

DANISH **R**ESearch **U**NIT FOR **I**NDUSTRIAL **D**YNAMICS

DRUID Working Paper No 02-13

How do digital information good characteristics influence pace and modalities of international market entry?

by

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Abstract

The paper develops theory to propose how considering digital information good characteristics modify and extends existing explanations with regard to entry mode choices (in single markets) and internationalization paths (across countries). Explanations offered relate to network and lock-in effects, complementary infrastructure investments, branding, and customer learning – factors that are particular important for understanding international market entry of digital information good providers.

Key words: MNCs; entry mode; learning; digital information goods

JEL Codes: O18, O32, L22

ISBN 87-7873-129-1

1. Introduction

Research on international expansion starting in the 1970s has focused on explaining the slow and incremental internationalisation process of typically large manufacturing firms (Johanson/Wiedersheim 1975, Buckley/Casson 1976, Rugman 1981, Dunning 1988, Johanson/Vahlne 1990, Andersen 1993) followed by a period of empirical corroboration (see e.g. Coviello/McAuley 1996). Relying on organizational learning aspects and transaction cost theory, this literature addresses determinants of entry mode (in a single foreign market) and entry patterns (across foreign markets) such as uncertainty, control needs, resource commitment and, most importantly, largely tacit foreign market knowledge. Much of this literature has been developed in the context of large firms that provide physical goods. By contrast, this paper is concerned with the question of *how the characteristics of digital information goods influence the internationalization process of companies involved in their provision.*

Interestingly, from the late 1980's on, researchers have increasingly addressed small firms that operated internationally early in their existence despite limited resources and capabilities in industries including high-technology, software, art, and craft (Sharma/Johanson 1987, Welch/Luostarinen 1988, McDougall 1989, Oviatt/McDougall 1994, McDougall et al 1994, Bell 1995, Knight/Cavusgil 1996, Coviello/Munro 1997, Madsen/Servais 1997, Coviello/McAuley 1999). Research on such international new ventures¹ observes accelerated internationalisation and to some extent a more frequent use of hybrid governance structures (e.g. Joint Ventures) during international expansion. Theoretical explanations offered for accelerated internationalization emphasize the increasing importance of network relations, industrial conditions, manager/entrepreneur's capabilities and mind set, and, perhaps,

¹ Such companies may be called 'born global' (Knight/Cavusgil 1996), 'global start up' (Oviatt/McDougall 1994), 'high technology start up' (Jolly et al 1992), or 'international new ventures' (McDougall et al. 1994). Here we adopt the latter term: 'international new venture' (INV).

most importantly technological change (Oviatt/McDougall 1999, Knight/Cavusgil 1997). For example, several innovations that have improved the speed and lowered the cost of international communications would include the telegraph, the telephone, fax machines, and most recently the Internet.

The 'international new venture literature' has accumulated evidence that questions explanations and predictions of traditional literature on international expansion (see Coviello/McAuley 1999). It also identifies factors that are instrumental in developing a more context sensitive and comprehensive theory of the internationally expanding firm. Unfortunately, this literature does not address the product characteristics of digital information goods and their impact on the internationalization process of the expanding firm. In particular, Oviatt/McDougall (1999) have recently proposed that the several explanatory factors discussed above are increasing in importance relative to tacit market knowledge as suggested in traditional models of internationalization. Nonetheless, while "...firms that are committed to multinational markets from their inception may internationalize rapidly through a simultaneous combination of modes...we have little understanding about why combinations are chosen and which ones are typical and successful" (Oviatt/McDougall 1999, p. 6). Thus the key contributions of this literature may be seen in shedding new light on the pace rather than the modalities of internationalization.

In the mid 1990's, new firms began to commercialize technological opportunities associated with the Internet. Yahoo!, AOL, and eBay have several things in common. Software at their core, they make their money from the transactions or traffic that their software enables, they provide digital information goods in several forms, they are barely in business for a decade, and all three expanded rapidly in international markets. For example, founded in 1993, Yahoo! is present in 24 countries overseas. Founded in 1985 AOL became in little more than a decade the world leader in online services and serves the largest global online community. While these are admittedly diverse examples, they nonetheless exhibit a crucial similarity - they provide digital information goods on an international scale.

In this context, perhaps most significantly, technological change may be the foundation of a refined theory of internationalization (Oviatt/McDougall 1999). For example, new communication technologies such as the Internet allows small firms to become international via a website, and communication costs are reduced in international operations (Knight/Cavusgil 1997). Internet technology makes new forms of business possible such as the provision of digital information goods - the focal concern of this paper. For example, web technology allows auctions to be done in ways that are impossible in the physical world. However, as argued by Oviatt/McDougall (1999), changing technology, while serving as a foundation, cannot by itself explain accelerated internationalization (p.12). In this article, it is the internationalization process of companies seeking to exploit technological opportunities through new and innovative digital information goods on an international scale that constitute the context for theory development. By integrating digital good characteristics in a theory of international expansion, we respond to Madsen/Servais (1997) who critically remark that many studies in the new international venture literature are rather descriptive without a well-developed theoretical frame of reference. By implication, "...further studies should be more theory driven than the previous ones reported" (p. 580).

Building on the work of Varian/Shapiro (1999) and Bakos/Brynjolfsson (2000) on digital information goods, the current article suggests to establish a theoretical link between digital information good characteristics and the pace and entry modes of the internationally expanding firm. By stressing the relevance of product characteristics in

general² and digital information good characteristics in particular, we use an exploratory case study³ of eBay as an illustration and context for theory development.

We seek to highlight the key points of correspondence and discrepancy between eBay's internationalisation process and three literature-streams (internationalization theory, internalization theory, and research on international new ventures) to stress the importance of digital information goods for understanding the internationalization process of their provider. By assessing eBay's internationalization process against the three perspectives, the objective is to use the company as a specific context for theory development rather than to describe the company comprehensively. Thus, we will be selective, stressing empirical facts that are relevant to our theoretical argument, thereby presenting only a partial picture of the complex company.

To anticipate our argument, we will contrast eBay's internationalization process (i) with internationalization theory to explicate how digital information good characteristics shed light on the company's rapid pace of internationalization, (ii) with internalization theory to highlight how the company's choices of entry modes in

² Recently, scholars have begun to address challenges of the internationalizing service firm in greater depth (Buckley et al. 1992, Robert 1999). Although digital information goods share at times product features with services such as intangibility and experience good character, digital information goods do not require simultaneity of production and consumption (separability), are signified by high fixed and low marginal costs, which is not the case for many service products, and in contrast to many services they can be stored (non-perishability).

³ While we lack the benefits of historical hindsight as the internationalization process of the digital good provider eBay is still ongoing and evolving, our objective is to identify and illustrate crucial product-characteristics that influence, eventually modify, and possibly extend explanations offered in the current international expansion literature. Yin (1994) argues that explorative case studies are particular adequate when 'how' and 'why' questions are addressed and theoretical advance may be expected from unique and contemporary events over which the investigator has little or no control (Yin 1994). The case is built from several semi-structured interviews with company representatives and secondary sources, such as the company's annual reports, press releases, as well as investment reports from UBS Warburg (23/1/01), Wassertein Parella (2/7/01), and Morgan Stanley Dean Witter (24/9/98). Nonetheless, the case in the current context serves as context for developing theoretical arguments only.

alternative international markets are influenced by product characteristics, and (iii) with the ‘new international venture’ literature to offer a complementary explanation of rapid internationalization. The discussion shows that a more satisfying and contextual sensitive theory of international expansion benefits from the consideration of product characteristics to accommodate new and emergent forms of doing business on an international scale. The remainder of this article is structured as follows. Section 2 provides examples of digital information good providers and outlines digital information good characteristics and their economic properties that may act as modifiers and possibly serve to extend current internationalization theory. Section 3 contrasts eBay's internationalization process to show how the three streams of literature that seek to explain the pace and modalities of internationalization relate to the internationalization of digital information good providers. Section 4 discusses and outlines key elements for a theory of internationalization of digital information good providers. Conclusions follow.

2. Digital information good characteristics and firms’ internationalization process

For the purpose of this article, digital information goods - from web pages offering auctions through software, music, and movies - are broadly defined as experience goods encoded as a string of bits (Varian/Shapiro 1999, Bakos/Brynjolfsson 2000).⁴ Digital information goods differ from other goods in several dimension and their economic implication, including their experience good character, transportation costs, (re-) production-, and product adaptation costs (see Shapiro/Varian 1999, Bakos/Brynjolfsson 2000).

⁴ By implication, we are concerned with service providers such as Yahoo!, eBay, or AOL that have no direct involvement in the provision of physical goods. While many service providers may offer mixed goods combining digital goods with physical aspects (e.g. Amazon), for the moment being we focus on pure plays only.

Experience good character: Digital information goods are often experience goods, which are signified by difficulties of consumers to evaluate such goods by sight, taste or touch before consumption (Nelson 1970). Who after all can assess the (dis-)pleasure of watching 'American Beauty' or 'Jurassic Park' lest one sees the movies? Likewise, trading through eBay auctions is a unique experience, the value judgment of which may depend on consumer expectation regarding speed, payment security, number and quality of offers etc. The more frequent one trades, the more predictable the quality of the auction experience becomes, but, nonetheless there remains uncertainty as every new auction is a new experience.

Digital information goods often require sellers to induce buyers to acquire information before consumption to facilitate the first experience. Various strategies to do so involve sharing information content (e.g. free samples of software, free tunes of a new CD via radio, a web page for the latest movie, free listing of seller items on auction sites). Such marketing efforts are usually cheap because of low marginal costs and effective in circumventing the experience good problem. Alternatively, branding and advertising are more expensive possibilities, but both signal quality to customers. By implication, in the presence of information costs, consumers may find it useful to rely on a firm's reputation while firms seek to induce customers through branding and advertising. Because digital information goods are also associated with complementary learning investments by consumers, for example in brand recognition, there are substantial economies of scope in advertising and branding of digital information goods. If building brands is expensive, international brand leverage is a formidable way to reap economies of scope.

Moreover, while the internationalization process of a firm may depend on the costs and possibilities of acquiring market knowledge (Johanson/Vahlne 1990), the cost and possibilities of customer learning about the firm's products may be equally important. Once customers have learned how to use a digital information good, an auction site or software for example, they are hesitant to switch to another one because of the hassle of new learning. For example, to post a single antique toaster, eBay asks a minimum of 50 questions at the start. In addition, and perhaps even more important, are the switching costs that relate to transaction records and trader reputation in the case of

online auctions. When switching costs lead to lock-in effects, firms have to offer a huge advantage and/or compensate for switching costs to attract consumers from competitors. Moreover, because attention is a limiting factor when there is abundant information (Davenport/Beck 2001), rapid spread of digital information goods may require advertising and fast market penetration to pre-empt attention space of customers. In sum, the presence of information costs, customer lock-in, and economies of scope in branding may influence the pace of international expansion and entry modes chosen. Thus we suggest with regards to the internationalization process of digital good providers:

P1: Digital information good providers seek to enter foreign markets through entry modes that allow (a) control for branding and advertising strategies, and (b) gaining access to locked-in customer bases.

Transportation costs: The digital nature of online-services allows for higher speed and lower costs of transportation compared to physical goods. For example, unlike agricultural goods, digital information goods do not perish or lose value during transport. Unlike the transport of heavy physical goods, mistakes in delivery (e.g. timing, dislocation) of digital information goods can be easily corrected and traced. In addition, issues of storing, inventory management and logistics are of little concern to digital information good providers. While transportation costs matter for digital information good providers, they matter far less compared to physical good providers. Where transportation costs are low, the need to locate facilities in proximity to particular markets, or the need to be very selective with choices of in-market locations may be a lesser concern. For example, whereas personal contact and local proximity between the producer and consumer appear to be an important aspect for many physical good providers and services (Buckley et al 1992), it does not seem to play a decisive role in the provision of digital information goods. By implication, psychic distance (Johanson/Vahlne 1990) may matter less because decisions on location, storing and distribution are less important to digital good providers.

Transportation costs of digital information goods are not zero, however. Instead, they depend on the type of information technology (hardware and software) as well as the

telecommunication network the client and service provider are using for data transfer. For some online services, a regular analogue voice telephony with a transmission capacity of 56 kbps may already satisfy the needs of most clients. To increase the speed of transfer, clients may choose to get connected with ISDN technology (56 – 128 kbps), ADSL (1.5 - 8 Mbps downstream and 12 - 500 kbps upstream), cable modems (1.2 - 27 Mbps downstream and 128 – 10 Mbps upstream), or, with the extreme satellite (400 kbps downstream and 56 kbps upstream via analogue voice telephony). Further increases in transmission speed can be expected from technological advance (e.g. UMTS). For example, streamed videos illustrating products offered in online auctions are too slow in transmission and have a too low quality via telephone connections. By implication, the kind of online services that can be offered to particular clients depends on transmission capacity, speed, and costs that are largely determined by competition among complementary services providers (e.g. Dixit/Nalebuff 1986). In addition, constraints in available infrastructure effectively limit market size for digital information good providers. Thus we suggest with regards to the internationalization process of digital information good providers:

P 2: Digital information good providers select foreign markets for entry that have high Internet penetration and advanced telecommunication infrastructure.

(Re-) production costs and competitive dynamics: Digital information goods are often costly to produce but cheap to reproduce (Arrow 1997).⁵ A movie costs hundreds of million US dollars to produce, but only little to copy on video and even less when distributed through streaming technology over the Internet. Likewise, software, news, and auction sites exhibit relatively high fix costs much of which are sunk and low marginal cost of re-production. To be sure, digital information good providers have to make capacity investments in hardware and software that also depend on the traffic volumes on websites. But marginal costs of serving additional users and the traffic they cause are low compared to required up front investments. High fixed costs and

⁵ Conversely, Aharoni (1996) finds one of the biggest differences between a physical good and a service is the fact that services very often are based on human resources (people-intensive) and in general they demand minimal investment in fixed assets.

negligible marginal costs provide a vast potential for economies of scale in production of digital information goods. Physical goods by contrast usually exhibit “diminishing returns to scale”, because from a certain point up, unit costs tend to rise. Thus, the cost structure of digital information good providers may also provide a powerful incentive to penetrate markets rapidly for reasons of minimum efficient scale.

Not only are digital information goods subject to supply side economies of scale, they often also exhibit demand side economies of scale or network effects - “the utility that a user derives from consumption of a good increases with the number of other agents consuming the good.” (Katz/Shapiro 1985, p: 424). For example, the benefit of any particular user of eBay's online auction increases with the number of other users. Likewise, the value of software packages increases as more people use them. While other than digital information good providers may also enjoy network effects in businesses such as gas, electricity, or telecommunication, they are more prevalent in digital information goods because of their cost structure.

Combination of demand-side and supply-side economies of scale can lead to very powerful market positions of digital information good providers. This is because higher sales reduce total production costs per unit and at the same time also make the product even more valuable to current and new users. If this is the case, there is substantial potential for first mover advantages that may lead, in the extreme, to temporary monopolies in particular markets (Lieberman/Montgomery 1998, Liebowitz/Margolis 1999). Network effects, customer lock-in, and scale effects in productions can act as entry barriers to lock out late moving competitors from particular markets.

Competitive dynamics work with accelerated speed in product market for digital information goods because imitation barriers (Rumelt/Lippman 1982) are low. To the extent that digital information goods are easy to re-produce, they may be also easy to copy by competitors if they rest on common knowledge. Estimates of damages due to illegal copying of software amounted to US \$ 11 billion in 1998. To replicate music stored in string of bits takes little more than a piece of software (e.g. witness recent law suits between Napster and the music industry), while imitating a complex

physical good often takes years of effort. Likewise, to imitate an auction format is relatively easy compared to replicating complex machinery. By implications, sustainable competitive advantage is unlikely to stem from particular product features (e.g. particular auction formats that may be easy to copy) or from general IT skills in programming that are widely available. This, in turn, stresses the relative importance of other sources of competitive advantage such as branding, management of the client base, and network effects in markets for digital information goods. Thus we suggest with regards to the internationalization process of digital information good providers:

P3: Digital information good providers seek to penetrate foreign markets rapidly and through entry modes that allow them to benefit from economies of scale in production and demand (network effects), as well as industrial networks.

Product adaptation costs and versioning: Because marginal costs of re-producing information goods are low, cost-based pricing schemes find their limits. For digital information good providers, however, product versioning and product adaptations can be cheaper and faster achieved. This opens up new pricing and marketing possibilities based on perceived customer value. Possibilities, as Bakos/Brynjolfsson (1999) suggest, include time based versioning (e.g. movie producers sell movies at a higher price to cineastes and latter for a lower price to less interested consumers), disaggregation of previously packaged information content (such as separating specialized news from previously aggregated news papers or journal articles), bundling of information according to consumers interest (e.g. information services like Reuters and Forester offer tailor made information packages that are sold to different industry segments), as well as rapid product adaptation according to instant consumer feedback (e.g. adapting or adding an auction category to a web site is far easier relative to changing a product design of specialized machinery).

Data on customers can also be exploited far more readily by digital information good providers for product adaptation in addition to the possibility of selling such data. For example, eBay charges final value fees for each successful transaction, has customer feedback forums, and monitors online transactions. These can be used for real-time learning about customer preferences and product adaptation because transactions can

be easily tracked at low costs (e.g. through collaborative filtering technologies). Low cost of learning for product adaptation is facilitated not just by monitoring transaction quantities, but also through monitoring web pages customers visit, how much time they spend there and what fields they click on. This can produce customer data that is almost instantly available and allow rapid change of product specifications and features. By contrast, providers of physical goods usually utilize more expensive and slower methods such as surveys, interviews, sales force reports to gather customer feedback. By implication, when gathering customer feedback is cheap, and product features are easy to adapt, digital information good providers face lower costs of experimenting with product designs and real time learning for product adaptation compared to physical good providers. Thus we suggest with regards to the internationalization process of digital information good providers:

P4: Digital information good providers enter foreign markets more rapidly than physical good providers because of the possibility of low learning costs and rapid post-entry product adaptations.

3. eBay's internationalization process in three perspectives

To explain the importance of product characteristics in general and digital information good characteristics with particular reference to the internationalization process of the expanding firm, the following section highlights key points of correspondence and discrepancy between eBay's internationalization process and three literature-streams: internationalization theory, internalization theory, and research on international new ventures. Focus is on international expansion patterns (across countries) and entry mode choices (in single foreign markets). Our product-characteristics based explanations may appear as a difference of degree rather than in kind relative to existing literature. Nonetheless, we hope to show that a theory of international expansion benefits from the consideration of product characteristics to accommodate new and emergent forms of doing business on an international scale.

The internationalization process of eBay

eBay is a digital information good provider and pioneered online person-to-person trading by developing a web based community in which buyers and sellers are brought together in an efficient and entertaining web based auction format in a way not possible before Internet technology. Its web-based auction-style shopping platform facilitates a marketplace for products ranging from collectible items, such as antiques, coins and memorabilia, to automobiles and fine art. Sellers from around the world - individuals as well as small businesses - have used the auctions to enter vast markets far beyond their local reach. For example, a rare record dealer in Omaha using a web auction can sell his hard-to-find Frank Sinatra LPs from bidders in Paris or Moscow or Hong Kong, or a Belgian camera dealer can auction his antique lenses to a photography buff in London or Atlanta or Manila. Nonetheless, the main share of trade is conducted within countries (90%) rather than across the countries (10%) in which eBay has established as presence.

In essence, however, eBay is no more than software on a web server accompanied by a strong brand. Leaving inventory carrying costs, distribution risks, vendor management issues to those who participate in auctions, it has created a web based business model that shows that the web can create efficient markets where none existed before. Sellers pay the company for the privilege of setting up their own auctions, buyers use eBay's software to place bids. When the auction is over, the seller and the winning bidder negotiate payment and shipping between them, eBay never touches the goods. For this matchmaking service, eBay takes between 7% and 8% of the sale price. In addition, the company begins charging listing fees 9-12 month after launching a site in a particular location or a new category. Most of the value that eBay realizes from its transactions is in the final value fee. While the amount may be small, incremental revenues without corresponding incremental costs fall straight to the bottom line. High yields accompanied by stock issues in 1998 and 1999, provided substantial financial pockets for rapid international expansion. Founded in 1995, eBay in addition to the U.S. marketplace has expanded its platform internationally, operating country sites in fifteen international markets including Germany, France, Taiwan, Austria, Switzerland, U.K., Italy, Australia, Korea, and New Zealand.

Internationalization of eBay has been initiated in late 1998, partly motivated by increasing competition by Amazon, Yahoo!, FairMarket, AuctionWatch, and Microsoft in the still growing home market. International expansion has since then evolved rapidly through growing user communities from the ground up, acquisition of local organizations, and partnership with local companies. Today eBay operates the world's leading trading community and marketplace on the Internet. In addition to eBay's U.S. marketplace, which includes specialized local and regional communities, eBay has expanded its platform internationally, operating country sites in fifteen international markets including Germany, France, Austria, Switzerland, U.K., Italy, Australia, Korea, Taiwan, and New Zealand.

In late 1998, eBay's efforts to expand internationally into Canada and the United Kingdom relied on building new user communities. The first step in establishing these communities was creating customized pages for users in those countries. These home pages were designed to provide content and categories locally customized to the needs of users in specific countries, while providing them with access to a global trading community based on eBay's infrastructure systems. Local customization in the United Kingdom was facilitated through the use of local management, grassroots and online marketing, and participation in local events. In February 1999, eBay partnered with PBL Online, a leading Internet company in Australia, to offer a customized Australian and New Zealand eBay home page. When the site went live in October 1999, transactions were denominated in Australian dollars and, while buyers could bid on auctions anywhere in the world, they could also search for items located exclusively in Australia. Further, local chat boards were designed to facilitate interaction between Australian users, and country-specific categories, such as Australian coins and stamps as well as cricket and rugby memorabilia, were offered. In June 1999 eBay acquired Germany's largest online person-to-person trading site, alando.de AG for US \$ 50 million in stocks that had good traffic, but little revenue. eBay's management handled the transition of service in a manner calculated to be smooth and painless for alando.de AG's users while users would have to comply with eBay rules and regulations. The only significant change for alando.de AG's 50,000 registered users, was that of being automatically transferred to eBay's URL to transact their business. Only a year after crossing the Atlantic, eBay conquered Germany and erased the lead

of Britain's QXL.com PLC, a British competitor. It started heading into France to take on iBazar, France's top auction site during spring 2001.

Although eBay opened a French site in 2000, capturing substantial market share in France as Europe's third largest online commerce markets has been impeded as iBazar - a leading provider of online trading services in Europe and Brazil - had anticipated eBay's arrival and acquired the domain name eBay.fr in 1998. The battle for supremacy in Europe's on-line auction market may have been decided in spring 2001 when eBay agreed to pay US \$ 112 million in stock for iBazar bringing together two established web auction sites under a single strong brand in Europe. For the time being, iBazar is not expected to contribute to profits in the short term as most of its local sites will continue to work separately, while eBay works on system integration and implementing listing fees. Similar to eBay's acquisition of alando.de, the national brand will be maintained in the short term to leverage local brand recognition before eventually converting it to the eBay name. Through iBazar's acquisition, eBay has gained market leadership in Belgium, Brazil, Netherlands, Portugal, Spain, France, Italy, and Sweden, adding further to eBay's market leadership position in Australia, Canada, Germany, Korea and the U.K..

Doing business in Europe has been complicated, however. In the U.S., four million auction participants each day can pay online through credit card or electronic check as a direct debit. For merchants, credit cards are expensive, but with direct debit, where a buyer authorizes a payment directly from a checking account, costs are small. The alternative is mailing a money order. With its one-third ownership of Billpoint, Wells Fargo is the bank that clears the eBay buyer's electronic check requests through what is called the Automated Clearing House (ACH), the network shared by thousands of U.S. banks and the U.S. government. There is no shared European ACH-style network, despite attempts by the European Union (EU) to encourage the banks across Europe to uniformly connect their proprietary networks to share direct debit information. When banks do manage to process these electronic check requests - which can be an uncertain and lengthy process - it can cost the customer a US \$ 30 service fee, discouraging trade. Another roadblock, are the differing regulations in European nations, despite the existence of the EU and the Euro. For instance,

regulatory authorities in Germany historically haven't allowed an online merchant to accept direct debit authorizations without the account holder signing a paper document - something not required in the U.S. However, Europe is saddled with at least 27 differing direct-debit networks, plus legal rules for ACH that differ from country to country.

To establish an Asian presence, in February 2000 eBay formed a joint venture with NEC to launch eBay Japan. According to the new CEO of eBay Japan, Merle Okawara, NEC was pleased to help eBay in leveraging the tried-and-trusted eBay business model to provide Japanese consumers with access to a global community of active online buyers and sellers. In customizing the site to the needs of Japanese users, eBay wrote the content exclusively in Japanese and allowed users to bid in yen. The site had over 800 categories ranging from internationally popular categories (such as computers, electronics, and Asian antiques) to categories with a local flavour (such as Hello Kitty, Pokemon and pottery). The eBay Japan site also debuted a new merchant-to-person concept known as “super shops”, which allowed consumers to bid on items listed by companies. After two years of trying to gain market share from Yahoo! Japan, the online auction leader in Japan, eBay decided to close its operations in the region during spring 2002. This was somewhat of a disappointment as Japan represents the world's second largest eCommerce market, but management has spent a significant amount of time, effort and money in this region without gaining any competitive stronghold against Yahoo!. The difficulties in Japan exemplify the challenges of operating internationally, as well as the high barriers to entry in the online auction market that result from the network effect, i.e., buyers go where sellers are and vice versa. The company conceded that it also stumbled in executing its strategy in the market by not sufficiently adapting the eBay Japan site for the Japanese market and lacking network economies.

In early 2001, by taking advantage of low share prices of Asian clones, eBay entered Korea, through establishing a majority stakeholder position in Internet Auctions, Ltd., Korea's leading online auction site. Internet Auction Co. is Korea's largest auction company, with about 2.8 million users and an average of 450,000 listings. Prior to the acquisition both Internet Auction and eBay had announced aspirations to become the

dominant player in Asia markets including Korea, Japan, Taiwan, Hong Kong and China. Without consolidation both companies would have competed head on. Shareholders of Internet Auction welcomed eBay's substantial financial means, strong brand name, and substantial knowledge and experience in running web based auctions that are expected to contribute to circumvent Internet Auctions system outages that were due to computer glitches. eBay on the other hand sees the Korean market as bridgehead to further Asian expansion and is keen to benefit from the advanced escrow system deployed by Internet Auction as well as its strong foothold in Japan where Internet Auction has developed relationships with Hitachi and Marubeni.

As it is working through the hard lessons it learned in the Japanese market, eBay Inc. is putting its effort into new ventures in the Asian market. During early 2002 eBay announced it agreed to acquire NeoCom Technology Co., Ltd., for US \$ 9.5 million in cash to enter the Taiwanese market which represents the third largest and fastest growing eCommerce market in Asia. NeoCom is a Taiwanese operator of the auction Web sites uBid.com.tw and Bid.com.tw, Taiwan's first two person-to-person trading platforms were already launched in October 1998. eBay also bought a 33% interest in EachNet.com, the leading online auction site in China. The moves further increase eBay's presence in the Asia-Pacific area.

eBay has been aggressive in expanding in overseas markets using simultaneous entry in several international markets. The recent additions of Korea, Italy, France, Austria, Taiwan, and China give eBay a dominant presence in eight of the top ten international markets outside of the U.S.. New user growth in Europe is 50% faster than the rest of eBay, while gross merchandise sales are growing 135% faster. More importantly, however, the company is beginning to monetize international growth by gradually introducing standardized listing fees on all its international sites and by further connecting its scalability IT infrastructure and systems to acquired operations abroad. Nonetheless, eBay faces a significant amount of competition, especially as it expands overseas, where local competitors have first mover advantages and strong local brands. In many countries, eBay will have to compete with local companies who understand the local market better. Thus, after a period of fast international expansion (1999-2002) there are rising concerns whether continued expansion can be profitably

managed. eBay is already spending much of its sales and advertising budget overseas. Clearly, eBay cannot hope to attract new customers and build a brand in foreign markets as cheaply as the Internet hype allowed in the U.S. where brand building proceeded at low costs. There are also concerns with regards to eBay's international 'growth-through-acquisition strategy' as this eliminates local competitors to leave the company in many markets alone to build out the online auction category on a country-by-country basis. Nonetheless, it also allowed eBay despite lacking first mover advantage to become the leading online auction site in Europe and Asia.

eBay in the perspective of the current internationalization theory

Albeit variously criticized⁶ there is a fairly solid core of knowledge about international expansion represented by two established streams of literature. *Stage models of internationalization* (e.g. Johanson/Wiedersheim-Paul 1975, Johanson/Vahlne 1990) offer prediction about entry patterns (across foreign markets) and entry mode choices (in single markets) based on theories of organizational learning (Cyert/March 1963). The *internalization theory* of the MNC is concerned with entry mode choices in single markets based on transaction cost analysis (e.g. Williamson 1975, Hymer 1966, Buckley/Casson 1976, Rugman 1981, Dunning 1988). In both theories lacking foreign market knowledge is a central construct. Lacking foreign market knowledge increases risk exposure to the internationally expanding firms, to which it responds through either limited resource commitment (stage models of internationalization) or high control modes (internalization theory).

From the late 1980's on, *the new venture literature* has addressed small firms that operated internationally early in their existence despite limited resources and capabilities (Sharma/Johanson 1987, Welch/Luostarinen 1988, McDougall 1989, Oviatt/McDougall 1994, McDougall et al 1994, Bell 1995, Knight/Cavusgil 1996, Coviello/Munro 1997, Madsen/Servais 1997, Oviatt/McDougall 1999, Schrader, et al 2000). Oviatt/McDougall (1994) define such international new ventures as firms that

⁶ See for a critical review of stage models and entry modalities (e.g. Andersen 1993, Melin 1992, Pedersen/Petersen 1998).

from their inception seek to derive significant competitive advantage from the use of resources from and sales of outputs in multiple countries. Theoretical explanations offered for accelerated internationalization emphasize the increasing importance of network relations, industrial conditions, manager/entrepreneur's capabilities and mind set, and, perhaps, most importantly technological change (Oviatt/McDougall 1999, Knight/Cavusgil 1997) relative to difficulties of acquiring foreign market knowledge. Even though a theoretical framework that comprehensively addresses accelerated internationalization of new ventures, typically, small firms is lacking (Madsen/Servais 1997, Oviatt/McDougall 1999), theoretical buildings blocks and explanations have emerged that contribute to understanding accelerated internationalisation patterns across countries.

In the following, we consider explanations offered by the internationalisation, internalisation, and new venture literature regarding entry mode and internationalisation patterns and contrast them with the internationalisation process of eBay.

Entry choices in single foreign markets

A key reason that accounts for the slow pace of increasing international resource commitment of physical good providers is as Forsgren/Johanson (1992: 10) note: International expansion [be it in a single markets or across markets] is inhibited by the lack of knowledge about markets. With regards to the internationalization process of eBay, the lack of foreign market knowledge that results in liability of foreignness seems to have mattered. For example, eBay conceded that it stumbled in executing its strategy in the market by not sufficiently adapting the eBay Japan site for the Japanese market. Customizing the site to the needs of Japanese users has been attempted: eBay wrote the content exclusively in Japanese and allowed users to bid in yen, and added categories with a local flavour (such as Hello Kitty, Pokemon and pottery). Likewise, difficulties in handling transactions in Europe with regards to debit collection have complicated international expansion. This is due to the fact that there is no shared European ACH-style network, and differing regulations in European nations despite the existence of the EU and the Euro. Nonetheless, while complications associated with liability of foreignness can be noted, there are also clear deviations between

eBay's internationalization process and the theoretical implications that are suggested - both in current internationalization and internalization theory with regards to entry modes in single countries.

One implication of lacking foreign market knowledge suggested in internationalization theory is, as authors (Johanson/Wiedersheim 1975, Johanson/Vahlne 1990) argue, that foreign market penetration in a single market follows a path of increasing commitment from no regular export activities through export by agents and licensing agreements to the more commitment intensive establishment of sales subsidiaries, joint ventures and overseas production units. As experimental knowledge about particular markets accumulates, internationalization theory suggests that risk exposure is attenuated and firms do escalate their resource commitments from low to high investment intensive foreign entry modes. In other words, if there is lacking knowledge about foreign markets, firms limit their risk exposure through limiting resource commitments. While individual resource commitment to particular foreign markets may require less investment for eBay (it takes little more than setting up a few computers, install the software, and leverage a brand) compared to physical good providers (which may require to set up production facilities, buying land etc.), entry modes chosen by eBay hardly correspond to theoretical predictions of internationalization literature. eBay entered the market in the U.K. (through Greenfield investments), and Australia (through an alliance) during 1999, it also entered almost simultaneously the German market (through acquisition). Later market presence has been established simultaneously in Canada (through Greenfield), Japan (through a joint venture), and France (Greenfield followed by acquisition) during 2000. Korea followed in 2001 (through acquisition). Japan has been exited and Taiwan was entered (through acquisition) in 2002.

The internalization literature is complementary to the internationalization literature in its concern with single entry mode decisions in particular foreign markets, but it is mainly based on transaction cost economics (Williamson 1975, Caves 1982, Hymer 1960, Casson 1982). Like stage models of internationalization, it is suggested that a lack of foreign market knowledge, including local habits, business rules, and language is likely to increase risk exposure in international expansion resulting in 'liability of

foreignness⁷. However, unlike internationalization process theory which suggests that risk exposure might be controlled by limiting resource commitments until foreign market knowledge has been acquired, internalization theory stresses the possibility to control expropriation risks⁸ through internalizing *vertical activities* required to do business in foreign locations (e.g. Kogut 1988, Teece 1976, Kogut/Zander 1995, McFetridge 1995).⁹

For example, liability of foreignness can cause a relative disadvantage vis-a-vis locally established firms because the entrant faces higher (perhaps prohibitive) coordination costs compared to companies transacting within, rather than across, country borders. The entrant may compensate temporary disadvantages of foreignness by other advantages including proprietary knowledge, knowledge sharing systems, reputation and brands among other things (Buckley/Casson 1976). However, if it is difficult to trade such assets in spot transactions or craft licensing agreement with host country partners in vertical relations, for example, due to market failures or imperfection (Teece, 1976, Kogut/Zander 1995, McFetridge 1995), firms may take resort to entry modes that allow hierarchical control, including FDI (Casson 1982, 1999, Dunning 1988).¹⁰ Casson (1999) adds that to the extent the MNC can more

⁷Main indicators used in the empirical literature on the liability of foreignness are: (a) elapsed time of operations in the foreign market (e.g. Zaheer/Mosakowski 1997, Harkema et al 1996), (b) international experience of the entrant firm (Erramilli 1991, forsrgren/Johanson 1992), and (c) lack of knowledge about foreign markets.

⁸These may be due to market imperfection that result from e.g. liability of foreignness in intermediate product markets.

⁹Note that transaction cost theory in Williamson's (1985, 1996) version is generally concerned with vertical value chain relations where incentive alignment problems in the face of asset specific investments is the key concern. Broader versions of information/transaction costs (Coase 1937, Casson 1982) may equally be applied to both horizontal and vertical entry mode decisions.

¹⁰ Licensing agreements involving knowledge-based assets are often less desirable when MNCs enter new markets, for three reasons: (1) They may result in leakage of competitive knowledge to host country partners, (2) the licensing firm might lose strategic control and flexibility, and (3) finally, the underlying knowledge might be only imperfectly transferred to the licensee because managerial know-how cannot be perfectly codified (e.g. Winter 1987) causing the licensees not to exploit such knowledge to the same extent that the originating company could (e.g. Kogut/Zander 1995, Buckley/Casson 1976).

credibly convey quality assurance through branding relative to a host country partner, internalization of activities may also help customers overcome uncertainty about the good in question through direct contracting with the original supplier.¹¹ In sum, the less property right and strategic protection against misappropriation of rents to intangible assets such as brands and reputation by foreign contracting partners is possible, and the more important such assets are for signaling quality, the more firms will tend to international expansion by FDI (e.g. via merger & acquisitions and Greenfield investments) for reasons of control. Consequently, entry modes chosen by the internationalizing firm rests on the costs and benefits of alternative governance arrangements with firms seeking to minimize transaction costs that in turn depend on degree of foreign market knowledge.¹² The predictions of internalization theory are partially supported in the eBay case, as liability of foreignness can be assumed to be high in Germany, France, Korea, and Taiwan where eBay entered through high control modes. On the other hand, where liability of foreignness can be assumed to be relatively low such as in the U.K. and Canada, eBay choose to enter via high control modes as well. Thus, eBay entered through high control modes in both groups (high vs. low liability of foreignness).

¹¹ Think of the successful branding strategies of fast food chains. The greater the uncertainty and distrust surrounding international business, the more managers may seek control through internalizing transaction (Coase 1937). Accordingly, to leverage its brand internationally, McDonald's owns its restaurants in Moscow but runs restaurants in New York City by franchising. In other words: by pooling ownership, incentives to haggle, cheat, and default are reduced.

¹² Dunning (1988) adds that commitment intensive entry modes including FDI may be explained not only through ownership advantages of the MNC and opportunities of internalisation in intermediate product markets, but additionally through location advantages of the host country that serve to induce international expansion. By location advantages, Dunning means the possibility of using resource endowments that are specific to a particular location. Firms might want to tap into local knowledge sources, exploit low labour costs, or take advantage of physical resources. If managers believe that location advantages can beneficially be combined with firm specific capabilities such as technological skills, reputation, and know how, and the latter are difficult to exchange as argued above, then firms may be required to engage in FDI.

In sum, the proposition that internationally expanding firms choose entry modes to minimize transactional risks that are associated with lacking foreign market knowledge (internalization theory) or controls for foreign country risks through limiting resource exposure until market knowledge has been acquired (internationalization theory) is partially supported at best. This begs the question for alternative explanations regarding entry choices during international entry. Unfortunately, the new venture literature offers "...little understanding about why combinations (of particular entry modes) are chosen..." (Oviatt/McDougall, 1999: 6).

International expansion patterns across country markets

While early work in internalization theory was restricted to the internationalization path in a single market, Johanson/Vahlne (1977, 1990) expand the explanatory reach of the stage model to propose patterns of internationalization across a series of new geographic markets, that may particularly well apply to early stages of internationalization. To control for risks associated with lacking local 'market knowledge', firms may tend to enter foreign markets that are similar in culture, language, rules and norms, and business networks before they expand to foreign markets that are increasingly dissimilar. By implication, like in individual market entry decisions, it is through the gradual acquisition, integration and utilization of foreign market knowledge that firms become willing to successively increase commitments across foreign markets (Penrose 1959, Sharma 1997). To recall the internationalization pattern of eBay: The company entered the market in the U.K., Australia, and Germany during 1999 followed by Canada, Japan, and France during 2000. Korea followed in 2001 (acquisition). Japan was exited, Taiwan, and China was entered in 2002. With regards to theoretical predictions, eBay's internationalization process started in the U.K. and Canada, e.g. countries with low psychic distance, but then rapidly moved to countries with greater psychic distance such as Germany, Japan, France, and Korea. So we are entitled to expect that the internationalization path of digital information good providers may be driven by other factors than those suggested in stage models of internationalization.

The international new venture literature addresses factors that contribute to the understanding of 'accelerated internationalization'. First, international ventures may

reflect the adaptation of the Japanese *keiretsu model*, where the internationally expanding small firm in mature markets follows as dependent supplier a large international expanding firm (Dunning 1993, Johanson/ Vahlne 1990). Second, even independent new ventures operating in niche markets may exhibit patterns of accelerated internationalization. If firms operate in niche markets or narrow product lines, growth objectives will be constrained by limited home demand (Luostarinen, 1989). Accordingly, international expansion might provide the only growth path (Coviello/Munro 1997), internationalization may be required to achieve economies of scale (Buckley/Casson 1976, Dunning, 1993), or to leverage differentiation advantages gained at home through foreign market expansion (e.g. Oviatt/McDougall 1991, Shrader et al. 2000). In the case of eBay none of these explanations seem to apply. First, eBay is not a dependent supplier which follows a global customer. It targets a mass market that is still growing domestically, rather than a local niche market contained home demand. So international expansion is not the only growth path. Finally, while economies of scale in production might be augmented through international expansion with regards to eBay's IT platform, eBay is hardly differentiated from other providers of online auctions with regards to product features, except for a powerful brand.

However, firms may also expand internationally as part of a network of personal and industrial relation. As argued by Coviello/McAuley (1999, p. 227), the network perspective draws on social exchange and resource dependence ideas to suggest that "...internationalization depends on an organization's set of network relationships rather than specific company advantages." By implication, to view a firm's international expansion process as independent from other industry players and personal relations to international networks might be misleading.

Johanson/Mattsson (1988) argued that firms seek to obtain a position in an industrial value network. If an industrial network is already internationally developed, an international 'late starter' firm may be able to draw on complementary resources through joint ventures and tap more readily into established international industrial networks. Hence, international expansion may proceed faster, compared to firms that operate in industries where international industry networks have not been established

yet. Such networks may well be instrumental for firms for rapid internationalization because networks often allow access complementary resources to compensate for lack of own capabilities and assets (Jolly et al 1992, McDougall et al 1994). Bell (1995) in study of 187 small software firms from Norway, Ireland, and Finland, suggest that networks and trends to cooperation rather than psychic distance contribute to explain internationalization patterns. Coviello/Munro's (1995, 1997) findings on small software firms point in the same direction: network relations are used to externalize market development activities.

In online auctions, eBay was an early starter that could not rely on industrial networks developed by others with one notable exception: during 1999 eBay forged a marketing deal with American Online (AOL), which placed eBay across AOL's domestic and international brands, such as AOL and CompuServe, the AOL.com Web page, and Netscape's Netcenter portal. Thus, eBay can create customized, co-branded sites across AOL's network. At the time of the agreement AOL had established a local presence in the U.K. and Canada (1996), France (1996), Germany (1995), and Australia (1998) – all markets that eBay entered as well.

Personal international networks may also contribute to manager/entrepreneur's experience and open attitude. Furthermore, individual managers with an international mind set may have international access to social networks (e.g. Coviello/Munro 1997, Bell 1995, Oviatt/McDougall 1994). This, in turn, can contribute to early internationalization (Reuber/Fischer 1997, Knight/Cavusgil 1996). For example, Sharma/Johanson (1987) argue that network relations may 'become bridges to foreign markets.' If managers have acquired prior foreign market knowledge the internationally expanding firm may not need to acquire knowledge by itself, and one would expect faster internationalization and higher commitment modes. eBay's top management team might have contributed to its rapid internationalization process as well. For example CEO Meg Whitman acquired international experience in brand building during her prior employment at Walt Disney, Procter & Gamble, and Hasbro. Similarly, Matt Bannick, who lead market entry in France, and Korea acquired international experience at McKinsey. Thus one may well assume that, prior international experience might have contributed to accelerated internationalization.

In sum, the internationalization path across countries of eBay cannot be explained through lacking foreign ‘market knowledge’ alone, which leads the internationally expanding firm to enter foreign markets that are similar in culture, language, rules and norms, and business networks before they expand to foreign markets that are increasingly dissimilar. Explanations offered in the ‘new venture literature’ with regards to top-management’s international orientation and utilization of international networks do contribute a possible explanation of eBay’s rapid internationalization across countries. Case evidence is sparse, however. In the following section we seek to outline how considering product characteristics of digital information goods can contribute to explain international expansion both with regards to internationalization paths across countries and single market entry decisions.

4. Advancing current theory of international expansion

The analysis in the previous section concluded that current theory only partially explains entry choice in single markets and internationalization patterns across markets of eBay although foreign liability due to lacking foreign market knowledge remains clearly important. This calls for refinement and extension of current literature. This article suggests advancing current theory by integrating product characteristics of digital goods as an important variable in the explanation of entry modes and internationalization patterns. The integration of product characteristics contributes to the understanding of international expansion in two ways. First, they modify existing predictions, and second, they suggest new predictions that cannot be reduced to arguments in the existing literature.

Single market entry : the influence of digital good characteristics

Digital information good providers seek to enter foreign markets through entry modes that allow control in branding and advertising strategies that are necessary because of the experience character of digital information goods. While we have argued that liability of foreignness matters in the internationalization process of digital good providers, learning of customers about the products of the foreign firm may equally matter, and perhaps even more than learning of the firm about a particular market. Thus entry modes may be chosen to seek control regarding possibilities of customer education rather than overcoming the hazards of liability of foreignness. By implication, an advanced theory of international expansion benefits from recognising liability of foreignness as a bilateral concept: Both customers and the foreign entrant engage in learning during market entry. While building a brand is important for reasons of customer lock-in that facilitates network effects, and high control modes may be chosen accordingly, seeking high control modes through M&A may also lead to a dilemma for digital information good providers such as eBay. By gaining control, competitors are eliminated that may be instrumental to educate customers about innovative product and services during the creation of new international markets.

While the product characteristics based predictions regarding high control modes may coincide with predictions taken from internalization theory when liability of foreignness is high (which makes contractual hazards a more likely case), our argument must not refer to expropriation hazards that are due to liability of foreignness in vertical relations. Instead, when choosing high control modes in markets for digital information goods that exhibit, for example, low liability of foreignness (which makes expropriation hazards a less likely case), the internationally expanding firm might want to keep control over branding, because customer learning that is facilitated by branding is crucial to succeed in the market. Thus, a theory of entry mode choice in single foreign markets that relates to digital good characteristics (e.g. experience good character, lock-in, and network effects) can explain why high control modes are chosen during market entry, even if there is low liability of foreignness and expropriation hazards are less of a concern.

An alternative explanation for high control modes is possible even if one concurs with the arguments of internalization theory that firms respond to expropriation hazards by internalizing transactions. Shrader et al (2000) suggested recently that firms might trade-off risks associated with international expansion such as risks associated with liability of foreignness and the risk related to entry modes. Integrating a foreign firm into another organization is particularly tricky as suggested in the literature on post-merger integration (e.g. Capron et al 1999). Thus the foreign entrant may compare transaction risks (which internalization theory addresses) with post-merger integration risks (that it neglects). Digital good characteristics influence this risk trade off, however, as digital information good providers operate in markets with demand side economies of scale. Where network effects are present, a late entrant in particular foreign market faces an additional risk trade-off: incurring post-merger integration risks or losing the market completely on the other (witness the failed attempt of eBay to gain traction in Japan against the market leader Yahoo!). In fact, as a late entrant, it is hard to imagine how low commitment modes (e.g. licensing) may give access to an installed client base because the incumbent will either fight or sell the client base, most likely by selling the whole company. In sum, digital information good providers seek to penetrate foreign markets rapidly and through entry modes that allow them to reap economies of scale in production, to benefit from network effects, as well as to control branding.

In the analysis above we have also noted that international entry of eBay in single country markets does not follow an incremental process of increasing commitment as market uncertainties are resolved through the acquisition of local market knowledge as suggested in internationalisation theory. To be sure, the new venture literature suggests, as was the case with eBay, that a management team that has acquired foreign market knowledge up front, may make more commitment intensive entry modes possible. In other words: learning about foreign markets takes place before a focal company engages in international expansion. A complementary explanation has to do, of course, with the already above discussed network effects, but, in addition one characteristic of digital information goods alters predictions of current internationalization theory: possibilities of cheap learning about customer preferences for product adaptation after market entry. When costs of gathering customer data and

learning about customer preferences are low in comparison to physical good providers, liability of foreignness becomes less of an issue in retarding resource commitment. This is because it can be faster and cheaper dealt with through new methods of learning that a digital good provider can use to greater extent than a physical good provider.

Moreover, required resource commitment in absolute value may be less for digital good providers compared to physical good providers, at least as far a Greenfield investment is concerned (e.g. high control and high commitment mode). Note in this context, that control to achieve transaction efficiency may be associated with high resource commitment (e.g. M&A or Greenfield) as suggested in internationalization theory, but this is not always the case. First, as far as digital information good providers are concerned, high control modes may not coincide with high resource commitments. Market entry for a digital information good provider may mean no more than to buy a domain name, hire some marketing people, and set up servers that run local traffic. Second, there are substitutes for ownership in achieving control such as network governance (e.g. Holmstrom/Roberts 1998, Larsen 1992) during international market entry. Greenfield investments and M&A may also require less resource commitment relative to joint ventures with opportunistic or incapable partners in foreign markets - at least in the long run (e.g. Prahalad/Hamel 1989.)

Digital product characteristics and patterns of firms' expansion across markets

Digital information good providers seem to deviate from a slow and incremental international expansion process across countries. As suggested in the new venture literature, they seek to create value abroad early in their existence (Oviatt/McDougall 1994). The explanations offered for 'accelerated internationalization' in the 'new venture literature' regarding prior experience of the management team, as well as possible co-operations with network partners have played a role in our case illustration. However, including product characteristics of digital information goods in the analysis of accelerated internationalization provides additional force to recent arguments that technological change and its implications become relatively more important relative to risk arguments that relate to the slow acquisition of tacit market

knowledge. With regards to the increasing importance of technological advance relative to tacit foreign market knowledge (Oviatt/McDougall 1999), our analysis of digital information goods suggests that foreign market entry across countries may proceed more rapidly than those of physical good providers. This is because post-entry product adaptations are possible and exhibit low costs. As was the case with single market entry mode choices, where learning for local adaptation can be achieved cheaply and rapidly through gathering data about customer preferences, the retarding force of lacking market knowledge is weakened both in a single, but also across foreign markets.

While transportation costs matter for digital information good providers, they matter far less compared to physical good providers. Digital information costs have lower costs of transportation compared to physical goods, their providers need not be very selective with choices of in-market locations. Issues of storing, inventory management and logistics are of little concern to digital information good providers when making location decisions. Thus, liability of foreignness might be less pronounced regarding such issues.

Digital information good providers, such as eBay, seem to select foreign markets for entry that have high Internet penetration and advanced telecommunication infrastructures. This is because the availability and costs of such complimentary services influence the demand of digital goods providers. For example, Canada, Germany, and Korea have well developed infrastructures that allow a strongly growing customer base to participate in online auction. So what may look as random patterns of market selection in the internationalization path of eBay, might be strongly influenced by available infrastructure and its costs to users in selected countries. In other words, international expansion across countries is driven by market selection according to market size and growth, which is effectively constrained by costs and possibilities to access the services of digital information good providers. By implication, digital information good providers seek to enter foreign markets first that have high Internet penetration and advanced telecommunication infrastructures (e.g. providers of complementary assets).

Moreover, as argued above, building brands for new categories of digital information goods, while crucial in markets where information costs are high, is also expensive. Online-auction provision constitutes a new industry and where no strong local brands existed, there was little possibility for eBay but to build a brand and create a market on its own. However, in markets where strong local competitors have already created a market for online auctions, as was the case in Germany, France, Korea, and Taiwan, the possibility for eBay to take advantage of high share prices to enter the market via mergers may have been the best option to gain market leadership despite the obvious difficulties of entering a foreign market as a second mover. In other words, saving on costs of market development and buying into the business of the first mover who has already an installed customer base, might have driven market selection in the case of eBay far more than concerns that relate to the liability of foreignness. In sum, psychic distance matters less when digital good providers select markets according to market size and growth, complementary infrastructure investments by others, competitor presence during market development, and availability of strong acquisition targets that allow brand leverage due to a large installed customer base. These factors may be far more important to achieve network effects and economies of scale in production in particular markets that the digital good provider might want to serve.

Finally, while the market for online auctions seems to develop rapidly as more and more countries provide for needed complementary infrastructure at low costs, market development does not work with the same pace across all foreign countries. Particular markets may be selected as an option and bridgehead for further expansion when a local provider (e.g. iBazar in France, Internet Auction in Korea) that eBay purchased engaged in market development activities in countries that will develop to full market size once market development becomes less constrained due to lacking infrastructure, customer learning, or Internet penetration. Seen this way, the internationalization path of eBay looks less random. Market selection is driven by option values that are associated with an installed base of customers as well as the possibility to expand into third countries.

5. Conclusions

The paper illustrates and advocates the integration of good characteristics in general and digital information good characteristics (experience good character, transportation costs, (re-) production-, and product adaptation costs) in particular as an important element in the explanation of international expansion. It develops theory to propose how considering digital good characteristics modifies and extends existing explanations with regard to entry mode choices (in single markets) and internationalization path (across countries). Explanations offered relate to network effects, lock-in, complementary infrastructure investments, branding and customer learning that are particularly pronounced in international markets for digital information goods. Thus, the paper contributes to advance a more comprehensive and contextually sensitive theory of the internationalizing firm that is especially relevant for companies that seek to take advantage of technological advance through the provision of digital information goods. The paper demonstrates how the explanations of stage models of internationalization, internalization theory, and international new venture research relate to the internationalization of digital information good providers. An explorative case study on eBay's internationalization process served as context for theory development to illustrate the need for, and possibilities of, integrating product characteristics of digital information goods in particular. However, eBay is a pure digital information good provider, but many companies build their business by packaging digital information goods and physical elements in the services they offer (e.g. book retailing, banking etc). A crucial question for future empirical research is therefore how mixed good characteristics influence the internalization process of the expanding firm.

Literature

- Aharoni, Y., Globalization of professional business services, in: Y. Aharoni (ed.), *Coalitions and competition: The globalization of professional business services*. London: Rutledge Press 1996, pp. 1-19.
- Andersen, O., On the internationalization process of firms: a critical analysis, *Journal of International Business Studies*, 24, 2, 1993, pp. 209-231.
- Arrow, K., Economic welfare and the allocation of resources of invention, in: Lamberton, D.M. (ed.), *The Economics of Communication and Information*., Cheltenham, U.K.: Edward Elgar 1997.
- Bakos, Y./ Brynjolfsson, E., Bundling information goods: Pricing, profits and efficiency, *Management Science*, 45, 12, 1999, pp.1613-1630.
- Bakos, Y./ Brynjolfsson, E., Bundling and competition on the Internet, *Marketing Science*, 19, 1, 2000, pp. 63-82.
- Barkema, H.G./ Bell, J.H./ Penning, J.M., Foreign Entry, cultural barriers, and learning, *Strategic Management Journal*, 17, 2, 1996, pp. 151-66.
- Bell, J., The Internationalization of small computer software firms - a further challenge to "stage" theories, *European Journal of Marketing*, 29, 8, 1995, pp. 60-75.
- Brynjolfsson, E./ Kahin, B., *Understanding the digital economy*, Cambridge, MA: MIT Press 2000.
- Buckley, P. J., & Casson, M., *The future of the multinational enterprise*, New York: Holmes & Meier 1976.
- Buckley, P.J./ Pass C.L./ Prescott K., The internationalization of service firms: a comparison with the manufacturing sector, *Scandinavian International Business Review*, 1, 1, 1992, pp. 39-56.
- Caves RE., *Multinational Enterprise and Economic Analysis*, Cambridge, U.K.: Cambridge University Press 1982.
- Capron, L./ Hulland, J., Redeployment of brands, sales forces and marketing expertise following horizontal acquisitions: A resource-based view, *Journal of Marketing*, 63, 1999, pp. 41-54.

- Casson, M., Transaction costs and the theory of multinational enterprise, in: Alan M. Rugman (ed.), *New theories of the multinational enterprise*, New York: St. Martin's Press 1982.
- Casson, M.C., The organization and evolution of the multinational enterprise: An information cost approach, *Management International Review*, 39, 3, 1999, pp. 77-121.
- Coase, R. H., The nature of the firm, *Economica*, 4, 1937, pp. 386-405.
- Coviello, N./ McAuley A., Internationalization of the smaller firm: a review of contemporary empirical research, *Management International Review*, 39, 3, 1999, pp. 223-256.
- Coviello, N. E./ Munro, H.J., Growing the entrepreneurial firm: Networking for international market development, *European Journal of Marketing*, 29, 7, 1995, pp. 49-61.
- Coviello, N./ Munro, H., Network relationships and the internationalization process of small software firms, *International Business Review*, 6, 4, 1997, pp. 361-386.
- Cyert, R. D./ March, J. G., *A behavioral theory of the firm*, Englewood Cliffs, NJ: Prentice-Hall 1963.
- Davenport, T.H./ Beck, J.C., Getting the attention you need, *Harvard Business Review*, September-October 2000, pp. 119-126.
- Dunning, J., The eclectic paradigm of international production: A restatement and some possible extensions, *Journal of International Business Studies*, 19, 1, 1988, pp.1-31.
- Dunning, J.H., The changing dynamics of international production, in: J.H. Dunning (ed.), *The Globalization of Business*, Rutledge: London and New York 1993, pp. 51-77.
- Erramilli, M.K., The experience factor in foreign market entry behaviour of service firms, *Journal of International Business Studies*, 22, 3, 1991, pp. 479-501.
- Forsgren, M./ Johanson, J., *Managing networks in international business*, Philadelphia: Gordon and Breach 1992.
- Holmström, B./ P. Roberts., The boundaries of the firm revisited, *Journal of Economic Perspectives*, 12, 4, 1998, pp. 73-94.
- Hymer, S.H., *The international operations of national firms: A study of direct foreign investment*, Cambridge, MA: The MIT Press 1976.

- Johanson, J./ Mattson, L.G., Internationalization in industrial systems- a network approach, in Hood N. (ed.): *Strategies for Global Competition*, London: Croom Helm 1988.
- Johanson, J./ Wiedersheim-Paul E., Internationalization of the Firm - Four Swedish Cases, *Journal of Management Studies*, 8, 2, 1975, pp. 305-22.
- Johanson, J./ Vahlne J.E., The internationalization process of the firm - a model of knowledge development and increasing foreign market commitments, *Journal of International Business Studies*, 8, 1 1977, pp. 23-32.
- Johanson, J./ Vahlne, J.-E., The mechanism of internationalization, *International Marketing Review*, 7, 4, 1990, pp. 11-24.
- Jolly, V.K./ Alahuhta, M./ Jeanette, J.P., Challenging the incumbents: how high-technology start-ups compete globally, *Journal of Strategic Change*, 1, 1992, pp. 71-82.
- Katz, M.L./ Shapiro, C., Network externalities, competition and compatibility, *American Economic Review*, 75, 1985, pp. 424-440.
- Knight, G./ Cavusgil, S.T., The born global firm: a challenge to internationalization theory, *Advances of international Marketing*, JAI Press 1996.
- Knight, G./ Cavusgil, S.T., Emerging organizational paradigm for international marketing: The born global firm. Paper presented at the Annual Meeting: *Academy of International Business*, Honolulu, HI 1997.
- Kogut, B./ Harbir, S., The effect of national culture on the choice of entry mode. *Journal of International Business Studies*, 19, 3, 1988, pp. 411-433.
- Kogut, B./ Zander, U., Knowledge, market failure and the multinational enterprise: a theoretical note, *Journal of International Business Studies*, 26, 2, 1995, pp. 399-408.
- Larsen, A., Network dyads in entrepreneurial settings: a study of the governance of exchange relationships. *Administrative Science Quarterly*, 37, 1992, pp.76-104.
- Lieberman, M.B./ Montgomery, D.B., First-Mover (Dis) Advantages: Retrospective and link with the resource-based view, *Strategic Management Journal*, 19, 1998, pp. 1111-1125.
- Liebowitz, S.J./ Margolis, S.E., Path dependence, lock-in, and history, *Journal of Law, Economics and Organization*, 7, 1995, pp. 205-226.

- Lippman, S. A./ Rumelt, R. P., Uncertain irritability: An analysis of inter-firm differences in efficiency under competition, *Bell Journal of Economics*, 23, 1982, pp. 418-438.
- Luostarinen, R., The internationalization of the firm. Helsinki: *Acta Academic Oeconomicae Helsingiensis* 1980.
- Madsen, K./ Servais, P., The internationalization of born globals: an evolutionary process?, *International Business Review*, 6, 1997, pp. 561-583.
- McDougall, P.P., International versus domestic entrepreneurship: New venture strategic behavior and industry structure. *Journal of Business Venturing*, 4, 1989, pp. 387-399.
- McDougall, P.P., Explaining the formation of international new ventures: The limits of theories from international business research, *Journal of International Business Venturing*, 9, 1994, pp. 469-487.
- McFetridge, D. G., Knowledge, market failure, and the multinational enterprise: A comment. *Journal of International Business Studies*, 26, 2, 1995, pp.408-422.
- Nelson, R.R., Information and consumer behavior, *Journal of Political Economy*, May 1970, pp. 311-329.
- Ostry, S., Technology, productivity and the multinational enterprise, *Journal of International Business Studies*, 29, 1, 1998, pp. 85-99.
- Oviatt, B. M./ McDougall, P.P., Toward the theory of international new ventures. *Journal of International new ventures, Journal of International Business Studies*, 25, 1, 1994, pp. 115-136.
- Oviatt, B. M./ McDougall, P. P., Toward a theory of international new ventures, *Journal of International Business Studies*, 25, 1994, pp.45-64.
- Oviatt, B. M./ McDougall, P. P., Global start-ups: Entrepreneurs on a worldwide stage. *Academy of Management Executive*, 9, 2, 1995, pp. 30-44.
- Oviatt, B. M./ McDougall, P. P., Challenges for internationalization process theory: The case of international new ventures. *Management International Review*, 37, 2, 1997, pp. 85-99.
- Oviatt, B. M., & McDougall, P. P., A framework for understanding accelerated international entrepreneurship, in R. Wright (ed.), *Research in global strategic management*, Stamford, CT: JAI Press 1999, pp.23-40

- McDougall, P. P., Shane, S./ Oviatt, B. M., Explaining the formation of international new ventures: The limits of theories from international business research, *Journal of Business Venturing*, 9, 1994, pp. 469-487.
- Penrose, Edith T., *The theory of the growth of the firm*, Oxford: Basil Blackwell 1995.
- Prahalad, C.K./ Hamel, G., The core competence of the corporation, *Harvard Business Review*, No. 66 1990.
- Reuber, A. R./ Fischer, E., The influence of the management team's international experience on the internationalization behaviors of SMEs, *Journal of International Business Studies*, 28, 1997, pp. 807-825.
- Roberts, J., The internationalization of business service firms: A stages approach, *The Service Industries Journal*, 4, 1999, pp. 68-88.
- Rugman A.M., *Inside the Multinationals: The Economics of Internal Markets*, New York: Columbia University Press 1981.
- Shrader, R., How new ventures exploit trade-offs among international risk factors: lessons for accelerated internationalization of the 21st century, *Academy of Management Journal*, 43, 6, 2000, pp. 1227-1247.
- Sharma, D.D./ Johanson, J., Technical consultancy in internationalization. *International Marketing Review*, 1987, pp.20-29.
- Teece, D. J., Transactions cost economics and the multinational enterprise: An assessment, *Journal of Economic Behavior and Organization*, 7, 1986, pp. 21-45.
- Varian H./ Shapiro, V., *Information Rules*, Cambridge, MA: HBR Press, 1999.
- Welch, L./ Luostarinen, R., Internationalization: Evolution of a concept, *Journal of General Management*, 14, 2, 1981, pp. 34-55.
- Williamson, O. E., *Markets and hierarchies: Analysis and antitrust implications*. New York: Free Press 1995.
- Williamson, O. E., Competitive economic organization: The analysis of discrete structural alternatives, *Administrative Science Quarterly*, 36, 1991, pp.269-296.
- Winter, S., Knowledge and competence as strategic assets, in Teece D. (ed.): *The competitive challenge*, Cambridge, MA: Ballinger 1987, pp. 159-184.
- Yin, R. K., *Case Study Research: Design and Method*, Revised edition: California: Sage Publications 1989.

Zaheer, S./ Mosakowski, E., The dynamics of the liability of foreignness: a global study of survival in financial services, *Strategic Management Journal*, 18, 6, 1997, pp. 439-464.

Danish Research Unit for Industrial Dynamics

The Research Programme

The DRUID-research programme is organised in 3 different research themes:

- *The firm as a learning organisation*
- *Competence building and inter-firm dynamics*
- *The learning economy and the competitiveness of systems of innovation*

In each of the three areas there is one strategic theoretical and one central empirical and policy oriented orientation.

Theme A: The firm as a learning organisation

The theoretical perspective confronts and combines the resource-based view (Penrose, 1959) with recent approaches where the focus is on learning and the dynamic capabilities of the firm (Dosi, Teece and Winter, 1992). The aim of this theoretical work is to develop an analytical understanding of the firm as a learning organisation.

The empirical and policy issues relate to the nexus technology, productivity, organisational change and human resources. More insight in the dynamic interplay between these factors at the level of the firm is crucial to understand international differences in performance at the macro level in terms of economic growth and employment.

Theme B: Competence building and inter-firm dynamics

The theoretical perspective relates to the dynamics of the inter-firm division of labour and the formation of network relationships between firms. An attempt will be made to develop evolutionary models with Schumpeterian innovations as the motor driving a Marshallian evolution of the division of labour.

The empirical and policy issues relate the formation of knowledge-intensive regional and sectoral networks of firms to competitiveness and structural change. Data on the structure of production will be combined with indicators of knowledge and learning. IO-matrixes which include flows of knowledge and new technologies will be developed and supplemented by data from case-studies and questionnaires.

Theme C: The learning economy and the competitiveness of systems of innovation.

The third theme aims at a stronger conceptual and theoretical base for new concepts such as 'systems of innovation' and 'the learning economy' and to link these concepts to the ecological dimension. The focus is on the interaction between institutional and technical change in a specified geographical space. An attempt will be made to synthesise theories of economic development emphasising the role of science based-sectors with those emphasising learning-by-producing and the growing knowledge-intensity of all economic activities.

The main empirical and policy issues are related to changes in the local dimensions of innovation and learning. What remains of the relative autonomy of national systems of innovation? Is there a tendency towards convergence or divergence in the specialisation in trade, production, innovation and in the knowledge base itself when we compare regions and nations?

The Ph.D.-programme

There are at present more than 10 Ph.D.-students working in close connection to the DRUID research programme. DRUID organises regularly specific Ph.D-activities such as workshops, seminars and courses, often in a co-operation with other Danish or international institutes. Also important is the role of DRUID as an environment which stimulates the Ph.D.-students to become creative and effective. This involves several elements:

- access to the international network in the form of visiting fellows and visits at the sister institutions
- participation in research projects
- access to supervision of theses
- access to databases

Each year DRUID welcomes a limited number of foreign Ph.D.-students who want to work on subjects and projects close to the core of the DRUID-research programme.

External projects

DRUID-members are involved in projects with external support. One major project which covers several of the elements of the research programme is DISKO; a comparative analysis of the Danish Innovation System; and there are several projects involving international co-operation within EU's 4th Framework Programme. DRUID is open to host other projects as far as they fall within its research profile. Special attention is given to the communication of research results from such projects to a wide set of social actors and policy makers.

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