New Educational Service Products: Tertiary EC/EB Education — the Asia-Pacific Region

by

Elsie Siu King Chan

BSc(UEA), MSc(AI)(Essex), GradDip(CompEd)(Monash), MACS, MHKCS, AMIMA

Submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

Deakin University

May 2003
I certify that the thesis entitled:

New Educational Service Products: Tertiary EC/EB Education —

the Asia-Pacific Region

submitted for the degree of:

Doctor of Philosophy

is the result of my own research, except where otherwise acknowledged, and that this thesis in whole or in part has not been accepted for an award, including a higher degree, to any other university or institution.

Full Name  Elsie Siu King Chan

Signed: ..............................................  Date: 31 May 2003
Abstract

Electronic Commerce (EC) / Electronic Business (EB) has been (and is expected to continue to be) a dynamic, rapidly evolving area of technology, requiring skilled people with up-to-date knowledge and skills. The global community has required (and still requires) tertiary academic programs to prepare and train these people quickly. In the late nineties, following a tidal wave of tertiary EC program development in the United States, new tertiary programs began to appear in the Asia-Pacific (AP) region to satisfy this need, over a very short period of time. This research project aims to examine whether the development and effectiveness of tertiary EC/EB educational programs can be enhanced through employing a particular marketing paradigm. Four regions - Australia, New Zealand, Hong Kong SAR and the Republic of Singapore — were selected from the AP region, for this study. Based on a review of marketing literature, an inductive approach is adopted to build a model for new educational service product offerings. I also provide a description and comprehensive analysis of EC/EB education, and explore the model empirically, examining how it applies to the way EC education programs have been developed, to date.

Essentially, this project consists of two major activities: theory building and theory testing — and is divided into three parts.

Part 1: Preliminary study — literature review for theory building. This section of the thesis provides a literature review of the domains of curriculum development, EC/EB program development and management, EC/EB component models and new service product development.

Part 2: Understanding the Marketplace — quantitative analysis. This section comprises five major surveys which provide an understanding of EC/EB education.

Part 3: In-depth analysis — qualitative research for theory testing. This section discusses the results of the multiple case studies of EC/EB degree programs undertaken over a five-year period.

The results of this project highlight both theoretical and practical aspects of the topic. In terms of the theoretical aspect, I provide a contribution to existing theory concerning the planning and development of new tertiary education programs.

Research into academic course development in the past has tended to assume that all program development is pedagogically based and influenced. There is an assumption that people only develop academic programs and academic courses for pedagogic reasons.

What this research project has done is to suggest that there are, in fact, many possible reasons for developing new programs and that, although these reasons might be pedagogic in nature, they can also be industry-focused, and market-oriented in the following ways:

- the university is shaping the way it is perceived by the public - that is, the market;
- the university is highlighting where its expertise lies.

This led me to a form of new service product development consistent with the new image of the university. There is a clear need for diverse models for program development which accommodate the dynamic roles of modern universities. My research project develops such a model based on conditions in the Asia-Pacific region, and discusses findings arising from the overall project, which can be used to improve new educational program offerings in future, in both the Asia-Pacific and, I suggest, in other regions. This potential use of my findings highlights the practical contribution made by the research Project.
Acknowledgements

First and foremost, I would like to sincerely thank my supervisor, Professor Paula Swatman, for her strong support and guidance during my PhD research. Her contribution was over and above that of the average supervisor. Her strong support assisted me to obtain scholarships from both RMIT and Deakin Universities for the duration of this PhD study. Her sponsorship enabled me to attend several doctoral consortium workshops which helped me to widen my scope in this specialised area of research. Far more than just a supervisor, she even subsidised my international conference expenses! Moreover, the time I spent with her in Germany gave me additional insight into the project. Her endless support, timely encouragement, caring counselling during my down times and her deep friendship over the past five years have been truly remarkable. Of course, her continuous advice and direction in my research have been invaluable throughout the project. I can say nothing more than a heartfelt “thank you” to her.

I would like to thank Professor Douglas Vogel of City University of Hong Kong for his valuable suggestion to change the focus of this research project to marketing paradigm in the year of 2000.

My thanks also go to Professor Brian Corbitt for his support as a panel member in the Teaching Electronic Commerce Workshop at PACIS 2000. His kind commitment gave me considerable encouragement at the earliest stage of my research work.

I would like to thank Assoc. Professor Sharman Lichtenstein for being an associate supervisor at the later stage of this research. Her advice and input to this Thesis is highly appreciated.

I would also like to record my gratitude to the encouraging support from Professor Paul Swatman and Assoc. Professor Ross Smith, respectively the previous and current Heads of School of Information Systems at Deakin University.
At the very early stage of this project, I sent emails to Heads of Schools to ask them whether they would offer electronic commerce programs. I received a reply from Assoc. Prof. Doug Grant of Swinburne University of Technology on 9 Dec 1998, saying “Elsie, this information is commercial-in-confidence! So I am sorry that I cannot answer. Best wishes Doug Grant”. I have to thank him for his kind reminder — this is surely not an easy project because of the commercial competitions amongst universities! Bearing this issue in mind, I heartily appreciate the contributions of the following academics to this project. Their support despite the confidentiality issues they faced, plus their time and academic expertises to fill in the survey forms and attend interviews were truly vital to this project. Without their contributions, this Thesis could not have been completed. I have listed their names in alphabetic order because I cannot rank the importance of their contributions. I intentionally do not mention their university as many of these people are very mobile.

Mr. David Banks, A. Prof. Ross Bloore, Mr. Richard Braithwaite, Mr. Chris Brien, A. Prof. Jiannong Cao, Prof. Tanya Castleman, Assoc. Prof. Paul Cheung, A. Prof. Ronnie Cheung, A. Prof. Siu Leung Chung, Prof. Joan Cooper, Prof. Brian Corbitt, Prof. Kevin Crowston, Ms Pascale de Berranger, Prof. Bill Doolin, A. Prof. Ali Farhoomand, Prof. Bernard Glasson, Prof. Shirley Gregor, Dr. Ira Hecht, Ms. Kathy Henschke, Prof. Sid Huff, Dr. Rod Jewell, A. Prof. Robert Johnston, A. Prof. Richard Joseph, Prof. Chris Keen, A. Prof. Vincent Lai, A. Prof. C. H. Lee, Prof. Lori Leonard, Dr. Divakaran Liginlal, Ms. Barbara McCartney, Prof. Bob McQueen, Dr. Jamie Murphy, Prof. San Murugesan, Mr. Con Nikakis, Dr. Craig Parker, Mr. Evan Patulloch, Mr. Don Peters, Prof. Simpson Poon, Mr. Patrick Quirk, Mr. David Rivett, Prof. Angela Scollary, Prof. Vijay Sethi, A. Prof. Mohini Singh, Dr. Geoff Smith, Prof. Craig Standing, Ms. Fay Sudweeks, Ms. Judith Symonds, Dr. Arthur Tatnall, Prof. Thompson Teo, A. Prof. Lai Lai Tung, Prof. Dennis Viehland, Prof. Douglas Vogel, Dr. Hakman Wan, Prof. Chris Westland, Mr. Barry Wilks, A. Prof. Mary-Anne Williams, A. Prof. Gerhard Wittig, Prof. David Yao.
I also extend my thanks and appreciation to my friends Karen, Steve, Phyllis, Helen and Tony for their support, chauffeuring my family members while I was attending conferences overseas; and my friends Rosa, Sharmini and many others from my church for their prayers on my progress in this research.

I would like to offer special thanks to my loved ones who have given me such strong support, as well as tolerance, during the years of my research project:

- my daughter Vicki, for her patience,
- my son Vincent, for being a super personal research assistant to me,
- my mother Mo Yin Tang, for her help with the housework, and lastly,
- my husband Michael who has been my advisor and supporter throughout this long, long process of research.

Most importantly, may I thank God for His blessings and guidance! May the glory brought by this Thesis be with Him!
List of Figures

Figure 1-1 A Brief Summary of the Evolution of the Internet......................... 4
Figure 1-2 The Tertiary Education Value-Chain........................................... 9
Figure 2-1 EC/EB Educational Programs: New Service Product..................... 16
Figure 2-2 External Influences on the Undergraduate Curriculum...................19
Figure 2-3 The Strategic Planning Approach for Developing a New Program... 21
Figure 2-4 A Systematic Model for Educational Program Development.......... 23
Figure 2-5 A Curriculum Structure for EC.................................................. 32
Figure 2-6 EC Content Delivery Models for Masters Level...........................35
Figure 3-1 Research Categories and Approaches....................................... 56
Figure 3-2 The Structure of the Research Project.........................................61
Figure 4-1 Nature of Commerce Change from Time to Time.........................83
Figure 4-2 Generic Framework for Electronic Commerce..............................90
Figure 4-3 Electronic Commerce Domain Matrix....................................... 91
Figure 4-4 A Framework for Electronic Commerce.................................... 92
Figure 4-5 The Meta-view of EB.................................................................93
Figure 4-6 The EBCM View from Different Perspectives...............................94
Figure 4-7 The Complete Electronic Business Component Model..................97
Figure 5-1 The Four Components of a Service........................................... 99
Figure 5-2 Growth Vector Components....................................................103
Figure 5-3 Growth Vectors Served by Product Development Variants............104
Figure 5-4 Growth Vectors Served by New Service Product Development Variant.......................................................................................... 106
Figure 5-5 Augmented Service Offering Model........................................108
Figure 5-6 The NetOffer Model for the Virtual Marketspace.........................110
Figure 5-7 Components of the Augmented Service Offering.........................115
Figure 5-8 The Three Levels of Service Offerings..................................... 120
Figure 5-9 New Program Development Process........................................121
Figure 5-10 Shostack’s Molecular Model..................................................124
Figure 5-11 A Simplified Example of Shostack’s Service Blueprint for a Student who Takes an Educational Degree Program............................................ 124
Figure 5-12 Life Cycle Process Theory..................................................132

Figure 5-13 Three Major Entities which Influence the Development of New Educational Service Product.............................................134

Figure 5-14 A Proposed Initial Model for the New Educational Service Product Offerings (NESPO).........................................................136

Figure 6-1 Service Product Characteristics Found in Degree Programs Surveyed.................................................................147

Figure 6-2 The Introduction of New EC/EB programs in the AP Region ......161

Figure 6-3 Anticipated Changes to EC/EB Programs in the AP in 2002/03.....167

Figure 6-4 Number of Universities offer EC/EB Programs and Subjects in 1999, 2000 and 2003.................................................................168

Figure 7-1 Elements of the NESPO model studied in this Chapter.........174

Figure 7-2 The Inter-related Role of EC/EB Professional.......................183

Figure 8-1 The Elements for Study in Section 8.2..............................193

Figure 8-2 The Elements for Study in Section 8.3...............................211

Figure 8-3 Distribution Strategy of EC/EB Programs in the 19 Universities...213

Figure 8-4 The Marketing Support Elements of the NESPO Model.........218

Figure 8-5 Extent of Market Research Carried out by Interviewed Universities .................................................................220

Figure 8-6 Student Criticism of Monash University’s EC Program.........229
# List of Tables

| Table 2-1 | Structure of EC Majors of MIS Degree at Deakin University in 1997 | 31 |
| Table 2-2 | EC/EB Curriculum Research Papers from 1997-2002 | 34 |
| Table 3-1 | A Comparison of Taxonomies of IS Research Methods | 55 |
| Table 3-2 | Relative Strength of the Survey and Case Study Research Methods | 67 |
| Table 3-3 | Ways of Receiving the Questionaries from the EC/EB Program Developers and Directors | 73 |
| Table 4-1 | An Electronic Commerce Typology | 87 |
| Table 4-2 | The Hierarchical Framework of EC | 88 |
| Table 5-1 | A Hierarchy of New Services Categories | 102 |
| Table 5-2 | Comparison of the Four Service Offerings Models | 126 |
| Table 5-3 | References for Elements of New Educational Service Product Offerings Model | 137 |
| Table 6-1 | Types of EC/EB programs in 2000 | 143 |
| Table 6-2 | Number of Replies to the Questionnaires in Survey 3 | 158 |
| Table 7-1 | Potential E-Commerce Career Types | 175 |
| Table 7-2 | Ho’s Evaluation Framework for Commercial Web Sites (Ho 1997) | 185 |
| Table 7-3 | Evaluation Framework for the Review of EC/EB Degree Program Web Sites | 186 |
| Table 7-4 | The Percentage of Features Present in the Evaluation Framework in May 2003 | 187 |
| Table 8-1 | Number of Cases for This Research Study | 192 |
| Table 8-2 | Interview Responses for the Element “Newness” | 197 |
| Table 8-3 | EC/EB Program Development Models | 198 |
| Table 8-4 | Interview Responses for the Element “Product Quality” | 201 |
| Table 8-5 | Interview Responses for the Element “Product Distinctiveness” | 203 |
| Table 8-6 | Interview Responses for the Elements “Product Adaptability” and “Facilitating Services” | 206 |
| Table 8-7 | Interview Responses for the Element “Service Evidence” | 210 |
| Table 8-8 | Interview Responses for the Elements “Distribution Strength/Strategy” and “Effective Communication” | 212 |
| Table 8-9 | Interview Responses for the Element “Follow-up Services” | 217 |
Table 8-10 Interview Responses for the Element “Market Knowledge”………219
Table 8-11 Interview Responses for the Element “Local Image” ……………221
Table 8-12 Interview Responses for the Element “Advertising/Promotion” …222
Table 8-13 Interview Responses for the Element “Financial Terms” ……………224
Table 8-14 EC/EB Masters Program Fees in Australia, Hong Kong and
Singapore in 2003 …………………………………………………………………………226
# Table of Contents

Candidate Declaration ................................................................. i  
Abstract ..................................................................................... ii  
Acknowledgements ....................................................................... iii  
List of Figures ............................................................................... vi  
List of Tables ................................................................................ viii  
Table of Contents .......................................................................... x  

## Chapter 1 Introduction .............................................................. 1  
1.1 Background to the Project ................................................... 3  
  1.1.1 Introduction to the Internet and EC/EB .............................. 3  
  1.1.2 Types of EC/EB education programs ............................... 6  
  1.1.3 Introduction to EC/EB tertiary education ......................... 6  
    1.1.3.1 EC/EB education in North America ........................... 7  
    1.1.3.2. EC/EB education in Europe ................................. 7  
    1.1.3.3 EC/EB education in the AP Region ......................... 8  
  1.1.4 EC/EB educational programs as service products ............. 9  
1.2 Research Questions ............................................................. 11  
1.3 Scope of the Research .......................................................... 12  
1.4 Limitations of the Research .................................................. 13  
1.5 Outline of Thesis ................................................................. 14  

## Chapter 2 Influences of new service development on EC/EB educational programs ......................................................... 15  
2.1 Curriculum Development Models ......................................... 17  
  2.1.1 Strategic model (Foster 1993) ........................................... 20  
  2.1.2 Systematic model (Diamond 1989) ................................. 22  
2.2 EC/EB Education at the Tertiary Level ................................ 24  
  2.2.1 The need for EC/EB education ...................................... 24  
  2.2.2 Literature of EC/EB learning and teaching issues ............. 28  
  2.2.3 EC/EB curricula ........................................................... 30  
    2.2.3.1 Earliest EC curricula ......................................... 31  
    2.2.3.2 EC/EB curricula 1997-2002 .................................. 33  
2.3 Role of Pedagogy and Market Orientation in EC/EB Programs 39  
2.4 Markets and Competition in Tertiary Education ................. 41  
2.5 New Product Development .................................................. 44  
2.6 New Service Development ................................................... 46  
2.7 Summary of Chapter 2 ......................................................... 48  

## Chapter 3 Research strategy and methods .................................. 50  
3.1 An Overview of IS Research Philosophy ............................... 50  
  3.1.1 The Positivist paradigm from an IS research perspective ... 51  
  3.1.2 The Interpretivist paradigm from an IS research perspective 52  
3.2 Methods in IS Research ....................................................... 53  
  3.2.1 Taxonomies of IS research methods .............................. 54  
    3.2.1.1 Neuman’s (1994) classification of research methods .... 54
3.2.1.2 Quantitative and qualitative research methods ............... 55
3.2.2 Comparing research approaches ..................................... 55
  3.2.2.1 Survey ................................................. 57
  3.2.2.2 Case Study ........................................... 58
  3.2.2.3 Subjective/Argumentative and Descriptive/Interpretive .... 58
  3.2.2.4 Triangulation ......................................... 59
3.3 The Structure of the Research Project .................................. 60
  3.3.1 Part 1 – preliminary study .................................... 61
  3.3.2 Part 2 – understanding the marketplace ......................... 64
  3.3.3 Part 3 – in depth analysis .................................. 66
3.4 Data Analysis ...................................................................... 66
  3.4.1 Data analysis for understanding the marketplace ................. 67
  3.4.2 Data analysis for the multiple-case studies ....................... 68
3.5 Discussion of and Justification for the Chosen Research Methods .... 68
  3.5.1 Web survey of universities in the AP region to understand the marketplace ........................................................................... 69
  3.5.2 Literature review as the foundation of the research domain: education, marketing and EC/EB ................................................................. 69
  3.5.3 Web survey to understand EC/EB education ....................... 70
  3.5.4 Survey of EC/EB program developers ............................ 70
    3.5.4.1 Survey method for the survey of EC/EB program developers ........................................................................................................... 70
  3.5.5 Use of multiple-case studies to understand the New Educational Service Product Offering (NESPO) model ............................................. 73
  3.5.6 Reasons for not selecting other approaches ..................... 74
    3.5.6.1 why not action research ................................ 74
    3.5.6.2 why not focus group .................................. 75
    3.5.6.3 why not single case study ............................. 75
    3.5.6.4 why not laboratory experiment ......................... 76
  3.5.7 Summary of the research project .................................. 76
3.6 Assumptions and Limitations ............................................... 77
3.7 Summary of Chapter 3 ....................................................... 77

Chapter 4  Electronic Commerce Component Model ....................... 79
  4.1 The Road from Electronic Data Interchange to Electronic Business ... 79
    4.1.1 Electronic Data Interchange phase .......................... 80
    4.1.2 Electronic Commerce phase ................................. 81
    4.1.3 Electronic Business phase .................................. 82
  4.2 Definitions of EC and EB .............................................. 83
    4.2.1 Definition of EC .......................................... 83
    4.2.2 Definition of EB .......................................... 84
    4.2.3 Differences between EC and EB .......................... 84
  4.3 Models and Frameworks of EC/EB .................................. 86
    4.3.1 Electronic commerce typology (Wigand 1995; 1997) .... 87
    4.3.2 Hierarchical electronic commerce framework (Zwass 1996; 1998) ................................................................. 88
    4.3.3 Generic framework for electronic commerce (Kalakota and Whinston 1996) ................................................................. 89
    4.3.4 Electronic commerce domain matrix (Riggins & Rhee 1998) .... 90
    4.3.5 Framework for electronic commerce (Turban et. al 2002) ...... 91
4.4 The Electronic Business Component Model (ECCM/EBCM) ......... 93

Chapter 5 New Educational Service Product Offering Model ................. 98
5.1 Service Product ........................................................................... 98
5.2 Newness ......................................................................................... 100
  5.2.1 Classifications of new services ............................................ 100
  5.2.2 Newness of service products and markets .............................. 103
    5.2.2.1 Newness of service product and market matrix ............... 104
5.3 Service Offering Models ................................................................. 106
  5.3.1 Augmented service offering model (Grönroos 1990; 2000) .... 107
    5.3.1.1 NetOffer model (Grönroos et al. 2000) ......................... 110
    5.3.1.2 Discussion of Grönroos’s two models ......................... 111
  5.3.2 Augmented service offering model (Storey & Easingwood 1998) ................................................................. 114
    5.3.2.1 Discussion of Storey and Easingwood’s (1998) ASO model ................................................................. 117
  5.3.3 Educational offerings model (Kotler & Fox 1995) ................. 119
    5.3.3.1 Steps in new program development (Kotler & Fox 1995) ................................................................. 121
  5.3.4 Molecular model (Shostack 1982) ........................................... 122
    5.3.4.1 Service blueprinting ....................................................... 124
    5.3.4.2 Discussion of Shostack’s (1982) molecular model .......... 125
  5.3.5 Comparison of four service offerings models ....................... 125
    5.3.5.1 Common elements in four models ................................ 127
    5.3.5.2 Elements are selected from four models ..................... 128
5.4 Model for New Educational Service Product Offering (NESPO) ...... 129
  5.4.1 Purpose, audience and scope of the model ......................... 131
    5.4.1.1 competition and survival ........................................... 131
    5.4.1.2 Product life cycle theory ............................................ 132
    5.4.1.3 Types of audiences ................................................... 132
    5.4.1.4 Scope of the model ................................................... 132
  5.4.2 Structure of the model ........................................................... 133
    5.4.2.1 Major entities which shape the mode ....................... 133
    5.4.2.2 Proposed model ....................................................... 134

Chapter 6 Understanding EC/EB programs and the marketplace ...... 138
6.1 Survey 1 to identify EC/EB programs in the AP region (1998-2000) . 139
  6.1.1 Introduction and purposes of Survey 1 ............................... 140
  6.1.2 Discussion of EC/EB program offerings in the AP in 2000 ....... 142
    6.1.2.1 Newness ............................................................... 144
    6.1.2.2 Product distinctiveness ............................................ 145
    6.1.2.3 Product adaptability .............................................. 146
    6.1.2.4 Service evidence ................................................... 146
  6.1.3 Findings from Survey 1 ....................................................... 147
6.2 Survey of EC Teaching Staff in 2000 ......................................... 151
  6.2.1 Introduction and purposes of Survey 2 ................................ 151
  6.2.2 Findings from Survey 2 .................................................... 151
    6.2.2.1 Methods of delivery ............................................. 152
8.2.6 Facilitating services…………………………………….. 207
8.2.7 Service evidence……………………………………. 209
8.3 Service Distribution…………………………………………….. 211
  8.3.1 Distribution strength/strategy………………………….. 213
  8.3.2 Effective communications……………………………. 215
  8.3.3 Follow-up services……………………………………… 216
8.4 Marketing Support…………………………………………… 218
  8.4.1 Market knowledge…………………………………….. 218
  8.4.2 Local image………………………………………………. 221
  8.4.3 Advertising/Promotion……………………………….. 222
  8.4.4 Financial terms…………………………………………. 223
8.5 Early Evidence of an EC/EB Popularity Decline ……………………. 227
  8.5.1 The death of an EC program in Singapore……………. 227
  8.5.2 The closure of EC schools in Australia……………….. 229
8.6 New Educational Service Product Offering Model in Practice………. 230

Chapter 9 Conclusions ………………………………………. 235
  9.1 Summary of the Research Project and Thesis……………… 235
  9.2 The Findings………………………………………………… 236
    9.2.1 The pedagogic nature and market orientation of EC/EB programs
    – answers to Part “a” of the principal research question ……. 237
    9.2.2 Engagement with the concept of new service product development
    – answers to Part “b” of the principal research question ……. 245
  9.3 Conclusions………………………………………………... 249
  9.4 Research Contributions…………………………………… 250
  9.5 Future Research…………………………………………… 252

References…………………………………………………… 256

Appendixes

I     Acronyms and terms
II    EC/EB research papers on curriculum 1997-2002
III   Appendixes related to Chapter 6
IV    Appendixes related to Chapter 7
V     Publications as a direct result of this Thesis