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Hans-Dieter Zimmerman

University of St. Gallen, hans-dieter.zimmerman@unisg.ch

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Understanding the Digital Economy: Challenges for new Business Models

Hans-Dieter Zimmermann,
mcm institute for media and communications management, University of St. Gallen,
Hans-Dieter.Zimmermann@unisg.ch

Abstract

The developments of the digital economy will have an elementary impact on economic systems and how economic values will be created. The paper therefore discusses four basic characteristics of the digital economy. Understanding the emerging developments in this context form the foundation of the definition of new and appropriate business models.

Introduction

We consider an economy based on the digitization of information and the respective information and communication infrastructure to be a digital economy. This new type of an economy implies not only technological, but also and especially structural and process-related challenges and opportunities. The way in which economic values are created will change fundamentally in the digital economy.

The development of business supported by information and communication technologies (ICT) can be assessed from two different perspectives. Electronic commerce, perceived as the utilization of the 'Net' and its services for additional communication, marketing, and sales channels, based on only very moderately changed business models, indicates an evolutionary path of development. However, beside this evolutionary development of electronic commerce stands a more revolutionary path of development. The new information and communication infrastructure that is building the basis for electronic commerce developments and the applications and experiences of electronic commerce developments so far will have a more extensive impact on businesses than mere channel enhancements. This development will radically alter processes and structures within and between industries, and will lead to the digital economy. This quite clearly will have a major impact on fundamental business models.

Following the definition by (Timmers, 1998) and considering the Business Media model as discussed in (Klose and Lechner, 1999), a business model is defined as follows:

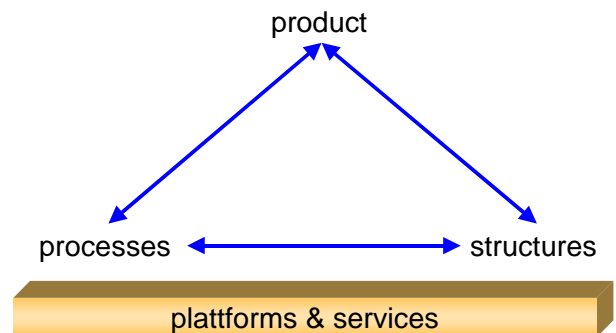
- An architecture for the product or service addressing certain customers needs,

- A definition of the relevant business community, including a description of the various agents and their roles and protocols of interaction,
- A description of the potential benefits for the agents,
- A description of the source of revenues.

In order to answer these questions and to develop effective business models for the future it is crucial to analyze and to understand the current developments. Analyzing them will lead to four major issues that characterize the emerging digital economy.

The analysis is based on observations and investigation of the 'real world', on literature analyses, and derived from 'lessons learned', gained from a variety of projects conducted in close cooperation with companies. In the following, these four basic topics will be discussed briefly: structures, processes, products, and infrastructures and services (see figure 1).

Figure 1: Main characteristics of the digital economy.



Structures

The first issue covers changing structures stemming from the utilization of new ICT infrastructures like the Internet and the WWW. Discussing this issue, we will focus on inter-organizational structures in industries as well as between industries.

Within this first issue there are three basic aspects observable:

(1) First, traditional value chains are being deconstructed. In the beginning of the discussion on the effects of 'E-Commerce', it was argued that customers will bypass intermediaries and interact with their suppliers directly. As a consequence, traditional intermediaries will be removed from the value chain.

For example, retail customers are able to access certain manufacturers directly in order to retrieve product information or, in addition, place orders directly.

Table 1: Examples for new Financial Intermediaries.

Company (URL)	Main Characteristics (target markets)
E-LOAN (eloan.com, eloaneurope.com, etc.)	E-LOAN mediates financial services focusing on different types of loans from different suppliers. (USA, UK, Germany, Japan, ...)
Interhyp.de (interhyp.de)	Interhyp.de mediates financial services focusing on different types of loans from different suppliers. (Germany)
InsWeb (insweb.com)	InsWeb mediates insurance services from different suppliers. (USA)
Finanzscout24 (finanzscout24.de)	Finanzscout24 mediates insurance services from different suppliers. (Germany)
Quicken.com (quicken.com)	Portal site for financial services covering topics such as investing, mortgages, insurance, taxes, banking, retirement, general market information. (USA)
ConSors (consors.de, .ch, etc.)	Online discount broker. (Germany, Switzerland, Spain, France)
Advance Bank (advancebank.de)	Virtual bank in Germany founded in 1996; offers all typical bank services only via the Net and phone; services are produced through a group of partners. (Germany)
MLP AG (mlp.de)	MLP AG offers a range of services addressing the financial management needs of sophisticated customers. The services cover banking services like checking and savings accounts and advanced services like asset and loan management, pension schemes, insurance issues, etc. More than half of the sales are derived from purely intermediary activities; most of the banking services are produced through a group of partners. MLP customers are able to access all these different services through one individualized interface. (Germany)
First-e (first-e.com)	First-e is an Internet-only bank offering the typical services in retailbanking. (UK, Germany)
Yourhome (yourhome.ch)	Yourhome is operated by Credit Suisse and mediates services addressing home buying issues from different suppliers. The range of services covers finding and financing a home, interior decoration, garden design & horticulture, location ratings, maps, general information. (Switzerland)

Today we know that this assumption will in fact be the effect under certain conditions, but in most cases intermediaries will be part of the value chain in the digital economy as well. The direct interaction between customers and suppliers is not at all the norm in today's business-to-customer 'e-commerce' interactions.

(2) Therefore, second, we observe the emergence of a new kind of intermediaries, or 'cybermediaries', as (Sarkar et al., 1995) names these type of intermediaries. This may look like a contradiction at first glance, but it is a typical development in the evolution of the 'e-commerce' and characterizes the fundamental change in industry structure. Table 1 shows a selection of different new financial intermediaries in the United States and Europe. They differentiate themselves from each other through their respective scope of service offers and geographical coverage, the role of the respective intermediary within the value creation process, the type of network, etc.

One basic reason for this development is that intermediation is a basic function in economic systems and thus in a digital economy as well. But, the appearance and shape of intermediaries in a digital economy will differ from traditional known intermediaries.

(3) Third, we observe a fragmentation or modularization of businesses. Especially new Internet start-up companies are often a 'one product company' that focuses on one or only a few services or products.

Typical examples are Application Service Providers (ASP). They are organizations that hosts (standard) software applications on their own servers within their own facilities. Customers access and apply the required application via private lines or the Internet. Thus companies are able to focus their resources on core competencies like marketing, product development, or customer relationship management. Typical examples:

- (a) LoanOrganizer.com is an ASP focused on providing an outsource solution for the wholesale and retail lender marketplaces.
- (b) Inktomi.com provides a search engine that can be integrated into any web application. Yahoo and Hotbot each hold a license of Inktomi.
- (c) An ERP provider offers single modules through a network.

Business Process Outsourcers (BPO) supply not only applications, but whole business processes. Personnel or accounting departments are often completely outsourced via the Internet to BPO's, which are often small start up companies. One example is Corio (www.corio.com), providing accounting services.

'Owning the customer relationship' is another strategy that leads to focusing on core competencies and in turn leading to a fragmentation of traditional value chains. These companies offer a set of products and services but

do not produce them on their own. A typical example here is Quicken.com, a new financial intermediary in the US and now entering European markets.

As a logical result, there have to be companies concentrating on producing products and services, thus able to capture economies of scale, etc. They are often called 'product factories'.

As a result of all the three mentioned issues, it is evident that industry structures are changing; one possible result may be – and have to be – value web like structures as analyzed in (Selz, 1999).

Network-like structures are the consequence of focusing on core competencies and make cooperation with other partners absolutely necessary.

Of course, different forms of coordination may be applied on different parts of the network, e.g., hierarchical relationships like supply contracts in one part of the network, market like structures like auctions in other parts.

These 'value creation paths' within a value web like structure are often set up only for a limited time.

Again, Quicken.com serves as an example: For each product type there are several suppliers from which a customer can choose from; and the same suppliers are partner in different such networks and cooperate with different intermediaries.

Processes

This example leads to the third major issue, the processes.

(a) Reversed value creation processes. More and more, value creation processes are initiated and driven by customers and especially their basic needs. Customers express their individual needs during interacting with specialized intermediaries or even manufacturers directly. A typical and well discussed example is Dell applying the 'build to order' concept.

(b) Then, it becomes evident, that the way companies interact with the market and especially with customers has to change. Customers are increasingly regarded as individuals rather than just part of a market segment. Furthermore, it is important to realize that customers a part of communities. Concepts like individualization, personalization, and mass customization characterize these goals and development.

(c) A third aspect when discussing changing processes in the digital economy are the emerging market-like coordination mechanisms. Web-auctions are the most prominent ones today. They appear in different shapes utilizing different auction mechanisms like the English or Dutch auction. 'Demand collection', applied by priceline.com or ihrpreis.de, and 'buying communities' such as lets-

buyit.com or kontorhouse.com also have to be mentioned in this context.

Looking at these developments, it becomes evident that inter- but also intra-organizational processes will have to be changed in the future.

Products

The third issue is products.

Today, especially in information intensive products, the content can be decoupled from its respective context and infrastructure, e.g., if you look at a newspaper, the content, news, ads, classifieds, appear in a certain context which is delivered via a certain physical infrastructure.

Based on the new ICT infrastructure, it is possible to reconfigure every product module into very flexible and many different contexts and in conjunction with nearly any other content or service.

For example, the latest news of the day can be accessed using a nearly unlimited number of web sites. Classifieds are accessible also through a myriad of web sites, many offering sophisticated search and other functions. Ads appear as banner ads and others on nearly each web site.

Furthermore, corresponding to customer needs, content from different source can be aggregated in specific web sites like, e.g., NewsPage (www.individual.com) which can be individualized as an additional feature. Another example is the Swiss service Swissclick (www.swissclick.ch), that gathers classifieds from nearly every Swiss newspaper and makes them searchable. A very sophisticated example is Yourhome (www.yourhome.ch), operated by Credit Suisse. Yourhome integrates various services addressing the need of 'buying a home' (see table 1).

And, in addition, other products or product modules can be integrated in business applications. Typical examples are payment or logistics services. In the field of payment services, they are no longer a stand alone product as they are today - at least in the retail sector - but an integrated part of a business application.

Infrastructure

In order to capture new kinds of value creation processes and structures enabling new type of products technical platforms in the sense of an infrastructure are necessary. These platforms provide the technical means that enable the realization of the business model of a distinct business community. Currently, especially in the Business-to-Business (B2B) area, specialized B2B marketplaces are emerging for different industries that are designed to meet the needs of the different agents of the respective business community. Suppliers like CommerceOne.com or Ariba.com are offering marketplace sys-

tems that can be utilized to specific needs of distinct business communities.

Like the traditional marketplace, the electronic marketplace needs market services in order to support the desired marketplace functions. Typical market services are contracting, trust, payment, logistics, or certification services. These services should be available as generic service that can be used by every participant on a marketplace and thus have to be considered as important elements of the marketplace infrastructure.

Conclusions

In order to create business models for the digital economy it is necessary to analyze the context from a company or industry perspective applying the developed framework. The basic questions which have to be asked are:

Structures: What is the future structure of a certain industry ?

Processes: What will the value creation processes look like ?

Products: What are the basic customer's needs and the respective product/ service elements in order to serve them ?

Infrastructure: Which services are necessary for a specific marketplace serving for a distinct business community ?

Answers to these questions will provide elementary building blocks for creating business models for an emerging digital economy.

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