Transition of Academic Web Sites

From a Simple Cyber Brochure to a Complex E-Educational Model

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Abstract: This paper discusses the evolution of academic web sites from an e-commerce perspective. The adaptation of e-commerce technologies to academic web sites and tracking this evolution raises a whole new set of related issues from different disciplines such as communication, psychology, pedagogy and education for example. Some of these issues have been discussed further. Business models for e-commerce have been used as a framework for analysis. I have identified a simple information site based on a cyber brochure model as prevalent in early days of academic web site development. Recent trends in this area show movement toward a complex e-education model of the academic web site based on the education brokerage business model advocated by Hämäläinen et al (1996). So far in New Zealand, only a few academic web sites are in the transition process to this model. However most New Zealand universities and polytechnics are adopting some e-commerce technologies on their web sites. Finally recommendations concerning the transition of academic web sites toward a complex e-education model are made.

1.   INTRODUCTION

The last decade witnessed an explosive growth of the Internet and the way we conduct business over the Net. What started as a purely academic project with a specific application to military has suddenly, after the introduction of the World Wide Web, attracted the business world to explore its commercial usage. In the meantime, codification, standardisation and clear definition of protocols for exchanging information and doing business

on the Web has set up a scenario for wider use of the Internet for commercial purposes.

In the beginning most of the web sites were within the academic domain. They were used for dissemination of research results and educational materials, and for exchanging ideas between members of academic communities. As such, fairly simply designed web sites were used. These were relatively basic informative sites, i.e. a set of hypertext documents, with a few multimedia elements, but with lots of links to other external resources on the Net. In its own way the Internet has been associated with always open Borges virtual library, which contains an infinite number of "books", i.e. documents. However, nowadays beside an informative and educational dimension academic web sites have other dimensions as well such as cultural, communicational, psychological, pedagogical and even commercial. For example, customer/student support component on the academic web site requires communication skills different from the face-to-face situation. Use of various electronic communication tools in synchronous (chat rooms) or asynchronous mode (discussion forums or mailing lists) asks for more informal communication style between students and teachers than it was in the past. Also, new communication technologies introduce new skills and knowledge. We now require students to develop new levels of computer and information literacy and communication skills arising out the use of computer-facilitated communication. Further, the information about the online enrolment or pre-enrolment guidance to students has to be communicated differently because of the nature of a new media by using for example, database driven web sites, set of interactive forms and menu systems not presented in the paper based system.

In regard to the cultural component the academic web sites should adopt a cultural sensitive approach because of the different cultural background of actual or potential students population. For example, in New Zealand academic web sites have separate sections written in Maori or for Pacific Island students.

From the pedagogical point of view presentation of the information or course contents should take into account what is specific for a new media. Luckily a new virtual environment make available a certain degree of flexibility allowing us to build in the same web site alternative paths through the material provided - guided tour for a complete novice or an absolute freedom to browse through the course material for an experienced user.

When the Internet started to be used commercially it initiated new definitions and approaches for the new virtual environment. These changes lead us to the situation that the competition in the market is not between products of different manufacturers but between different business models, which have been adopted for a particular business. The importance of the

business model for e-commerce emerges from here as well as from the need to understand and use it as an analytical frame for our research.

The overall objective of this paper is to address the evolution of academic web sites from an e-commerce perspective through the discussion of business models used in e-commerce. Also, to emphasise different model and the role teachers have to adopt in the new educational environment. Therefore in the next section I have set up an analytical framework explaining the definition and classification of business models, emphasising those particularly relevant for academic web sites (for example the education brokerage business model by Hämäläinen et al (1996)). In the third section I discuss classification and components of specific business models (from very simple to complex) and make an attempt to identify them on academic web sites. Considering the evolutionary nature of the academic web sites and the business models I acknowledge these issues and give some suggestions for improving use of e-commerce components on these sites in the last section.

2. BUSINESS MODELS FOR E-COMMERCE

The concept of the "business model" has not be uniquely defined and used in e-commerce literature. According to Timmers (2000, p. 32), the business model is "an architecture for product, service and information flows, including a description of the various business actors and their roles; description of the potential benefits for the various business actors; and a description of the sources of revenue".

When it comes to the classification of the current business models, the lists of models are quite different if we use different sources. As Rappa (2000) pointed out "there is no single comprehensive and cogent taxonomy of web business models one can point to". As an illustration in Table 1. I present three classifications of the business models in e-commerce. It is not clear from these lists what criteria has been used to create them. Timmers' list is the only exception because he attempts to classify business models by identifying value-chain elements and possible ways of integration information along the chain.

Some of the entries on the three lists are the same (for example: Rappa's and Timmers' *community*, or Rappa and Lawrence's *affiliate*). But in other cases one item on one list encompasses a few items on the other list (for example: Rappa's brokerage model and Lawrence's *virtual storefront* and *auction/reverse auction*).

The most important message from all these classifications and articles referenced is that very often (if not always) there is no pure business model

applied in a real world. Usually, real life application involves some elements from one or more models or even a completely different business model. For example, virtual communities are very often combined with almost any of the other models. Frequently virtual community facilities (discussion lists, FAQs, user forums) are added without charge to the participants, with a view to enhancing customer loyalty. In other words, mixed business models are more the rule than the exception.

Table 1. Three Possible Classifications of the Business Models in e-Commerce

Rappa (2000)	Timmers (2000, pp. 35-41)	Lawrence et al (2000, p. 24)
Brokerage	e-shop	Poster/Billboard model
Advertising	e-procurement	Online yellow pages model
Infomediary	e-malls	Cyber brochure
Merchant	e-auctions	Virtual storefront
Manufacturer	Virtual community	Subscription model
Affiliate	Collaboration platforms	Advertising model
Community	Third-party marketplaces	3.5.7 model
Subscription	Value-chain integrators	Auction/Reverse auction
Utility	Value-chain service providers	Affiliation model
	Information brokerage	Portal model
	Trust and other services	I-Commerce customer service life cycle
		Integrated Internet marketing model

We see an academic web site as a realisation of a single or combination of business models that have been adopted by a particular educational organisation and which reflects their vision, mission and strategy. In the early days of the Internet, presentation of an academic web site could be described as a realisation of a Cyber Brochure model (see the Lawrence's list of business models). Briefly, the Cyber Brochure model provides for information sheets, brochures and information items. The emphasis here is on the information itself with only a small amount of space given over to promotional material. Instead of printing out an expensive paper brochure with complete information about the available courses and degrees together with other relevant information for potential students (requirements, fees, dates, etc.), the academic institution is able to create a web site with content which can be updated instantly.

Most of the academic web sites around the world are still based on this business model. Very few of them make a step further toward adopting elements from other business models or including advance Internet technologies or tools.

The most comprehensive business model for electronic markets for learning has been developed by Hämäläinen et al (1996) and is known as *educational brokerage*. Using Rappa's classification list it could be classify into *Brokerage* group of models. On Timmers' list the following two models

have some elements of Hämäläinen's model: *Value-chain integrator* and *Information brokerage*.

Hämäläinen et al (1996) discussed a new paradigm of education which takes into account need for just-in-time learning and which uses an on-demand approach. Although a technology base for this business model is already available, the model itself is not widely applied in practice. The main reason why the education is still treated only as a potential key application in e-commerce is because this industry still lacks critical mass, and companies investing in educational products do not have a market of sufficient size to cover their cost (Nabil et al (1997)).

In this model the teacher takes a role of facilitator and broker of educational resources. As Hämäläinen et al emphasise education brokerages play a major role in the reengineering of academic education and corporate training by providing value-added services to both customers and the suppliers and by enabling the efficient integration of different types of learning. Through cooperation among educational institutions, training companies, in-house training departments and product vendors economy of scale could be achieved which will reduce the unit cost to a small fraction of what tertiary institutions currently charge.

However, some authors challenge the dominant trend of automation of higher education[1]. In my opinion proper usage of computer and Internet assisted learning tools could help those involved in the educational process (students, academic and administrative staff) to improve learning, teaching, and management efficiency.

More flexibility and awareness of the recent trend in e-commerce and Internet technologies and their application in educational services has been shown by publisher companies, Blumenstyk (1999). Harcourt General, Harcourt Brace's corporate parent, plans to create its own independent university to offer courses and degree through distance learning. Other publishing companies have shown similar intentions. It means that we can talk about a tendency among publishing companies to move from one to another other business model – from a publishing to a learning company.

Currently one of the main obstacles to this transition is the issue of accreditation. Once the problem of accreditation of virtual educational institution is solved the situation in this field will start to change radically. Classical distance and face-to-face institutions will be exposed to strong

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[1] For example, Noble (1998) described the automation of higher education as the distribution of digitized course material online, without the participation of professors who develop such material. He sees the recent trend towards automation of higher education as implemented in North American universities today not as a progressive trend towards a new era, but rather a regressive trend, towards old era of mass-production, standardisation and purely commercial interests.

competition in the new virtual environment. So far the first step in this direction has been made in America. The first virtual university recognised in the United States by a major accrediting body in early 1999 was Jones International University.

Obviously, classical tertiary institutions are less adaptable to the challenge set up by the new educational paradigm and Internet technologies at least when it comes to the commercial side of education. One of the ways to bridge the gap between themselves and more aggressive newcomers in educational market is to go into cooperation with other universities, publishing companies, educational platform providers, etc. Until recently there was a tendency in classical educational institutions to keep all these resources in-house. Hämäläinen's model suggests a different approach, one based on collaboration and cooperation. This implies that some of the functions in a complete educational process should be left to external organisations or intermediaries (payment brokers, validations/accreditation services, assessment/certification services, educational platform providers, etc.)

A new initiative from Massachusetts Institute of Technology at Boston could be treated as a new business model and a possible answer to the challenge posed by publishing companies threatening to overtake some educational components from classical educational institutions. MIT will make the materials for nearly all its courses freely available on the Internet over the next ten years – the new program known as MIT OpenCourseWare. This initiative could be treated as a good marketing tool for MIT and be defended at the same time on pedagogical and educational ground. As we have pointed out one month ago in the TET2001 Conference in Prague (Kovacic (2001)) interaction between lecturers and students and peer-to-peer support are the key factors for successful outcome in learning process not the online course material itself. The main strength and competitive factor of the classical educational institutions in educational market is in support and interaction with students and this will help them to survive in the virtual environment over the next period.

3.   EVOLUTION OF ACADEMIC WEB SITES

Initially one purpose of the academic web site was to make course material or additional course resources available to the students at any time. Most of the web sites at that time were just a pure replica of paper based courses with little use of the features provided by the new media. Further progress was made by using course web pages for student support. FAQs,

discussion forums, mailing lists, online tests are the main components of the second generation of academic web sites for individual courses.

Improvement on the educational institution web site was made by including some e-commerce components such as various forms of student support (pre-enrolment guidance, student loan/grant information, career advice, links to other teaching and non-teaching resources, etc.), search facility, interactivity and feedback forms. However, even by adding multimedia components to these sites nothing has been essentially changed. The core business model used for the web sites development is still the same - *Cyber Brochure* business model.

As I have suggested in the previous section, the flexibility and readiness of newly created virtual education and training institutions to apply the latest e-commerce tools brings them into the active and leading position in the educational markets. Some completely adopt an e-shop business model by selling online courses, allowing students to enrol online, pay course fees online and have immediate access to the course material. At this level of services, this works well but mostly with short courses oriented towards a particular software application or topic. Taking into account a business component of the educational process, the classic, face-to-face and even distance education institutions are well behind these companies. Interestingly even institutions which run online courses do not necessarily have an online payment facility or even online enrolment to these courses (see the current situation among New Zealand tertiary institutions - Table A. in the appendix). However, the development of an appropriate online payment system is a key issue for the success of the Hämäläinen's model when more than one educational provider is included. The payment system should allow flexibility so that each educational provider can be rewarded for the elements they supply.

As I have noted before, business models are not always mutually exclusive. Instead, we have very often a mixture of different models. Under the *complex e-education model* there can be a combination of at least four different models: cyber brochure, brokerage, e-shop and virtual community model. The role of the first (cyber brochure) model is clear enough. Currently most of the educational web sites fit into this category of business model. Brokerage (educational brokerage) is the basis for Hämäläinen's model. In practice we have some kind of local or partial brokerage model - helping students to find a suitable course or diploma in a single educational institution by means of an online search facility. This type of student assistance could be better described as pre-enrolment guidance. Unfortunately most of New Zealand tertiary institutions' web sites contain brief information with contact details only, and no real online pre-enrolment guidance.

The third component of a complex e-education model, i.e. e-shop could be found only on commercial sites involved in the educational market. Traditional academic institutions very rarely sell courses online although Internet technologies are already available for that. Finally, a virtual community has been used for a long time for student support on individual courses, but not extensively at the institutional level. FAQs were the only component of virtual community model used on these sites.

Among New Zealand tertiary institutions, only 4-5 of them have an option of online enrolment, online access to personal/student information and a secure server for enrolment and payment. The reasons for such a small use of advanced e-commerce technologies and tools cannot be explained merely by lack of financial resources. Some e-commerce components of the business models mentioned above do not ask for large scale investment in web site development, rather an innovative approach to support existing students and attracting new students. Better student support and sales services, expert advice, chat sessions with administrative and academic staff, free download of a few chapters of the course material, free access to some course components, are just a few options which we can use to bring benefits for both students and educational institutions.

4.   CONCLUDING REMARKS

The evolution of academic web sites has been followed/traced using business models in e-commerce as an analytical framework. I identified a simple informational academic web site as a starting point in this evolution which was based on the cyber brochure business model. Later, some components from other business models have been added to enhance student satisfaction with the web site. However, these modifications did not change the nature of the starting cyber brochure business model.

We briefly discussed Hämäläinen et al (1996) business model as the most suitable for educational market and which is known as educational brokerage. This model is one possible answer to the new educational paradigm and the need for "just-in-time" training and an on-demand approach to education. Also, I indicated several components of the Hämäläinen's model that were found on New Zealand academic web sites. Finally, some recommendations on how to increase student satisfaction with academic web sites have been given.

5.   REFERENCES

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Table 2. E-Commerce Features Available on the New Zealand Tertiary Institutions Web Sites (on 12 February 2001)

University / Polytechnic	Search	Pre-enrolment Guidance	Enrol/Apply Online	Personal Information Online	Secure Server	Online Platform
Auckland University of Technology	✔	static pages	✔	✔	✔	
The University of Auckland	✔	static pages	✔	✔	✔	
University of Canterbury	✔					
Lincoln University	✔					
Massey University	✔			✔		
University of Otago	✔					
Victoria University	✔		✔		✔	
The University of Waikato	✔		✔			
Aoraki Polytechnic	✔					
Bay of Plenty Polytechnic						

University / Polytechnic	Search	Pre-enrolment Guidance	Enrol/Apply Online	Personal Information Online	Secure Server	Online Platform
Central Institute of Technology	✔		simple form			
Christchurch Polytechnic Institute of Technology	✔		simple form			
Eastern Institute of Technology	✔					
Hutt Valley Polytechnic	✔					
Manukau Institute of Technology	✔		simple form			
Nelson Marlborough Institute of Technology	✔					
Northland Polytechnic						
Otago Polytechnic						
Otago Polytechnic – School of Art						
Southern Institute of Technology						
Tai Poutini Polytechnic	✔					
Tairawhiti Polytechnic	✔		simple form			
Taranaki Polytechnic						
Telford Rural Polytechnic						
The Open Polytechnic of New Zealand	✔					
The Waikato Polytechnic	✔		(✔)			WebCT
UNITEC Institute of Technology			(✔)			Black-board
Waiariki Institute of Technology						
Wairarapa Community Polytechnic						
Wanganui Regional Community						

University / Polytechnic	Search	Pre-enrolment Guidance	Enrol/Apply Online	Personal Information Online	Secure Server	Online Platform
Polytechnic						
Whitereia Community Polytechnic						
Christchurch College of Education	✔					
Dunedin College of Education			simple form			
Univeristy of Waikato School of Education	✔		(✔)			Top-Class
UNITEC School of Education						
Wellington College of Education	✔					
Total	**22**	**2**	**7+ 5 s.form**	**3**	**3**	**3**