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Evolving eBusiness Models: Lessons Learned from Two Industries[a,b]

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Abstract: Global competition, ever-increasing customer demands and rising development costs are altering the way business is being conducted. The dot-com bubble burst has had little if any impact on developments on the business-to-business side of eBusiness. Firms are aware they have no choice but to develop stronger and closer ties with suppliers on the buy-side and with their business customers on the sell-side of the extended enterprise. This permits firms within the value chain to communicate information about market demand directly, resulting in minimizing inventory buildup, sustaining quality and building profitable operations. Networked supply chains speed time to market through collaboration with suppliers and customers. The authors illustrate these developments based on two large research projects they conducted over several years analyzing the real estate and air travel industries.

1. Introduction

Firms have been struggling with defining organizational boundaries, reconfiguring their value chains and the potential threat of disintermediation. More specifically [10]:

- Organizational boundaries become fuzzy, change or disappear and, as market coordination forms, may also find a new place within organizations.
- Value-added chains change or entirely new ones appear, and value-added activities are newly distributed.
- Suppliers and customers become part of the value-added chain.
- Entirely new players become entrepreneurs who would not have entered a market prior to recent eBusiness developments.
- Disintermediation and reintermediation is frequent, but increasingly the reintermediaries are different players.

Moreover, Manyika and Nevens [8] state that while many companies spent heavily on information and communication technology (ICT) during the pre-dot-com bubble years, most did not experience the expected benefits because they tackled the wrong ICT and business levers.

One may argue that the dot-com crash had a negative impact on the market perception of certain Internet applications and technologies, but the underlying concept of eBusiness, leveraging the Internet and WWW to improve business, continues to be sound. We suggest below that firms do not have any choice but to embrace eBusiness if they want to stay competitive and gain strategic advantage. Increasingly we realize that business-to-business (B2B) eBusiness must be an essential component of any business strategy. eBusiness applications in the area of supply chain management for example, have enjoyed considerable growth since the dot.com bubble burst. There have been significant investments on both the buy- or downstream-side (supply chain management, logistics), as well as the sell- or upstream-side (customer relationships) of focal organizations. These developments are observable along the entire value chain, in some cases ranging from third-tier suppliers all the way to a focal firm's customers' customers' customer.

According to Forrester Research [2], US market expenditure on supply chain management (SCM) software purchases and rental fees will rise from US $5.54 billion in 2002 to US $5.98 billion in 2003, US $6.16 billion in 2004 and US $6.18 billion in 2005. It is worth putting these figures in perspective, by considering the increase in expenditure from 2000 (US $3.85 billion) to 2001 (US $4.80 billion). From manufacturers to retailers, current supply chain developments are driven by the business requirement to keep inventory levels low while simultaneously increasing production levels and realizing just-in-time delivery relationships. Supply planning and optimization efforts are critical to achieving those goals.

Broadly speaking, firms are facing three sets of challenges in the twenty-first century [9]:

1. An eEconomy reflective of the broad business environment in which global commerce is being conducted,
2. An eBusiness enterprise with the capability to exchange value (money, goods, services and information) electronically, effortlessly and without friction, and
3. Challenges to distinct competencies resulting in new types of competition.

In many ways, firms have no choice but to invest in their relationships on both sides, i.e. with suppliers and with customers. In order to stay competitive and to develop just-in-time supply and delivery concepts, firms have no choice but to embrace ever-tighter commercial relationships. These relationships, in turn, can only be realized if they are conducted electronically, resulting in challenging questions with regard to trust, as well as what constitutes the boundaries of an organization. It is becoming increasingly difficult today to clearly delineate where an organization's 'boundary' actually is, as these relationships and the underlying mutual trust associated with these relationships, increasingly create an operating environment of a family of organizations.

No doubt these developments have been massively shaped and challenged by the Internet and the World Wide Web (WWW). We must realize that these challenges should be seen in light of ongoing traditional challenges that manufacturers face. These include cost reduction efforts, service and customer focus, quality improvement, labor efficiency and unions, inventory and warehousing issues, run lengths and manufacturing flexibility, design for manufacturability, and product reliability amongst others [3].

Having provided a context for the remainder of the paper, we will now describe developments and lessons learned from long-term research in two industries, i.e. the real estate industry and the air travel industry.

2. Real Estate Industry

Real estate is a promising market for studying the potential impact of eBusiness because it is an information-intensive and information-driven industry; transaction-based, with high value and asset-specificity; market-intermediaries (agents and brokers connect buyers and sellers rather than buying or selling themselves); and on-going information and communication technology (ICT) related changes.

Real estate agents connect buyers to sellers by controlling and disseminating information, e.g., via the Multiple Listing Service (MLS) publication. Agents are valued based on their skills in promoting listings and closing sales. Since houses are relatively speaking, an expensive and occasional purchase, most individuals still feel the need for assistance from a professional for such transactions. These are all factors that tend to increase transaction costs [12].

Real-estate agents and real-estate firms are pure market-intermediaries—connecting buyers and sellers but rarely buying or selling on their own account. If the value added by agents merely represents a source of information, their position is vulnerable if buyers and sellers develop new ways to find one another and exchange necessary information.

The way in which ICT can be used to disintermediate the traditional agent or broker is of central interest here, as this potentially threatens the traditional relationship between agent and home-owner. Disintermediation is the elimination or displacement of market intermediaries, enabling direct trade with buyers and consumers without agents [10]. Traditionally, linkages between buyer and sellers have been managed by a host of intermediaries - agents, wholesalers, retailers, distributors, warehousing operations, forwarders and 'jobbers' - who reduce the number of customers or suppliers with which a principal has to deal, thus avoiding information overload for the principal. Today, examples abound in which these mediating roles have been replaced or eliminated because information technology permits the principals to manage the relationship directly [1] [10] [11].

Agents have begun to realize the potential disruption of the use of the Web, and in many cases are adopting these new communications channels for their own use. For example, Carol Lucas, a Prudential agent in the vicinity of San Francisco, California, launched her own Website, CarolLucas.com, as early as December, 1996. This agent linked her site within the real-estate community and paid fees to appear on six property-listing sites. By 1998, Lucas stated that 75 percent of her business was being generated through her website. Other agents continue to stress the value of individual service, existing buyer-broker relationships, connections to other house-buying services, buy/sell deals, and guarantees.

New forms of brokerage are evolving and changing the structure of the real-estate industry. Moreover, there seems to be a growing trend to unbundle services traditionally offered by real-estate agents. For example, some agencies offer customers a discount on their commissions, if they deliver certain services themselves, including using their home computers to advertise their homes on the Internet, using desktop publishing software to make fliers as handouts, organizing their own open house events, and various advertising efforts. One such broker offers homeowners a 32.5 percent discount off the traditional commission if they sell their house within 45 days. Such developments challenge researchers to better understand how eBusiness might continue to affect this industry. Of course, the impacts of these technologies are not unique to the real estate industry.

2.1 Industry Trends Triggered by ICT and eBusiness Applications

US real estate agents are under enormous threat from ICT that enables information sharing and bypassing of traditional information intermediaries. The US industry previously held an information monopoly through Multiple Listing Services (MLS). This information monopoly has clearly been broken. Real estate property listings in MLS can now be found on agents', agencies' or industry associations', as well as on MLS' own website. Consequently, the old information monopoly is falling apart. We observe the unbundling of services (e.g., Open House, lock box, fliers) for a price and lower commissions.

Moreover, an agent's social capital - the set of social resources embedded in relationships - helps to explain how real estate agents add value to the real estate process. The agent's social capital serves her/him in two ways to deepen process knowledge and provides him/her with resources to tap in support of the process. While the Internet can significantly speed the transaction process, it cannot replace many of the 'high-touch' functions that real estate agents provide to their customers. Changes in process can be seen as changes to (1) who is participating in the various stages, (2) the ordering of some stages in the process, and (3) the increased use of ICT is altering industry structures by subverting some of the agent's control over information while also supporting the existing contract-based structures. Some of our socio-structural findings help to explain why information intermediaries persist when techno-economic perspectives would suggest their disappearance.

The business model for a real estate brokerage is changing from the traditional focus on the transaction process to adding increased value to home buyers and sellers.

2.2 Real Estate Industry: Conclusions and Summary

Real estate is an information business, and, consequently, is deeply impacted by ICT. The escalating rate of change can be seen when studying firms in this market, as well as the consumers it serves. The information revolution that is inescapably penetrating all facets of industry is also propelling the real estate industry into unknown territories.

It appears that a real-estate war broke out in cyberspace in 1999. The outcome of this battle may determine, for many years, where and how millions of U.S. home buyers and sellers transact their property and mortgage money. Moreover, the outcome may also reconfigure the role real-estate agents play in the home selling and buying process. The major adversaries in this battle are indeed major players:

- Real Estate Brokerage Industry: The brokerage industry's principal trade group is comprised of the National Association of Realtors (NAR) with its 750,000-plus members together with some of the largest broker-controlled (MLS) groups.
- Microsoft Corporation: This large and cash-rich computer software firm together with its allies in the real-estate franchise industry, including Re/Max International, Prudential Real Estate Affiliates and Better Homes and Gardens Real Estate Services, has made several aggressive moves to dominate this industry.

Based on several industry analysts, it has been estimated in 2002 that there are over 5,000 Websites focused on some aspect of the real estate transaction process and that within four to five years these sites may aggregate into just five or six major Websites. Such developments are expected as a result of industry consolidation and is analogous to predicted consolidation and aggregation expectations in other service industries. Due to the pervasiveness of the Internet, we anticipate an eroding of the position of real estate professionals as they adapt to the loss of exclusive access to the Multiple Listing Service. More and more steps within the value-chain of the real estate transaction process are being automated and, at least partially, disintermediated. This suggests the emergence of one or more electronic markets. Electronic markets typically emerge through the automated mediation of market transactions. These developments challenge the real estate establishment and may force real-estate agents to look for other ways to add value to the consumer. ICT may, in turn, provide a means (e.g., data visualization, broad-band telecommunications, interactive communications, dispersion of jobs and work, relationship marketing, use of intelligent agents) to make this possible. One vision of the real estate agent of the future is that he/she must perceive this profession as an information technology-savvy multimedia content provider who protects and controls the information and data at hand. This latter vision appears to be shared by the National Association of Realtors.

3. Air Travel Industry

Tourism is another global industry that links a worldwide supplier community with consumers. Like real-estate, the tourism industry tends to be diverse, fragmented and geography bound, and the size of tourism principals vary from micro to global enterprises. Like real-estate, both air travel and tourism have quickly adopted the Web as a key distribution as well as a promotional channel. Some of the reasons why travel has become one of the leading eBusiness applications on the Internet are (1) the volume of overall revenues, (2) the amount of rich and topical information for customers, and (3) the concept that almost every Internet user is a potential customer for some travel niche [6]. In investigated the ongoing transformations in the air travel industry, we focused particularly on scheduled flights.

The air travel industry is characterized by a broad diversity of players of which only special segments, like the airlines themselves, are concentrated into an oligopoly of global alliances [5]. Main players on the supply side are primary suppliers, i.e. hotels, restaurants, organizers of cultural or sporting events, airlines and other transport providers, such as car rental companies, railroad and ferry companies. Intermediary suppliers include the tour operators (TO) who act as product aggregators, travel agents who act as information brokers, the providers of Computerized Reservation Systems/Global Distribution Systems (CRS/GDS) such as Sabre and Amadeus covering airline offerings, as well as other tourism-relevant products, and so-called Destination Management Organizations (DMO) on a national (NTO), regional (RTO) or local level (LTO) focusing on planning, marketing and administrative tasks for destinations, e.g. the Gulliver system for Ireland. Tourists, independent travelers and business people represent the demand side.

Travel and tourist products require a high degree of customer participation during service fulfillment. Table 1 below summarizes the main economic characteristics of scheduled flights.

Table 1: Product characteristics of airline tickets, e.g. [4]

Characteristics	Tickets for scheduled flight
Initial production cost	High level of fixed cost (aircraft, crew, fuel, etc.).
Marginal cost for additional product	Less than 15% of overall costs are related to the number of passengers (ground service, catering, etc.) within a given contingent of seats.
Individualization cost	Fixed cost for setting up yield management and booking systems, low variable cost for price discrimination based on service level and contractual features: right to return or change ticket, advance booking, restrictions regarding timing, etc.
'Shelf-life'	Flight schedule defines the shelf life; after the check-in gate at airport has closed the over-stocked seats are worthless.

For airlines online sales provide the opportunity to target more customer segments. As such online sales are very useful to manage yields, as it is quick, easy and inexpensive to differentiate prices even further to sell remaining capacity on a last minute basis if required. Customers can benefit from easier access to a wealth of current information and efficient transactions, and gain, at least subjectively, a sense that they benefit from increased market transparency. On the other hand, we see a combination of structural properties of the air travel industry and its product, leading to intense competition and a swift adaptation of attractive customer segments to electronic transactions.

3.1 Industry Trends Triggered by the Web

In traditional ticket sales channels for scheduled flights, travel agents used to intermediate most transactions between airlines and customers, and CRS/GDS intermediate the relationship between tourism principals and customers. This value chain was based on the capabilities of data storage, information retrieval and transaction processing as they have existed for more than 30 years (early form of cybermediation between supplier – retailer).

In 2003, airlines are increasingly trying to take advantage of the opportunities of the Web. Today, most low cost airlines for example, such as Germanwings and Ryanair, focus on direct sales. Traditional travel intermediaries, namely travel agents and the CRS/GDS have also entered the online market.

Travel agents appear to be especially vulnerable to disintermediation, as despite a recent phase of consolidation, they operated for many years in a fairly protected market where the concentration level was fairly low and margins while small, were stable,. Travel agents are now using the Web to develop differentiated value propositions and reinforce their market position. By being able to direct large volumes of travel towards different airlines, larger travel agents are trying to maintain their market position and influence over airlines.

Computerized Reservation Systems (CRS) and later Global Distribution Systems (GDS), developed in the 1960s by airlines, have transformed themselves into Web-based incumbent intermediaries by building so-called 'online travel supermarkets' for consumers using Web technology.

Web-based new intermediaries, so called 'cybermediaries', have positioned themselves as consumers' advocates with innovative pricing models (demand collection, demand aggregation, reverse auction [4]). Priceline (www.priceline.com) is an example of these new entrants offering a demand collection system. Traditionally, consumers have had little opportunity to signal the amount of money they are willing to pay before they actually make a purchase. The Web makes pricing strategies feasible which combine personalization and versioning. In the case of Priceline, customers can specify their preferences including the price which are then advertised by Priceline to airlines, car companies, or financial services companies who can decide whether they want to fulfill this additional demand at the price offered by the customer. In return for its service, Priceline earns a commission for every sold ticket.

Finally, Web-based airline strategies have emerged in which major airlines have formed airline online alliances (Opodo, Orbitz) mimicking the supermarket business model.

3.2 Air Travel Industry: Conclusions and Summary

The above illustrates to what degree the Web has contributed to the transformation and the development of the distribution systems in the air travel industry. The air travel industry, almost like any other industry, is characterized by an increasing number of distribution channels. Triggered by increased information and communication possibilities and combined with lower costs, we see a mixed-mode structure that represents a continuum of combinations of traditional channels, dis-, re- and cybermediation, as illustrated by the above described sequence of developments. Two trends have to be distinguished:

- The rise of new intermediaries, mainly successful on a large scale in the role on online travel supermarkets, parallel to the push of airlines into various forms of direct selling.
- Decreasing market transparency (against the general notion of increasing transparency) and increasing concentration against the prevailing electronic market rhetoric.

Our analysis can be summarized in four major effects of the Web on the air travel industry:

- The Web has facilitated globally dominant strategies. Successful or plausible business models are subject to almost immediate imitation.
- The Web has led to numerous new alliances that are crisscrossing the boundaries of existing alliances and industries.
- The Web has been used to reduce price transparency as the degree of price differentiation and the number of potential outlets is rising.
- The Web has driven concentration despite the sketched emergence of a multitude of online travel sites.

4. Conclusions

Based on descriptions of two industries above (real estate and air travel) and subsequent deliberations above, some generalizations can be made. We have observed several phenomena such as bundling and unbundling, personalization, price differentiation mechanisms, and dis- and reintermediation along different value chains [7]. Underlying these developments is the primary recognition that supply chains are being re-configured into so-called 'demand chains'. Supply is usually driven by forecasts that are notoriously weak and unreliable predictors of demand. Demand chains are viewed as a set of links through which materials flow, as in a pipeline which can be managed and regulated at several strategic control points based on actual consumption (rather than forecasts). We also should note that with ever-increasing supply/demand chains being interconnected, actually creating a network, a firm may be a customer at one moment and a supplier (to the firm they bought from) the next. Being able to develop such a network and use it effectively is becoming increasingly important to firms and industries, but we must realize that the need and very existence of these networks is created by this duality in relationships [9].

This, in turn, forces firms to literally rethink all features of their business models, including pricing strategies, logistics, just-in-time delivery, inventory management systems, warehousing, marketing and pricing strategies. Extrapolating these developments to the level of the worldwide market, one must recognize that this process has far-reaching implications. Global firms today are attempting to reconceptualize and redefine their relationships along the value chain in an effort to lower costs, work closer together, increase speed and agility, reduce risk, raise quality and to become jointly more competitive. In the global market context, firms seem to be moving beyond the tactical sphere of procurement, purchasing and sourcing into the strategic realm of global supply and demand management.

These developments challenge real estate agents and air travel establishments, as well as many other industries and professions in the 'mediation' or 'middleman' business. They may force players in these industries and professions to look for other ways to add value to the consumer. ICT may, in turn, provide a means (e.g., data visualization, broad-band telecommunications, interactive communications, dispersion of jobs and work, relationship marketing, use of intelligent agents) to make this possible. One vision of both the real estate agent as well as the travel agent of the future is that he/she must perceive this profession as an information technology-savvy multimedia content provider who protects and controls the information and data at hand. These are just two examples depicting evolving eBusiness models requiring suitable and continuous adaptation to observable changes in their respective environments.

References

[1] R. Benjamin and R. T. Wigand, Electronic Markets and Virtual Value Chains on the Information Superhighway. Sloan Management Review, 1995, 36(2), pp. 62-72.

[2] Forrester Research, SCM Software Purchases and Rental Fees (U.S. Market). Cambridge, MA, 2002.

[3] GartnerGroup, The Evolving New Economy. Gartner Special Report, Stanford, CT. The GartnerGroup, 2000.
[4] S. Klein and C. Loebbecke, The Transformation of Pricing Models on the Web: Examples from the Airline Industry. 13th International Electronic Commerce Conference, Bled, Slovenia, June, 2000, pp. 331-349.
[5] S. Klein and C. Loebbecke, Web Impact on the Air Travel Industry. In: Tracking a Transformation, E-Commerce and the Terms of Competition in Industries, The BRIE-IGCC E-conomy Project, Brookings Institution Press, Washington, 2001, pp. 112-127.
[6] S. Klein and C. Loebbecke, Emerging Pricing Strategies on the Web: Changing Roles and Responsibilities of Suppliers, Intermediaries and Customers. Electronic Markets (EM), 2003, 13(1), pp. 46-58.
[7] C. Loebbecke, Digital Goods: An Economic Perspective. In: Encyclopedia of Information Systems, Bidgoli, H. (Ed.), Academic Press, San Diego, 2002, pp. 635-647.
[8] J. M. Manyika and T. M. Nevens, Technology after the Bubble: IT will rise again - but only if the providers learn how to help their customers make money. The McKinsey Quarterly, 2002, 4.
[9] R. T. Wigand, Business-to-Business Electronic Commerce: The Convergence of Relationships, Networked Supply Chains and Value Webs. In: E-Life after the Dot-Com Bubble, H. Bouwman, B. Preissl and C. W. Steinfield (eds.), Berlin, Springer Verlag, 2003, forthcoming.
[10] R. T. Wigand, Electronic Commerce: Definition, Theory and Context. The Information Society, 1997, 13(3), pp. 1-16.
[11] R. T. Wigand, A. Picot and R. Reichwald, Information, Organization and Management: Expanding Markets and Corporate Boundaries. Chichester, England, Wiley, 1997.
[12] O. E. Williamson, The economics of organization: The transaction cost approach. American Journal of Sociology, 1981, 87(3), pp. 548–577.

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