

E-commerce of virtual products: definition of a business model for the selling of software

• Abstract

Since the computer was invented, the technology of the Internet has heralded the greatest changes in business, establishing the virtual environment which makes it possible to do business electronically. Organizations that work through this new channel need to restructure their strategies and their business models.

This work focuses on the e-commerce of virtual products, that is, products that can be electronically sold, delivered or used. Its objective is to define a business model for selling software whose delivery or use takes places virtually.

The research will be multimethod, through survey and case study. The research context is the software industry, more specifically software which is virtually delivered or used. As a result, the aim is to develop and validate a business model for the electronic business of virtual products.

Key-words :

e-commerce, virtual products, business model

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1. Introduction: topic, context, focus and objective of the research¹

The Internet has been making an impression for its impact on business, establishing the virtual environment, which allows business to be electronically carried out, as is the case of e-commerce. According to Cunningham (2001, p.2), “e-commerce will become the main pillar for a company’s strategies, operation and technology systems”. The fact of buying/selling remotely at any place or time alters products, processes and relations between clients, companies, suppliers and intermediaries (Turban *et al.*, 1999). In the face of this change in the way buying/selling takes place, the business models also change (Afuah and Tucci, 2001).

Kauffman and Walden (2001) carried out an important study on e-commerce, listing suggestions for research topics, among which are: a) the study of digital products (Kaufman and Walden, 2001, p. 32); and b) an understanding of how business models are being modified by (and to) the Internet, formulating a basis of business models for e-commerce that can offer sustainable competitive advantage. The authors point out that business models in the e-commerce environment are different from those of traditional businesses, and there is a need for updated research as an attempt to understand what kinds of business models are more efficient in different scenarios.

The topic of this research is the e-commerce of virtual products, that is, products or services that can be advertised, sold, paid, delivered or used through the Internet (Choi, Stahl and Whinston, 1997). If “the industrial economy depended on physical goods and services, in the new economy many offers (like software and electronic entertainment) are non-physical and knowledge-based” (Tapscott, Ticoll and Lowy, 2001, p. 5). The context of this research is the Brazilian software market, an important sector of the Brazilian economy. Although it seems to display good technical know-how, its companies still face high mortality rates, the management of their business models being their worst problem (ANPROTEC, 2002). Together with the topic and context of this research, there is the focus on the business models for the selling of software, the use or delivery of which occurs virtually.

The research issue underling this paper is: ‘how should a business model be for selling software that is used or delivered virtually?’ Thus, the general objective of the research is to define a business model for the selling of software that is used or delivered in a virtual environment. Its specific objectives are: a) to develop a preliminary business model from the literature reviewed; b) to identify the current situation of software sold to be used or delivered in a virtual environment in Brazil; c) to verify the adequacy of the business model in companies that work with software sold to be used or delivered through a virtual environment; and d) to validate the model.

In this introduction (section 1), the topic, application context, focus and objective of the research have been presented.

Section 2 concerns the theoretical basis of the study, while section 3 presents the research method. In section 4 the current stage of the research is discussed, as well as some of the results expected.

2. Theoretical basis: e-commerce and business models in the digital economy

E-commerce consists of sharing business information, keeping up business relations and making transactions through telecommunication networks (Zwass, 1996). E-commerce can assume many forms, depending on how virtual the products and services offered are, in the process and in the delivery agent (Turban *et al.*, 1999). Choi, Stahl and Whinston (1997) created a model, shown in Figure 1, that illustrates the possible configurations with the physical, digital and virtual dimensions.

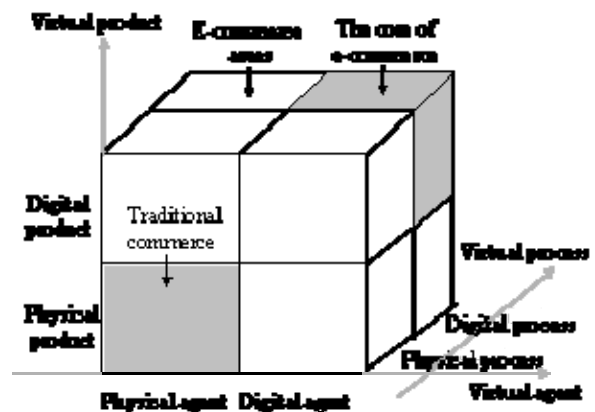


Figure 1 – E-commerce dimensions
Source: Choi, Stahl and Whinston (1997, p. 18)

The figure 1 presents different approaches to e-commerce. The market is constituted of agents, products and processes. The agents are sellers, purchasers, intermediaries and third parties. Products are the goods being exchanged/sold. The interactions between the market agents are the processes, which include product choice, production, market research, search, purchase order, payment, delivery and consumption. These three components of a market may be physical or digital.

The horizontal axis of the diagram shows whether the market agents are digital or physical (for instance, a brick store is physical, while a web store is digital). Similarly, the vertical axis represents how digital a product has become (the printed newspaper, for example, is physical, while its on-line version is digital). Finally, the third axis shows whether a process is physical, digital or virtual. The traditional commerce – the bottom left part of the cube – is where the three components are physical. Yet the opposite part of the cube represents on-line production, delivery, payment and consumption (for instance, reading the newspaper, or using software via Internet). Blank areas are a mixture of traditional commerce

and virtual, e-commerce: the product may be physical, but the purchase, marketing and payment may be virtual.

2.1 E-commerce of virtual products

Virtual or digital products are all those that can be electronically sold or delivered, goods that are already in digital format or may be digitalized (Choi, Stahl and Whinston, 1997). The main difference between a physical product and a virtual product is that the physical only can be bought and paid by the internet, but can't be delivered by the internet.

They are usually information-based, and can be downloaded through the Internet (Kauffman and Walden, 2001). Turban et al. (1999, p. 429) mention some examples of digital products: newspapers, magazines, articles, books, software, audio, video, distance education, telemedicine, research (data collection and analysis), formatting of documents, remote consultancy, among others. According to Choi, Stahl and Whinston (1997, p. 63), "the list of digital products can only be limited by human imagination". With virtual products, there is a change "from physical goods to an economy that favors services, information and intelligence as primary sources for value creation" (Rayport and Jaworski, 2001, p. 2). In the industrial age, the focus was on the application of knowledge to maximize production and reduce costs, while in the digital economy the focus is on providing the consumer with as many choices as possible (Choi and Whinston, 2000). New products require new strategies of action and new business models so that markets can be better understood and properly explored.

2.2. Business models for the digital economy

A business model is an architecture of products, services and information flow, including the description of the many actors and their roles, the description of potential benefits and the description of resource sources (Lechner and Hummel, 2002), that is, a logical summary of the creation of value in an organization or in a network of companies, including suppositions about their partners, competitors and clients (Klueber, 2000; Dai and Kauffman, 2002). There are many concepts of business models, and each author takes different aspects into consideration. Table 1 summarizes the constituting parts of a business model, according to some author's viewpoint.

Table 1: Components of a business model

Reference	Components of a business model
Afuah and Tucci (2001)	Value to the consumer, scope, pricing, resource sources, implementation, capabilities, sustainability
Zimmermann (2000)	Structure, processes, products, infrastructure
Rayport and Jaworski (2001)	Proposition of value to the client, definition of what is to be sold, specification of resources, evaluation of the obtained gain.

Forge (1993)	Choices among: a) low price/low added value/generic products; or b) intermediate (between a and c); or c) high price/high added value/specific products
Mahadevan (2000)	Value flow of business partners and buyers, resource flow, logistics flow

According to Afuah and Tucci (2001), the business model is the main determining factor of a company's performance, the method through which each company builds and uses its resources to offer its clients better value than that of their competitors and so attain long term sustainability. Klueber (2000) complements this idea, defining business models as a logical arrangement of the creation of value in an organization as a business network, taking its partners, competitors and clients into account.

Although with different elements, the business models quoted have a structure and objectives in common. Therefore, they can be analyzed, integrated and aggregated, creating more complete and comprehensive business models.

3. Research Method

This work is of an exploratory nature, for it tries to understand how a given behavior occurs, through the confirmation, complementation and improvement of preliminary ideas, (Pinsonneault and Kraemer, 1993, p. 7). Concerning its method, it consists of a multimethod (Benbasat *et al.*, 1987), using survey and case studies.

The objective of the survey is to know the 'state of the art' of the commercialization of software used or delivered in a virtual environment, and to provide subsidies for the selection of cases. The survey was the method chosen for this initial stage, since it allows to describe, compare or explain knowledge, attitudes and behaviors (Pinsonneault and Kraemer, 1993) involving the proposed topic. The collected data will be primary and secondary, and data collection will be carried out through the analysis of websites (Freitas et al., 2001) and interviews by e-mail and telephone. However, should the return rate jeopardize the achievement of the objectives at this stage, the possibility of a face-to-face interview will be discussed (Frankfort-Nachmias and Nachmias, 1996). The sample unit is composed of companies that sell virtual products, and the respondents will be people involved with these activities. The instrument of data collection will identify who, what, how many and where (Yin, 1994): which companies operate with virtual products, how many they are and in which context, and what these companies sell. Prior to its application, the questionnaire will undergo a process of content and face validation. Defined from lists of Brazilian business associations, the population is composed of companies that develop or sell software.

The second stage of the research will be the case study, with the objective of verifying the adequacy of the preliminary model (defined from theoretical analysis, based on the models listed on table 1), and also of revising and changing it. The

case study was the method chosen, since it makes an in-depth study of different segments and areas related to a given project or process possible, so that a deeper understanding of its impacts and consequences can be obtained. Two cases will be studied: (1) a product with virtual delivery (like the electronic distribution of software) in a company (product A/company A); (2) a product of virtual use (software use via the Internet) in another company (product B/company B). The following techniques for data collection will be used: a) interview: internal – with people involved in projects related to the cases studied, and external – with clients and suppliers; b) analysis of documents or sites; c) analysis of files.

The analysis of the collected data will have three stages: a) content analysis, trying to find out the meaning of themes and approaches by using excerpts, sentences or sentences composed from the answers obtained (Bardin, 1977); b) gathering and counting of important data, providing different observation angles and elements that can improve the understanding and fundamentals of qualitative analysis; c) development of summary tables with synthesis elements of the analyzed data that can be compared to the elements of the preliminary model. From this last stage on, with the contribution of the theoretical references studied and the experience gathered during data collection and analysis, some changes will be made in the business model initially proposed. After refining the model, the validation stage begins, the objective of which is to verify whether the model fulfills its original purpose. The validation will be made by a group of experts with academic experience and another group, with practical experience.

4. Current status of the research

The following stages of the research are currently being carried out: a) definition of the population to whom the survey will be applied; b) confrontation between the different business models (explained on table 1), searching for a definition of a preliminary business model; c) preliminary draft of the questionnaire. By the end of the study, we intend to define a business model for selling virtual products, especially software used or delivered in a virtual environment. This business model would deal with aspects like range of action, value generated to the consumer, pricing policy, resource sources, implementation, capabilities and sustainability, trying to define ways of maximizing resources such as structure, products and processes. Besides providing a tool that may contribute to software development companies to become more competitive and more likely to survive, the potential contribution of this research is the complementation of the already existing knowledge about information technology and e-commerce. Furthermore, Kaufman and Walden (2001), when suggesting this topic as a research objective, point at an academic gap in the area, which makes this work particularly useful.

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