Chapter XVII
ICT Impact on Knowledge Industries:
The Case of E-Learning at Universities

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ABSTRACT

This chapter analyzes e-learning from an industry perspective. The chapter studies how the use of ICT-technologies will affect the market for university teaching. This is done using a scenario framework developed for study of ICT impact on knowledge industries. This framework is applied on the case of e-learning by drawing on practical experiences.

INTRODUCTION

This chapter analyses e-learning from an industry perspective. The chapter studies how the use of information and communication technologies (ICT) will affect the market for university teaching. This is done by the use of a scenario framework developed for the study of ICT impact on knowledge industries. This framework is applied on the case of e-learning by drawing on practical experiences made at the Center for Information and Communication Technologies (CICT) at Technical University of Denmark.

The impact of ICT on knowledge services such as e-learning relates to production processes, content, and delivery. Production of knowledge services can, as the production of goods and of other services, make use of ICT in order to increase efficiency. This can for instance be done through processing, sharing, and reuse of data. A special feature for information services is that electronic delivery can be used both in the production process and in delivery to end users. Electronic delivery is, however, not just a new way to deliver an existing service. Electronic delivery changes the content of the service delivered. Provision of online ac-

cess to information is a service, which is different from provision of the same information through a weekly newsletter.

Knowledge services using ICT in either production or delivery can be termed e-knowledge services (Sundbo, 2006). Professional e-knowledge services have been studied by, for example, Haukness (1999) and Miles (1994). But services directed towards private citizens have been less common. However, with improved network access for private citizens, use of the Internet or mobile networks as delivery channels are becoming more widespread.

First a scenario framework for analysing ICT impact on knowledge services is outlined. Second, different types of e-learning are discussed and the experiences made at CICT are presented. Thereafter follows an analysis of the market for e-learning and the possibilities for universities to address this market.

SCENARIOS FOR ICT IMPACT ON KNOWLEDGE SERVICES

We will in this section present two sets of service scenarios, which later will be used to discuss the implications of ICT-based learning methods for university teaching. These scenarios have been developed as part of the research project 'E-services—Knowledge Services, Entrepreneurship and the Consequences for Business Customers and Citizens.'[1]

The first set of scenarios describes customer relationships. Here two dimensions are defined:

- Codification and openness
- Social relationships

A high level of codification and openness implies that information can be made available on the Internet and it is possible for consumers to get easy access to a low price. Services, where information and knowledge are more difficult

to codify or where access for other reasons is limited, are more expensive and available for a limited audience only.

The other dimension relates to interaction between producers and users. Some services involve intensive communication (e.g., coaching), while services like cash dispensing demand very little direct interaction.

Use of ICT may imply that the characteristics of a particular service are moving from one point to another in this two-dimensional continuum.

Scenario I deals with highly codified information, where ICT is used to expand coverage and user interaction. Wikepedia is a typical example of this of service. Information is easily available, and both users and producers are able to interact. The success depends on the reliability of the information, and usability for users (Christensen, 2006).

Scenario II deals with highly specialised information used in close interaction with users, which is difficult to codify. This implies that although ICT may be used in part of the process, it is difficult to deliver all parts of the service without one-to-one communication. Most often service delivery will necessitate at least some face-to-face communication. Many consultancy firms are found in this scenario. Management consultants for instance will, in spite of intensive use of ICT, need to interact with customers through personal communication. ICT is mainly used for standardisation and modulation of production (Baark, Falch, et al., 2002).

In Scenarios III and IV interaction with users are less necessary. ICT may here be used to develop self-service concepts. This is particularly relevant in scenarios where information is codified more easily. Electronic payment systems are an example of a service where the self-service concept has been developed in full (Scenario IV). But also, more complicated services, where codification is more difficult (Scenario III), can be provided through development of expert systems.

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