The diffusion of Internet Business and the renaissance of conventional wisdom

Malin Brännback
LABORIS
Dept. of Computer Science, University of Turku
Turku Centre of Computer Science
DataCity FIN-20520 Turku, Finland
Jussi Puhakainen
Institute of Information Systems
Turku School of Economics and Business Administration
DataCity FIN-20520 Turku, Finland

Turku Centre for Computer Science
TUCS Technical Report No 215
November 1998
ISBN 952-12-0328-5
ISSN 1239-1891

Abstract

The diffusion of Internet technology has prompted the necessity to fundamentally reconsider the relevance of contemporary business models and Web-based systems. This paper is an exploratory study of the Internet business using the ICDT model, Kotler's product model, and the value chain concept. We distinguish between two categories of Web-based systems; Web-presence systems (WPS) and Web information systems (WIS). The paper concludes by presenting the key issues, which have to be considered depending on the type of Web-application the company decides to develop. This paper is the beginning of research which aim is to develop a typology of Web-applications and thereafter develop a WIS strategy.

Keywords: Diffusion of Innovations, ICDT-model, Internet Business, Web-presence systems, Web Information Systems, Value Chain

TUCS Research Group
Information Systems Research Group

Introduction

One of the constant problems within the information systems (IS) field is the rapid developments in information technology (IT) practice leading to IS theory development constantly lagging behind (Rayport and Sviokla, 1994, Hoffman and Novak, 1996, Brännback, 1997, Brännback and Puhakainen, 1998, Checkland and Holwell, 1998). This is particularly visible with the Internet and the World Wide Web (Web). The Web is only five years old, yet the number of users has reach beyond the size for which it took radio nearly eighty years to do (Sterne, 1997, www.nw.com, www.nua.ie/survey). Many organisations have established Web-based business activities successfully. Many have failed. Some are only present for the sake of presence others have developed sophisticated Internet solutions and linked them with equally sophisticated internal information and communication systems, i.e. non-Web-based IS (Isakowitz, et al, 1998). As new technology is providing new business opportunities and causing changes in business behaviour it is also prompting an equally rapid development of new knowledge for understanding, modelling, and supporting business in this new market situation. Therefore, it is not surprising to find an equally gigantic goldrush phenomena within the academic community in studying the Internet. Some of the recently presented conceptual frameworks for business have become dated and proved insufficient as descriptive or normative tools.

The reason for existing models seemingly becoming dated is not only due to the fast changes, but also perhaps even more to the fact that all businesses have not reached the same degree of maturity, which can be seen among business in, e.g. the US. Recently Isakowitz et al, 1998, pointed out that, from a IS perspective we may distinguish between Web page systems (WPS) and Web-based information systems (WIS), which differ both technologically and conceptually from each other. The differences are such that they require new approaches to design and development, and failing to realise this may be another reason for existing models not providing proper guidance in the new business situation. Therefore, we need a model, and in particular a model, which can be applicable in different stages of business development and one, which can support WIS design and development.

The ICDT model (Angehrn, 1997) is one of the first *strategic* frameworks for *mature* Internet business practice (here called electronic commerce (EC)). The model provides a systematic procedure for describing the electronic business environment and for identifying and analysing how existing products and services have to be extended and redesigned in order to succeed on the Internet. The framework also provides some guidance for key considerations in creating completely new services, products, or business activities. It is important to note that the ICDT model is for mature Internet business and since a majority of companies can be classified as beginners the model clearly falls short on many issues. The model does not take into consideration company size. Even if the benefits of EC are seen as self evident it may still be overwhelming for small companies to allocate sufficient resources (both financial and personnel) for establishing a working EC practice. The model provides no guidance for the strategic considerations, for example, required when a small local company considers the option of taking a quantum leap into a global market environment, not to mention the operational consequences of such a decision.

In this paper we explore the significance of the ICDT model against the diffusion of EC. Although the introduction of new technology prompts the creation of entirely new knowledge it may well be sufficient to merely modifying existing knowledge (Brännback, 1997, Puhakainen and Brännback, 1998, Brännback and Nieminen, 1998). For example, we find it useful for the purpose of sense making, and learning to explore EC against Roger's (1962) model of diffusion of innovation. Moreover, since the product or the service will acquire new features and the distinction between products and services become blurred (Brännback and Puhakainen, 1998) we suggest as supporting tools a basic product model and the value chain concept. The former helping to understand what remains and what is new with the product and the latter helping in understanding what happens within industry. Furthermore, the Web applications have developed into a variety of systems, with quite different specification needs. Therefore, we have at least two basic dimensions: the business dimension and the systems dimension.

In the next section we will present the ICDT model and the two categories of Web systems; WPS and WIS. In section three we will present some of, to our minds relevant models, such as Rogers' (1962) model for the diffusion of innovations, the five-level product model (Kotler, 1991), and the value chain (Porter, 1985). In section four we provide four illustrative examples. The article concludes with an outline key considerations for a WPS and WIS.

2. The ICDT Model and Web systems

The ICDT Model

The ICDT model (Fig. 1), as presented by Angehrn (1997), is a way of segmenting the Internet business into four virtual spaces based on activities, which economic agents can engage into: information, communication, distribution, and transaction. The four spaces are called: visual information space (VIS), visual communication space (VCS), visual distribution space (VDS), and visual transaction space (VTS).

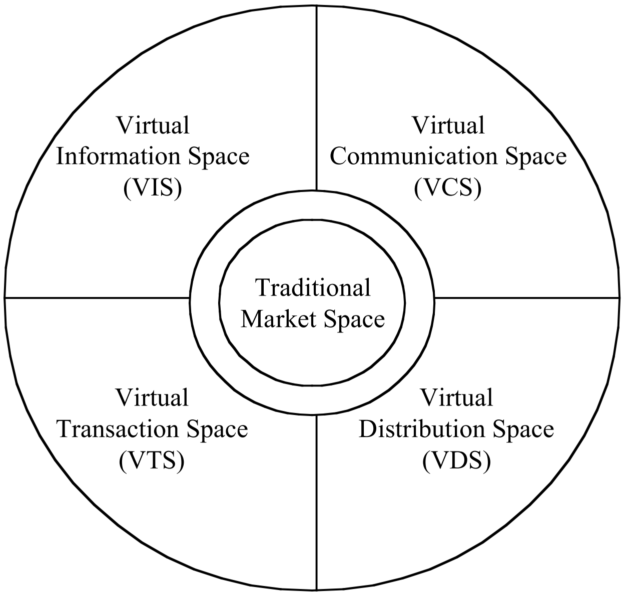

Figure 1: The ICDT Model

The VIS, is where companies display themselves and the products and services they offer. From a customer point of view the information space provides and efficient way of gathering information and comparing market offers. In terms of business on Internet, has attracted most interest and in many cases this stage has signified the only form of adoption. This type of adoption has for many companies been a forced adoption where it has been regarded as establishing an Internet presence without much understanding of why, what to do, or for whom. It has not been understood that it may require an in-depth rethinking of their marketing and advertising strategy and that the Internet is a different broadcasting medium than television, radio, or the printed press (Angehrn, 1997, Brännback, 1997, Hoffman and Novak, 1996, 1997, Peppers and Rogers, 1997, Sterne, 1996, 1997). Those companies, which have adopted and seen the potential offered by the new medium have integrated the Internet-based channels into the marketing strategy, and developed new forms of effective market information exchange.

The VCS is the extension of the previously presented space in which ideas and experiences are exchanged, opinions influences, negotiations, potential collaborations, exchange of relationships, and different types of communities are created (see also, Armstrong and Hagel, 1996). Such communities include simple news- and user-groups up to sophisticated 3D spaces and virtual realities (Steuer, 1992, Jones, 1998, Masinter, 1998). It is important for companies to understand that these communities form a platform for where communication between consumers take place and that the communication potentially will influence market and industry trends (Brännback and Puhakainen, 1998). The communities serve an excellent platform for proactive opinion building where change agents could affect various adoption processes.

According to Angehrn (1997), the VCS has been the least attractive space for companies. This may due to the fact that the very nature of communication is fundamentally different from traditional market communication media. The communities offer a many-to-many mode of communication instead of the traditional one-to-many. Moreover, one specific feature of market communication media, as known in advertising, is that the sender should be recognised and known to the receiver (Arens, 1996). In Internet communities it is not accepted (Sterne, 1996) that companies try to manipulate the receivers in any particular way. Thus, a company wanting to tap communities on (customer) information has to do it anonymously. Finally, companies have in many cases failed to understand the importance of allowing customers to contact via e-mail, Volvo in the US being an excellent example (www.volvocars.com) (Handley, 1998). In cases where it has been possible to contact the firm through e-mail, companies have failed to realise the significance of fast response (Sterne, 1996). Creating a sense of community among customers is added value because customers can share experience, problems, and solutions and allow companies to collect important information about customers (Bakos, 1998, see also Armstrong and Hagel, 1996, Hagel and Rayport, 1997).

The VDS is the electronic distribution channel most suitable for digitised products and products that can be transmitted through computer networks. Electronic books, articles, pictures, music, video tracks and software all belong to this category. The VDS provides an excellent platform for distant learning, consulting, i.e. telecommuting, through video-, voice-, and text-based technology. Finally, the VDS shows how the Internet can be used to provide auxiliary services for customers "on top" of traditional services and products (Brännback and Puhakainen, 1997). Good examples of additional services are customer support and consulting services, product information, training, or updates. These can be either synchronous or asynchronous, through point-to-point or multi-point connections.

The VTS provides channels through which formal business transactions can be exchanged, e.g. payment, orders, and invoices. Due to legal, security and reliability aspects that have been slow in developing the activities in the VTS have been limited. At the time when the original ICDT model was developed the VTS represented the fourth and final phase of Internet business and many companies have not reached here yet, and some never will.

WPS and WIS

The scope of Web-based applications has grown along with the diffusion of the Web (Isakowitz, et al, 1998). Isakowitz et al (1998) have identified four major categories:

(i) Intranets, which are intended for supporting internal work,

(ii) Web-presence sites (WPS), which are aimed at reaching external customers

(iii) Electronic commerce systems, which support the interaction with customers, and

(iv) Extranets, various systems of the first two categories for supporting business-to-business communication, and interaction

In our minds we see basically two categories, WPS and Web IS (WIS), i.e. we find the distinction of electronic commerce systems (ECS) and Extranets artificial, since Extranet solutions are also used to support business-to-business purchases. A much more important distinction is to distinguish between business-to-business customers and consumer product customers. The categories suggested by Isakowitz et al (1998) take a systems perspective. Our suggestion takes a user or customer perspective.

Nevertheless, the two categories, WPS and WIS and the ICDT model can be merged. We argue that a WPS covers the functions of a VIS. It can be argued that the virtual communication space also is contained in a WPS, but this depends on the technical solutions. The VCS and VTS are clearly WISs. Intranets represent a family of their own, and can be classified under the umbrella of computer supported cooperative work (CSCW) since they are intended for supporting internal organisational processes.

WPS are basically nothing more than another communication media like the radio or the TV. For these the communication mode has traditionally been described as a one-to-many (Hoffman and Novak, 1996, 1997). A WPS therefore is a broadcasting media, but given the features of the Internet a WPS enables a many-to-many (Hoffamn and Novak, 1996, 1997) but also a one-to-one communication mode (Peppers and Rogers, 1997), and this requires special attention from both a business and IS perspective.

The WIS is much more complex, as it is intended for supporting business processes and therefore it is often integrated with other IS, such as databases and transaction processing systems (Isakowitz et al, 1998, Arocena and Mendelzon, 1998), and groupware. However, the WIS differ from traditional IS due to many reasons. They have the potential of reaching a much larger audience (because they are Web-based) and they require new approaches to design and development. In fact, developing a WIS is no longer about software engineering, it is about product packaging of IT services and it requires a much greater understanding of customer perceptions and behaviour by software developers, than previously (Brännback and Nieminen, 1998).

It is obvious that WIS and WPS have quite different requirements. For WPS it is more or less about designing a new media strategy and the question of added value is still a primary one, but equally important is it to consider the usefulness of adding another communication channel to the already existing ones. WPS considerations should be considered in the framework of marketing channels and as such this is not necessarily of a strategic nature, rather a tactical one. However, WIS require much more complex considerations, where who, what and what added value become fundamental questions (Lohse and Spiller, 1998, Tenenbaum, 1998, Turoff, and Hiltz, 1998, Senn, 1998). It is in the context of WIS that the ICDT model seems to be insufficient since it does not consider the type of non-Web-based IS that are necessary for supporting the business process. A WPS can, of course, be viewed as a WIS, but we have chosen to treat it separately as many companies will be and already are satisfied with only a WPS. Not every company is regarding a WIS as a necessary solution.

In discussions regarding WIS opinions on what type of products or companies will benefit from the Internet, it has been suggested that certain products will never be worth selling in the net. Heavy manufacturing industry has been seen as one such category. Not long ago advertising was seen as impossible on the Web as well (Sterne, 1995). With the continuing diffusion, companies are looking for ways to use the Web and manufacturing companies have also entered the electronic age. It is because of these numerous "loose" opinions, which later have been proven wrong that we found it necessary to embark on investigating some of the conventional and existing business models, and use these models for exploratory purposes. Our ultimate goal, reported elsewhere, is to develop a WIS typology and from there develop a WIS strategy model.

3. Relevant Models

Diffusion and Adoption

The diffusion of an innovation is a process where the ultimate goal is adoption. The adoption process, which is a mental process, is often broken down for conceptual and pedagogic purposes.

There are four essential elements in the diffusion of innovations: (i) the innovation, (ii) how it is communicated, (iii) in a social system, (iv) over time (Rogers, 1962, p. 12). Although Rogers' focus is on technological innovations it is important to note that an innovation is "an *idea* perceived as new by the individual" [italics added by authors]. Moreover, it is enough for an idea to be "subjectively" new. "It is the newness of the idea to the individual that determines his reaction to it." (Rogers, 1962, p. 13). The essence of the diffusion process is the interaction where one person communicates a new idea in a social system, e.g. informal groups, organisations, etc. The way an individual adopts an innovation may vary within a social system. For example, many individuals adopt regardless of what other individuals in that system does. In some social systems acceptance is preceded by acceptance by the majority of the social system. Finally, in some cases ideas are adopted by a group forcing an acceptance on those who are unwilling.

Rogers makes a distinction between the diffusion process and the adoption process. Adoption is an *individual process* whereas diffusion deals with the spread of new ideas in a social system, or between social systems. The adoption process is often seen as a learning process (see, for example, Argyris and Schön, 1978, Argyris et al, 1985) and is depicted as in Fig. 2. Rogers (1962) has identified five stages: awareness, interest, evaluation, trial, and adoption. Within marketing the evaluation stage is often dropped and the adoption process is named AITA.

The ICDT model can for sense making purposes be seen as a diffusion and adoption model, where the organisation establishes an Internet presence in VIS and thereby develops a WPS. When the organisation decides to upgrade its presence into a WIS it will follow the pattern of the diffusion model in Fig. 2. Similarly as the IS is transformed from a WPS into a WIS the product or the service offering concept will change requiring fundamental considerations regarding core product/service, core benefit and value adding features, at the same time as the target market may change. With this in mind it is motivated to explore a basic product model (Kotler, 1991), which can serve as a useful tool for business practice

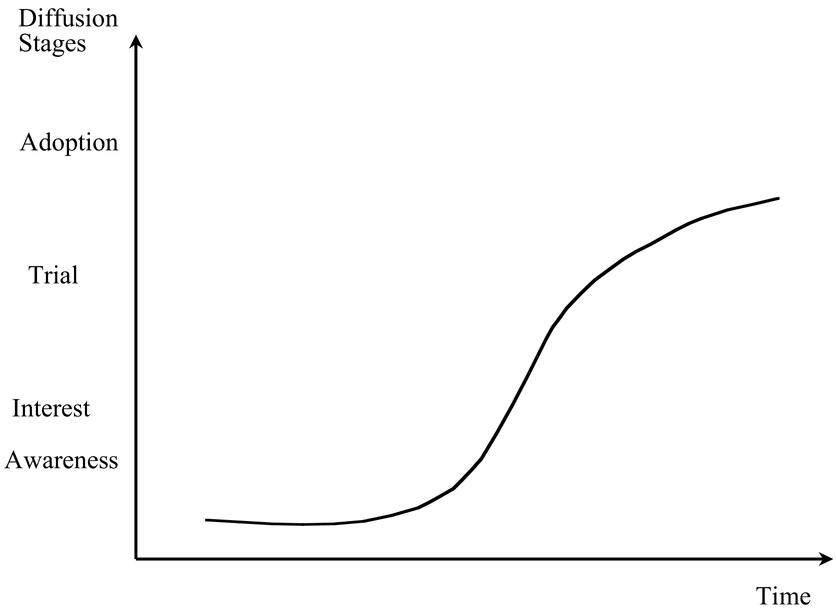

Figure 2: Diffusion over time

The Product model

Within the field of marketing the product is today described as having essentially five levels (Kotler, 1991) (Fig. 3). The core benefit, which is what the product or service *does*, not what it is. The core product describes what the product is. Hence the core benefit is inherently intangible whereas the core product can be both tangible and intangible. The third level, expected product, means that there are some general characteristics found in all these products which are more or less taken for granted. The augmented product includes a range of attributes, which distinguish products and services from substitutes. In the final level the potential product, the manufacturer can supply all such features, which positively will surprise and delight the customer, features, which in the future may become part of standard expectations.

Along with the diffusion of technology and adoption of new technology the various levels will evolve. What was once considered as augmented or potential features of a product may become required expectations and along with maturity the manufacturer seeks for new benefits, which may be developed into new products or may become improved features of a product. Now, this is more or less conventional wisdom for a marketer, and it is quite surprising to find that many companies entering EC have omitted these considerations. One explanation may lie in the failure to realise that companies do not understand the difference between WPS and WIS, that they treat the Web as a new channel and not as a new market place requiring the whole range of state-of-the-art business considerations.

Nevertheless, if EC are understood as WPS this is not a simple issue either, because the Web does not function like any of the traditional channels. The Web is a one-to-one and a many-to-many media and it allows for both disintermediation and re-intermediation. This brings to surface the value chain concept and more specifically the value system

(Porter and Millar, 1985, Jelassi, 1994, Rayport and Sviokla, 1995, Brännback and Nieminen, 1998).

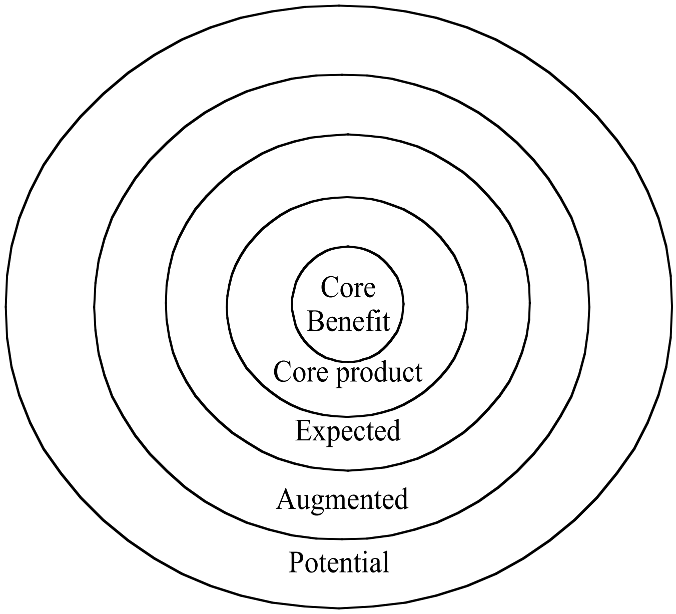

Figure 3: The-state-of-the-art product model (Kotler, 1991)

Disintermediation and re-intermediation

Much in the same way as the product evolves with the diffusion of the technology, so does the structure of the market in terms of a value system (Porter and Millar, 1985). The Internet is changing the way in which the players on the market interact. Information technology, in the form of electronic data interchange (EDI) made many intermediaries obsolete (Krcmar et al, 1995), automatic teller machines made the clerk at the bank passé, and the Internet may do to the same to the travel agent. Or, it may introduce new players in the market and reshape the way consumers-to-business, business-to-business, or consumers-to-consumers interact.

In Figure 4 we have illustrated the disintermediation re-intermediation process we see emerging. Analogous findings have been discussed by Hoffman and Novak (1996) concerning market communication. The key point here is that there are more players active and present in the market space. Customers can contact the end-business directly, without having to go through an intermediate agent. New intermediates may enter the market and serve as brokers, providing a platform for several agents to display themselves, thus making the traditional intermediates obsolete. This we call re-intermediation. These new players we have indicated as "service" in Fig. 4. At the top of the figure we see a direct contact between the business and the customer and the intermediate is by-passed. In the middle we still have the intermediate left in the traditional role as this reality is likely to be with us for a while to come. The primary reason for the traditional intermediate to survive for some time is their degree of expertise they possess.

Similarly, although the automatic teller machines have replaced the bank clerk there are still many occasions when it is preferred to see one in person. The situation may also be such that the owner of the business decides to move upstream or downstream in the business, as was the case with Brun Passot (Jelassi, 1994).

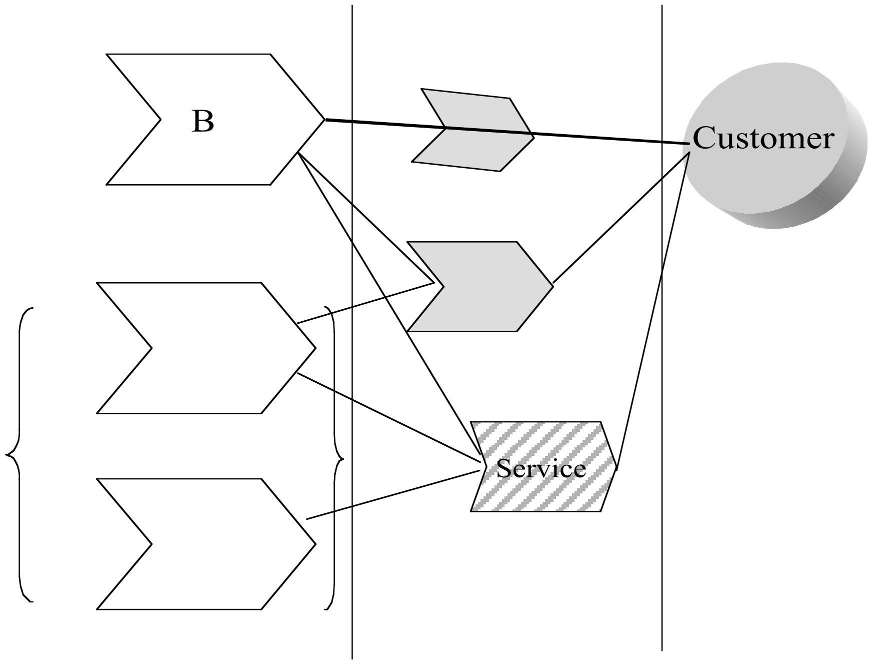

Figure 4: Disintermediation and re-intermediation

In summarising this section we see that both the product and the value system is changing in the context of Internet. These changes are the result of the diffusion of technology as well as the rate of adoption among customers. As an increasing number of consumers adopt they also start to expect that the offerings evolve.

4. Illustrative examples

In this section we will provide four examples illustrating the models described in the previous section.

The Travel Agent

The following story was found in Iberia's flight magazine in March 1997:

"There was a time when a trip between Madrid and Barcelona used to cost a sixth of a minister's salary. Fortunately, flying is nowadays affordable to everyone,..The manual reservation board now belongs to the prehistory of Iberia, and we are currently witnessing the coming of the virtual travel agent.
Release your imagination and go back in time to the forties. If you are a gentleman, don a dark grey tailored suit..a hat and a walking stick..You have both money and courage and you wish to fly with Iberia. You approach an aristocratic building where the airline has its ticket sales office, and you are attended by an impeccably turned-out employee standing behind a counter made of finest wood. You watch as he consults the reservations board on the wall before issuing your hand-written ticket. There is only one price: you take it or leave it..Sir", the employee finally says, "we shall be expecting you here next Monday at ten in the morning to weigh you and your luggage and take you to the airport.""

The story above is a very vivid example of how the product has changed over the years, but is also an example of how the airline business has changed. In the forties you bought your ticket from the airline directly. Then came travel agent as intermediaries selling the tickets and a whole range of other auxiliary services, such as hotel rooms, car rentals, football tickets, etc. Today, we are going back to the system of the forties, only now it has been computerised. There is no impeccably turned-out employee any longer, just-do-it-yourself at the airport by the machine or in the Web! And of course, this works in many cases, but there are many instances where this will not be a good solution. There are many reasons why the travel agent will survive, but perhaps not in its traditional form.

For example, the travel agent has knowledge of agreements and special rate offerings, which enables them to offer the best price for a trip. This is particularly the case when the customer plans a trip involving several stops and changes of airlines. It will take a while before the customer acquires this level of expertise. Additionally, there are several tricks and rules-of-thumb which the travel agent knows about that is built on experience. For example, one of the authors recently wanted to book a flight from Turku to Gotenburgh, via Helsinki. The computer showed that the flight from Turku to Helsinki was full booked. Hence the only possibility would have been to take a bus to Helsinki and the plane there on after. However, the travel agent made a phone call - somewhere - and asked "Hi, this is Ann, do you have a slot for me on the flight between Turku and Helsinki, I have one passenger, thanks". The travel agent obviously knew where to call since suddenly there was a seat available. An ordinary customer would hardly have known where to call or even that this was possible. Nor does an ordinary passenger have any knowledge of special package agreements between travel agents and airlines, between different airlines, or between travel agents and hotels. Therefore, the initially seemingly cheaper do-it-yourself travel agent may in fact turn out more expensive.

The Catalogue

Traditionally advertising catalogues, like the Yellow pages sell space for companies to advertise. Suppose a person moves to a city and wants to visit the hairdresser. Being new in town the person does not know where to go, picks up the catalogue and looks for "hairdressers". Several pages of nice adverts are available and it is likely that the person will pick one with an attractive ad. This is at least how the advertising agency (and the hairdresser) assumes it to be.

Now, suppose the catalogue is available on-line on the Web. The person finds the site and writes the search word "hairdresser". The next thing that happens in is that a list of hairdressers with addresses and telephone numbers is displayed, some with bold text or otherwise differentiating font. The nice adverts, which were supposed to attract attention are not there, instead it is assumed that the person will be able to pick the right one from a list (which is the same as picking an address from a phonebook). Occasionally there are images along with the lines, the images showing scanned adverts from the original catalogue (extremely poor quality). The point is that this form has lost a lot in terms of communication and attention attraction compared to the catalogue. The product available on the Web is not augmented, rather the opposite it has lost its advertising capacity. The catalogue you can use without prior knowledge, the Web-based catalogue requires you have some prior knowledge of what you want. If you have that the Web-based catalogue is clearly superior, since the search process will be a matter of seconds.

Therefore, it is obvious that the core benefit as well as the core product has changed and need to be re-defined. Moreover, the outer layers are clearly different and the electronic product does not even meet the expectations, which are connected with the physical catalogue – attracting customers through attention. In re-defining the core benefit and product it is even questionable whether it should be the same concept as the catalogue. What is the added value of an electronic catalogue? Will an electronic catalogue cannibalise an otherwise successful product? Is it the intention of the company to harvest a cash cow? Perhaps a solution could be to establish a virtual community connecting businesses to other businesses - a broker. In this case this new product does not cannibalise the existing catalogue, but widens the product offering?

The Local Company

A Western Finland-based company selling electric supplies to consumers and businesses decided to move some of its business to Internet. Before entering the electronic age they had to answer a few basic questions: why, to whom and what added value they intended to offer target customers with this new service. The planning-process was not, however, very structured. In fact, the company's CEO was fairly surprised when he was asked these questions. They had intuitively answered these questions, but not considered them systematically, as they would have in the case of a traditional launch of a new product.

The principal idea behind the company's intention to step into EC was a will to enhance their role as an expert in their field and to create stronger ties to their business-to-business customers, through more effective customer service. This was seen as important because the switching barriers are low.

Hence the intention was to make business-to-business activities more effective. The business-to-consumers was not seen as the primary target group, because the customer does not usually make the purchase decision of electric supplies. Usually a certified electrician makes the purchase decision. The certified electricians and design companies where considered the most profitable target market for several reasons:

- they possess the relevant knowledge of the products and specifications
- they usually conduct their purchases by phone early in the morning or late in the afternoon outside "office hours"
- they are usually very interested in new products and they are price sensitive because part of *their* profit comes from re-sale to *their* customer

The new service supplemented the existing one and thereby adding value to the customer. The site was accessible 24-hours a day, which was greeted with enthusiasm by the target group. It was easy to find the product, which matched certain specifications or to find suitable substitutes. The Web-site also offered information on inventory levels. This feature was found positive, because in case of a situation where a particular product was not available there would be information on when it would be. However, the company considered this feature risky since switching barriers are low and they thought this information would send the customer off to a competitor. Therefore, the system was connected to the company's UNIX-based inventory management-software showing the product, the specifications and the inventory information in real-time. The pricing is based on the buyer's purchasing history and every buyer has (or can have) different product-group discounts.

The described features clearly indicate that the Web-application for this particular company is WIS, in that it is connected to a number of non-Web applications. The Web application has not yet reached a critical mass, however, those who have started to use it have soon become heavy users. Moreover, there are customers who have chosen this company as their major supplier *because of this service*. The company has no intention to expand their business from a local company to a global one. It is specifically aimed at intensifying their local business.

The Global Company – Automation@Store

Valmet is the world's leading manufacturer of paper machine technology and all main processes. Like most companies Valmet also decided to establish a Web presence and created a Web site. It is possible to find current information about Valmet on this site. They publish their press releases, information of the business, financial information, etc. As such, the Valmet Corporation's web-site is still to a large extent a WPS, where the Web is used as a complementing communication media.

In 1995, Valmet Automation launched its Internet site, which at that point was a WPS. However, in November 1998 Valmet launched their Extranet site (www.valmet.com/automation), which is the most comprehensive on-line service in the automation industry. The newly released WIS provide all functions of the ICDT model. The site is a VCS in that it provides a discussion forum for customers to interact with each other or with Valmet. The site is a VDS because customers can download electronic documentation, user manuals and information aimed at product training. Finally the site is a VTS since it is possible for customers to order automation hardware, spare parts, and software. The aim of the site is to support global activities as a channel of trade and service. The WIS supports mass customisation, in that the customer can find tailor-made solutions in terms of product specifications and pricing.

Hence, the Internet is no longer a place where you can only sell books (www.amazon.com, www.bokus.com), music CDs (www.boxman.com, www.cdnow.com) , or download the latest software updates, etc. Heavy industry has taken the opportunity to enhance their products and services. The potential product has become an expected product feature.

5. Outline of Basic Elements for Web-based applications – WPS and WIS

In this section we will outline the central questions, which needs to be considered when establishing an EC. This outline is developed from a business perspective and thus excludes the technological considerations. First and foremost the company will have to decide which type of Web-based application it chooses to develop. Once this is clear there is a set of different considerations, which need to be considered.

Key WPS considerations

In our understanding a WPS is a new platform for market communications, along the already existing ones: advertising, sales promotion, public relations, personal selling, and direct marketing. Hence, a WPS is not merely a platform for advertising – it can be that – but a WPS is clearly an element in all other platforms. Furthermore, it is essential to stress the importance of human-computer interaction (HCI) considerations. Therefore in order to create a successful WPS important considerations will be:

- How does communications work, in particular computer-mediated communication?
- How is the target audience?
- What human-computer interaction considerations are relevant?
- What are the major steps in developing an effective marketing communications program and how does a WPS complement the existing program or what changes does it create?
- Who should be responsible for the development of a WPS?
- How will the basic communication objectives (attention, interest, desire, and action) be reached through a WPS? What needs to be done differently?
- How does a WPS affect the message design process?

A WPS will be the merging of HCI skills and knowledge with marketing communications skills and knowledge, where message content, structure, and format is one dimension and selection of channel is another. These considerations are likely to be different depending on the chosen communications platform.

Key WIS considerations

Developing a WIS is a much more complex process. Clearly, the elements of a WPS are present is a WIS. Since a WIS includes the integration of both Web-based applications and non-Web-based applications compatibility will be a major technical issue. From a business practice perspective it will become important to make the very basic considerations such as:

- Offering. Is it a product complementing the existing one, is it a service, is it something entirely different?
- Target market. Will the company intensify their customer service with existing customers and gradually attract new customer? Is the company looking for many new customers? Will the WIS support local business or should the business activities be expanded into global ones?
- Added value. What are the real reasons for customers to use the WIS?
- Available resources. What resources does the company have available, to develop to WIS (in-house, outsource), maintain it and to manage the business generated from the WIS? Resources should be understood as both financial and personnel?
- Restructuring of work. Does the WIS require restructuring of work and potentially the organisation?
- Training. Does a WIS require employee training?
- New technology. Does a WIS require installation of new technology?

The key elements listed here are basically the same as for establishing any new business, and we see a WIS as a new business form. The ICDT model is a descriptive model, which can be used for exploring what is done within EC. However, it is clearly not a normative model providing proper answers for these basic questions.

6. Conclusions

The rapid diffusion of Internet technology into the business world has prompted the necessity to make fundamental re-considerations regarding business practice but also regarding Web-based systems. We have here discussed the ICDT model, which is one of the early strategy models for Internet business. We have also pointed at some of the limitations of the model, which are both business-oriented and IS-oriented. The IS-oriented reasons come from the fact that we can distinguish between two different categories of Web-applications, WPS and WIS. These two categories require quite different managerial considerations. The former is merely a new communications media, which require media-centred strategic considerations, the latter is a much more complex form of IS, which calls for fundamental considerations regarding both business practice and IS development processes. Consequently we see an urgent need for a development of a WIS strategy model.

Before embarking on developing a WIS strategy model we found it necessary look at what we already have and explore the usefulness of so called conventional models. We use them here as sense making tools for exploring what *really* is new about EC. We find that the conventional business models are still relevant.

We develop our discussion using the rationale of how innovations diffuse as developed by Roger's (1962). We also, use the product level to examine the changing role and function of a product or service. Moreover, we take the value chain concept and discuss re-intermediation and disintermediation of industries, which are both a threat to existing business and an opportunity for entirely new business applications. With four examples we show that the situations that businesses may face when entering EC are quite different and that the current form of the ICDT model does not give proper guidance. The model is not a sufficient descriptive tool either. Only with the last example, of the global company, it appears to function, which may suggest that it is best suited for global EC activities. The model appears to be good as a sense-making tool in that it is fairly easy to learn about the potential business opportunities available. However, for normative decision-making it will be necessary to consider some of the conventional business models since the key questions, which need to be answered are still essentially the same as for establishing a new business or choosing a marketing communication channel.

References:

ANGEHRN, A. A. (1997) Designing Mature Internet Business Strategies: The ICDT Model, European Management Journal, 15 (4) 361-369
ARENS, W. F. (1996) *Contemporary Advertising*, Irwin, Chicago
ARGYRIS, C. AND D. SCHÖN, (1978) *Organizational Learning*, Reading, Massachusetts,
ARGYRIS, C., PUTNAM, R., AND D. SMITH MCLAIN (1985) *Action Science*, Jossey-Bass Publishers, San Francisco
ARMSTRONG, A., AND J. HAGEL III (1996) The real Value of On-Line Communities, Harvard Business Review, May-June, pp. 134-141
AROCENA, G. O., AND A. O. MENDELZON (1998). Viewing WISs as Database Applications, Communications of ACM, 41 (7), 101-102
BAKOS, Y (1998). The Emerging Role of Electronic Marketplaces on the Internet, Communications of ACM, 41 (8), 35-42
BRÄNNBACK, M (1997) Is the Internet changing the dominant logic of marketing? *European Management Journal*, 15 (6) December, 698-707
BRÄNNBACK, M AND J. PUHAKAINEN (1998) Web-Marketing: Has the distinction between products and services become obsolete? *Journal of Market-Focused Management*, 3 (1), 47-58
BRÄNNBACK, M AND P. NIEMINEN (1998) Exploring the Relevance of Relationship Marketing Theory for Product packaging of IT Services, in Kangas, K. and R. Suomi (eds.) *Proceedings book of IFIP 8.7.* meeting to be held in Helsinki 13.12.1998, 17pp forthcoming
Checkland, P. and S. Holwell (1998) *Information, Systems, and Information Systems making sense of the field*, Wiley&Sons, Chichester
HAGEL III, J. AND J. F. RAYPORT (1997) The Coming Battle for Customer Information, Harvard Business Review, January-February, 53-65
HANDLEY, A. (1998) Turning Browsers Into Buyers, (www.searchz.com/alert/101598.shtml), 23.10. 1998
HOFFMAN, D. L., AND T. P. NOVAK (1996) Marketing in hypermedia computer-mediated environment: Conceptual foundations, Journal of Marketing, 60, July, 50-68
HOFFMAN, D. L., AND T. P. NOVAK (1997) A New Marketing paradigm for Electronic Commerce, The Information Society, 13 (1), 43-54
INTERNET (1998) www.nw.com, www.nua.ie/survey, www.volvocars.com, www.valmet.com, www.valmet.com/automation, www.amazon.com, www.bokus.com, www.boxman.com, www.cdnow.com
ISAKOWITZ, T., BIEBER, M., AND F. VITALI (1998). Web Information Systems, Communications of ACM, 41 (7), 78-80
JELASSI, T (1994) *Competing Through Information Technology, Strategy and Implementation*, New York, Prentice Hall
JONES, Q. (1998) Virtual Communities, Virtual Settlements & Cyber Archaeology: A Theoretical Outline (www.ascusc.org/jcmc/vol3/issue3/jones.html) 30.9. 1998
KOTLER, P. (1997) *Marketing Management Analysis, Planning, and Control*, 9th ed. Prentice Hall Inc., Englewood Cliffs, NJ, 1997

KOTLER, P. (1991), *Marketing Management Analysis, Planning, and Control*, 7th ed., Englewood Cliffs, NJ, Prentice Hall Inc.
KRCMAR, H., BJORN-ANDERSEN, N., AND R. O'CALLAGHAN (1995) *EDI in Europe*, Chichester , Wiley
LOHSE, G. L. AND P. SPILLER (1998). Electronic Shopping, Communications of ACM, 41 (7), 81-87
MASINTER, L. (1998) Collaborative Information Retrieval: Gopher from MOO, (ftp.lambda.moo.mud.org/pub/MOO/papers/MOOGopher.html) 5.3. 1998
PEPPERS, D, AND M. ROGERS (1997) *Enterprise One-to-One, Tools for competing in the interactive age,* DoubleDay, New York
PORTER, M. E. (1985) *Competitive Advantage, Creating and Sustaining Superior Performance*, The Free Press, New York,
PORTER, M. E. AND V. E. MILLAR (1985) How information gives you competitive advantage, Harvard Business Review, (July-August), 149-160
PUHAKAINEN, J. AND M. BRÄNNBACK (1998) Business-to-Business Electronic Commerce: Possibilities and Problems Facing Companies Entering the Electronic Age, in Kangas, K. and R. Suomi (eds.) *Proceedings book of IFIP 8.7. meeting* to be held in Helsinki 13.12.1998, 10pp forthcoming
RAYPORT, J. F. AND J. J. SVIOKLA (1994) Managing in the Marketspace, Harvard Business Review, November-December, 141-150
RAYPORT, J. F. AND J. J.SVIOKLA (1995) Exploiting the Virtual Value Chain. Harvard Business Review, November-December75-85
ROGERS, E. M. (1962). *Diffusion of innovations*, The Free Press, New York
SENN, J. A. (1998) WISs at Federal Express, Communications of ACM, 41 (7), 117-118
STERNE, J. (1995*), World Wide Web Marketing*, New York, John Wiley & Sons
STERNE, J (1996*) Customer Service on the Internet*, New York, John Wiley & Sons
STERNE, J (1997) *Advertising on The Web*, Que Corporation
STEUER, J. (1992) Defining Virtual Reality: Dimensions Determining Telepresence, (www.cyborganic.com/People/jonathan/Academia/Papers/Web/defining-vr1.html) 14.4. 1998, also in Journal of Communications 42 (4) 1992
TAPSCOTT, D (1995) *The Digital Economy* promise and peril in the age of the Networked Intelligence, McGraw-Hill, New York
TENENBAUM, J. M. (1998). WISs and Electronic Commerce, Communications of ACM, 41 (7), 89-90
TUROFF, M. AND S. R. HILTZ (1998). Superconnectivity, Communications of ACM, 41 (7) 116

Turku Centre for Computer Science
Lemminkäisenkatu 14
FIN-20520 Turku
Finland

http://www.tucs.abo.fi/

University of Turku
• Department of Mathematical Sciences

Åbo Akademi University
• Department of Computer Science
• Institute for Advanced Management Systems Research

Turku School of Economics and Business Administration
• Institute of Information Systems Science