibit 5 Evolution of fulfillment and shipping costs as a percentage of revenue

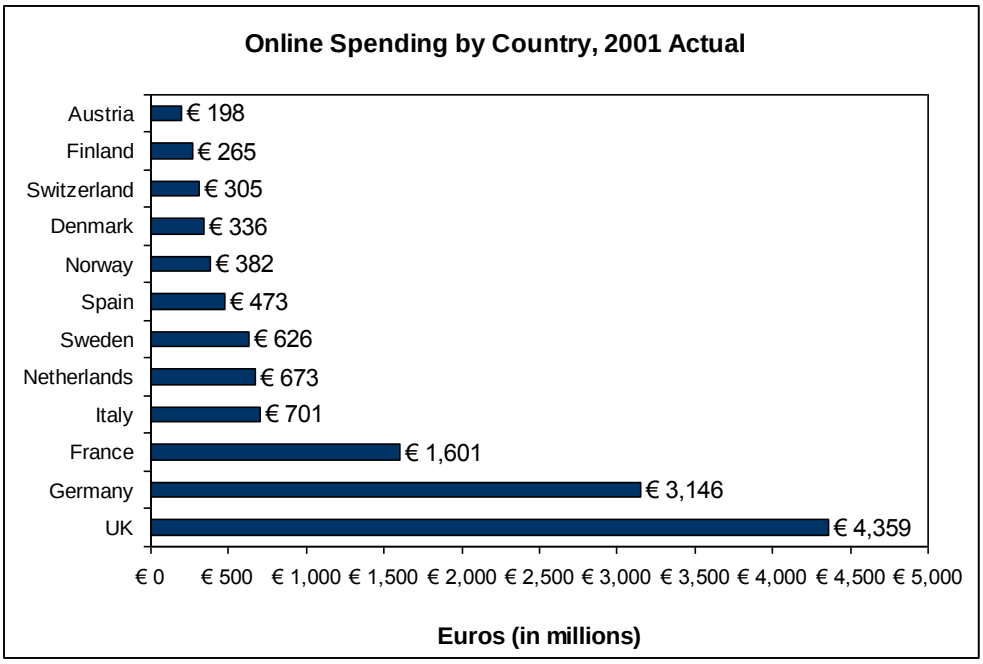
Quarter	Gross margin	Fulfillment cost	Shipping cost
Q1 00	22.3%	17.3%	
Q2 00	23.5%	15.1%	
Q3 00	26.2%	15.1%	
Q4 00	23.1%	13.5%	
Q1 01	26.1%	14.1%	
Q2 01	26.9%	12.8%	
Q3 01	25.4%	12.8%	
Q4 01	24.6%	9.8%	15.2%
Q1 02	26.3%	10.6%	
Q2 02	27.1%	10.7%	
Q3 02	25.4%	10.6%	
Q4 02	23.5%	8.9%	12.5%

Notes:
Gross Margin = Net sales - Cost of sales;
Cost of sales = Cost of merchandise + Inbound and outbound shipping cost + Cost to package product.
Fulfillment costs do not include shipping costs, which are included in the cost of sales

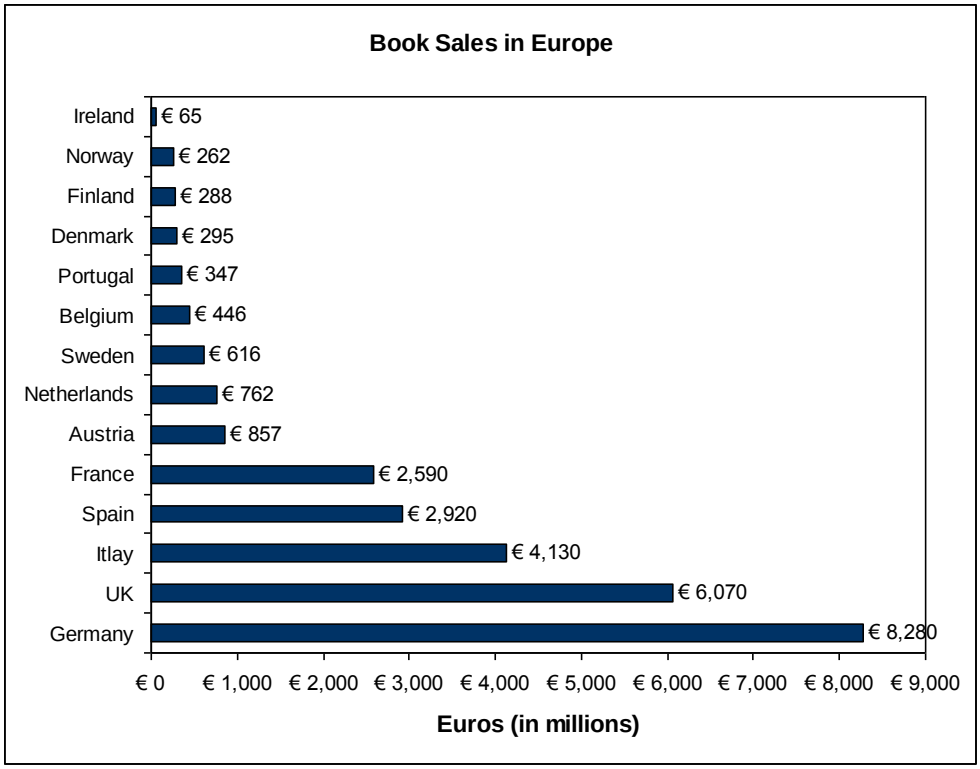
Source: Case writer created.

Exhibit 6 European online markets and book markets

A. Online Spending by Country, 2001 Actual



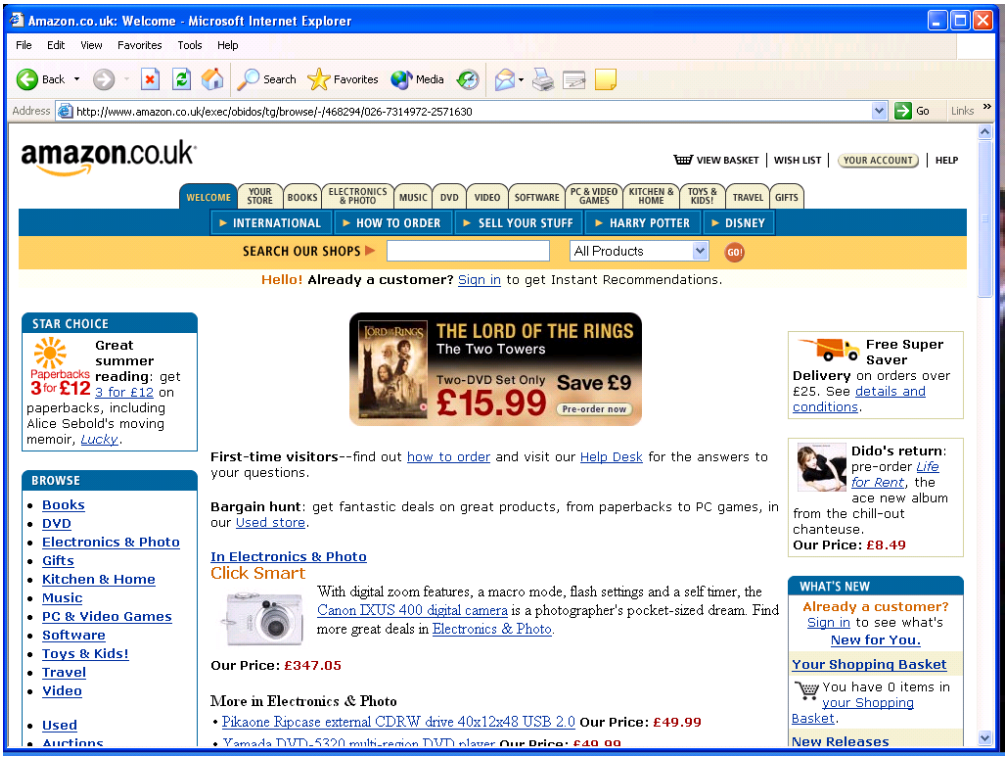
B. Book Sales in Europe in 1999



C. Projected Evolution of German online book sales from 2000 to 2006

Source: A) Mulligan, Mark. European Consumer Commerce Forecasts, 2000-2006. Jupiter MMXI, October 26, 2001. B and C) Forrester Research, Inc.

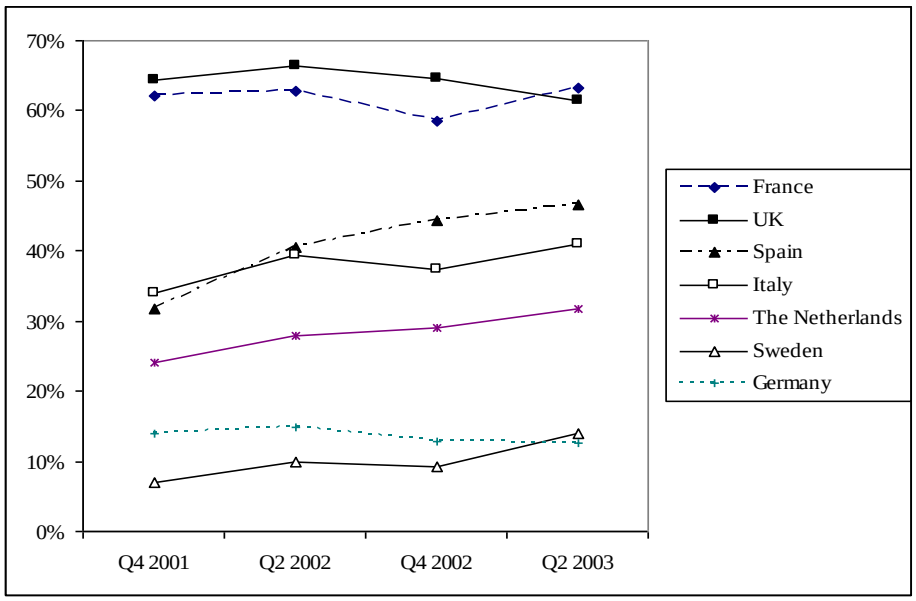
Exhibit 7 Amazon.co.uk and Amazon.de homepages in 2003



Source: Amazon.co.uk and Amazon.de

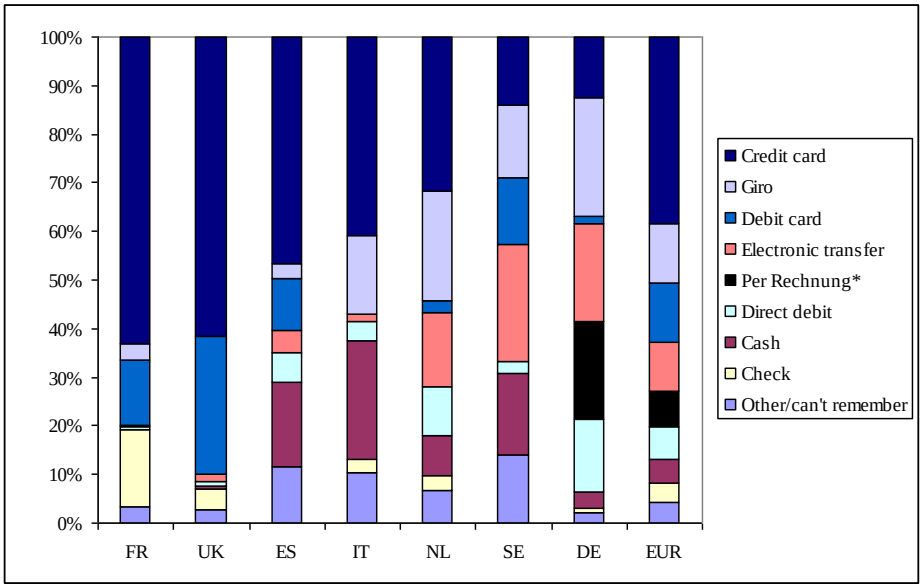
Exhibit 8 Europe's online payment methods

A. European use of credit cards for online purchases. (Percentage of European consumers who ordered on line in previous three months who responded affirmatively to the question: "Did you use a credit card for your most recent purchase online?")



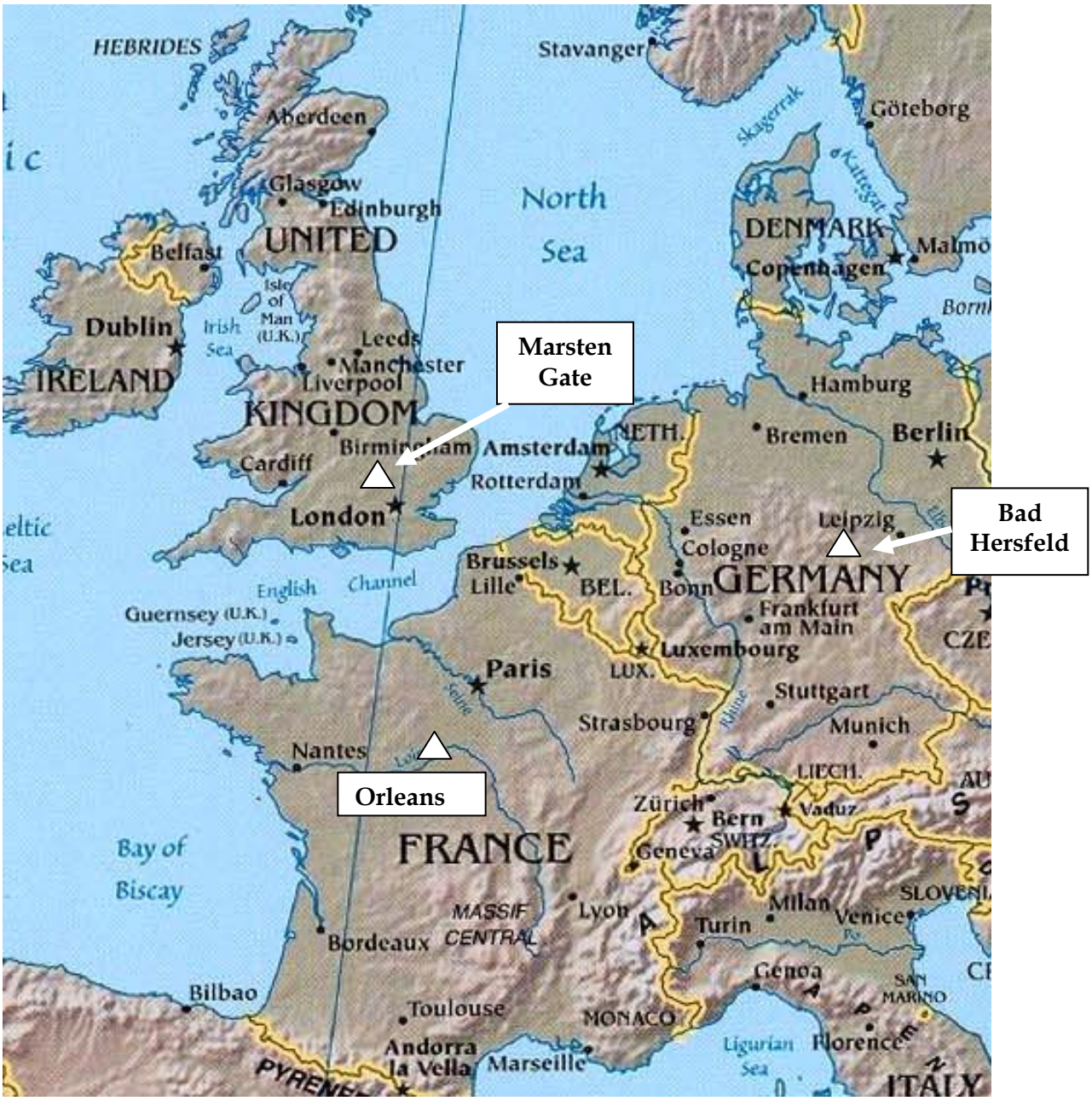
Source: Forrester Research, "Europe's Online Payment Method Potpourri" by Joost van Kruijsdijk, Oct. 2003

B. European payment methods for online purchases



Source: Forrester Research, "Europe's Online Payment Method Potpourri" by Joost van Kruijsdijk, Oct. 2003

Exhibit 9 Amazon's European Distribution Centers



Source: Adapted from <http://www.lib.utexas.edu/maps/europe/europe_ref_2003.jpg> accessed on February 17, 2005.

Exhibit 10 Map of Europe

Source: "European Countries" from the Houghton Mifflin Education Place web site <http://www.eduplace.com/ss/maps/pdf/eur_country.pdf> accessed on February 24, 2005. Copyright © Houghton Mifflin Company. Reprinted by permission of Houghton Mifflin Company. All rights reserved.

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