Perceptions of E-Commerce as an Academic Discipline in Australian Universities

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Abstract

This paper presents findings from a study on perceptions of e-commerce as an academic discipline in Australian universities. The study examined Australian universities' perceptions on whether e-commerce should be regarded as a business-oriented discipline or a technology-oriented discipline and further whether e-commerce should be considered as a distinctive discipline. Data was collected from official websites of all Australian universities and was categorized in accordance to award titles, host faculty and program structures. Findings showed that most Australian universities perceived e-commerce as a business-oriented discipline. However, there was no consensus on whether e-commerce should be considered as a distinctive discipline.

Keywords

Curriculum
E-commerce education
Perceptions
Program development
Activities
Surveys

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Introduction

In the last decade of the twentieth century, advances in information and communication technology (ICT) and commercialization of the Internet had transformed the way people think about doing business. Existing business processes were enhanced by being technology-enabled, and new business paradigms were developed to take advantage of the technology. These new developments were all branded e-commerce. All of a sudden, e-commerce became a buzzword in everybody's daily life (Ngai, 2004).

Fuelled by overwhelmingly optimistic hype and seemingly unlimited injection of funds, thousands of new ventures were started in the late 1990's to exploit the new opportunities brought about by the e-commerce revolution. Unfortunately, most of these ventures were not financially sound and relied on constant injection of capital to survive. Inevitably the e-commerce bubble burst when the investment funds dried up after the crash of NASDAQ technology index in April, 2000 (Burns, 2001).

Many of the ill-fated e-commerce ventures were operated by previously successful entrepreneurs. They usually had a good understanding of operating a business under traditional environments, but knew little about the technologies applied in their e-commerce ventures and the implications of these technologies to business.

Another major group of e-commerce venturers in the e-commerce bubble era was ICT wizards. They had a good grasp of the technologies, but usually lacked the skills and knowledge in managing a business.

Their failures demonstrate the importance of a multi-disciplinary approach in e-commerce education. E-commerce entrepreneurs and professionals need skills and knowledge in both business and ICT disciplines to run e-commerce ventures successfully.

As an evolving discipline, the boundary of e-commerce is vague. There is neither a solid theoretical base for the discipline nor

a distinctive group of professionals. An example of the ambiguous nature of e-commerce can be found in its definition. Reviews of contemporary definitions of e-commerce (Mitchell, 2001; Tse, 2005) show no consensus on what the term means. Without a generally accepted definition of e-commerce, it is impossible to specify a common body of knowledge for the discipline that should be included in e-commerce education programs.

Consequently, the development of education programs in e-commerce has largely been driven by forces within educational institutions. E-commerce programs have been developed by combining existing contents from the business and ICT disciplines with newly developed e-commerce contents. The mix of contents has largely been based on the individual institution's view concerning the relevance of the contents, which in turn has been determined by the institution's perceptions of e-commerce as an academic discipline.

This paper presents a study on how Australian universities perceive e-commerce as an academic discipline by examining their undergraduate and postgraduate e-commerce coursework program offerings. In particular the study examines the universities' perceptions on whether e-commerce should be regarded as a business-oriented discipline or a technology-oriented discipline and further whether e-commerce should be considered as a distinctive discipline. The purpose of the study is to develop an understanding of the perceptions of e-commerce as an internal force that shapes current e-commerce education programs.

The remainder of the paper is organized as follows. The second section presents a literature review on e-commerce education. The research questions are subsequently developed in the third section, while the fourth section outlines the design of the study. Findings are presented in the fifth section and are discussed in the sixth section. Finally, a conclusion to the study is drawn in section seven.

Literature Review

As pointed out in Featherstone et al. (2004), education programs in e-commerce and e-business are very much in an embryonic stage. Current research in e-commerce education focuses on two areas, namely the characteristics of e-commerce education programs and the approaches for incorporating e-commerce contents into education programs.

Characteristics of E-Commerce Education Programs

With regards to the characteristics of e-commerce education programs, it is generally agreed that a mix of contents from business and ICT disciplines should be included in e-commerce education programs. However, there is no agreement on the right mix of the two (Featherstone et al., 2004; Gunasekaran et al., 2004). It is also unclear whether the business or the ICT/science faculty should initiate and "own" e-commerce education (Durlabhji and Fusilier, 2002).

Etheridge et al. (2001) and King et al. (2001) found that most US-based e-commerce education programs were at the postgraduate level and offered by business faculties. Durlabhji and Fusilier (2002) and Dunning et al. (2001) also found that most postgraduate e-commerce programs in US were offered as disciplinary streams in the Master of Business Administration (MBA) programs.

Empirical studies on the characteristics of e-commerce programs in other countries are very limited. Chen et al. (2004) examined the structures of e-commerce programs in China and found significant variations among programs. It was suggested that teaching capacities of individual institutions dictated the structure of their programs.

Incorporation of E-Commerce Contents to Education Programs

Another major area in e-commerce education research is the approaches for incorporating e-commerce contents into education programs. A large proportion of studies in this area are based on individual

institution's experiences in implementing e-commerce programs.

In some institutions, the incorporation of e-commerce contents took place at the subject (unit) level. E-commerce contents were added to a self-contained subject. The incorporation could take place in an existing subject (Grenci, 2005) or a specialized e-commerce subject (Dhamija et al., 1999; Foster and Lin, 2004). In specialized e-commerce subjects computer-based simulations were frequently used as a teaching tool (Bodoff and Forster, 2005; Ngai et al., 2005; Parker, 2005). Subjects that incorporated e-commerce contents could be offered either as electives for existing education programs or as part of the specialized e-commerce education programs.

At the program (award) level, two approaches were used to implement e-commerce education programs. Some e-commerce education programs were implemented as an extension of existing education programs. In such cases, e-commerce related subjects were grouped into a disciplinary major in an existing education program. A typical example of this type of programs in Australia was the Bachelor of Business (e-business) offered by the University of Technology Sydney (UTS). The 24-subject program included 8 common core subjects for all Bachelor of Business students, 8 elective subjects from various business disciplines, and 8 prescribed subjects that constituted the e-business major. Fedorowicz and Gogan (2001), Bartholome and Olsen (2002) and Mehta et al. (2005) presented their own institutions' experience in developing e-commerce major in existing academic programs.

Alternatively, universities established new stand-alone education programs to include both e-commerce subjects and subjects from other disciplines. In Australia, such programs had distinctive titles like the Bachelor of Electronic Commerce that distinguish themselves from other existing programs.

Research Questions

While previous studies have made good accounts of contemporary practices in e-commerce education, they provide little insight on how educational institutions perceive e-commerce as an academic discipline. Empirical studies in e-commerce programs have focused on the contents of programs, and case studies have focused on individual institutions' experiences. What remains unanswered is how the higher education sector collectively views e-commerce as an academic discipline.

Given that the e-commerce boom was started in US, it was not surprising that early studies in e-commerce education were mostly US-based. One common feature of US-based studies was reliance on the Association to Advance Collegiate Schools of Business (AACSB) as a data source. For example, Durlabhji and Fusilier (2002), Dunning et al. (2001) and Etheridge et al. (2001) used the list of e-commerce programs compiled by the AACSB as the primary source to identify e-commerce programs. As AACSB was an accreditation body of business faculties, the use of AACSB's list as an information source might result in bias towards business faculties.

The findings of Chen et al. (2004) shows that institutional factors of a country can play an important role on the developments of e-commerce education programs. Therefore, a study of e-commerce education programs outside US can provide a valuable insight on how universities that operate in a different institutional environment view e-commerce as an academic discipline.

The university system in Australia has its roots from the British system and has a number of distinctive features. Firstly, university is a status strictly controlled by the Australian government. An Australian educational institution cannot call itself a university or use the word 'university' in its name unless it has university status. Such status is granted to an educational institution through a Royal Charter, an Act of Parliament or a ministerial order. Due to strict government control, it is difficult for a

private institution to receive the university status. There are currently 39 universities in Australia and only two of them (Bond University and the University of Notre Dame Australia) are private universities.

Secondly, Australian universities are both educational institutions and accrediting bodies. There is no non-accredited university in Australia as the university status confers an educational institution the power to accredit its own academic awards. All academic awards conferred by Australian universities are accredited by themselves. In some disciplines, such as accounting and ICT, professional bodies like the Institute of Chartered Accountants in Australia (ICAA) and the Australian Computer Society (ACS) provide independent accreditation of education programs for membership and migration purposes. Participation in these independent accreditation programs is voluntary and does not constitute a legal requirement for Australian universities to operate.

Thirdly, the naming conventions for academic awards in Australian universities are different from those in British and American universities. In Australian universities the use of generic award titles such as Bachelor of Arts (BA) and Master of Science (MS) are generally limited to the arts and science faculties respectively. Other faculties have their own distinctive sets of award titles. Business faculties generally use titles like Bachelor of Business (BBus) and Master of Commerce (MCom) in their programs. Likewise, ICT faculties use titles like Master of Information Technology (MIT) for their programs. Programs that share the same basic structures use the same award titles while stand-alone programs have their own unique titles, for example Bachelor of Accounting and Master of Financial Planning.

As self-accrediting educational institutions, Australian universities are subject to less external influences on the design of education programs than their American counterparts. Therefore, perceptions of e-commerce as an academic discipline play a more important role in shaping e-commerce

education programs in Australia than they do in the US. In this study two particular questions related to perceptions of e-commerce as an academic discipline are examined.

Perceptions on the Orientation of E-Commerce

The first question to be examined in this study is whether e-commerce is considered as a business-oriented discipline or a technology-oriented discipline. As pointed out in the literature review, there is no agreement on the focus of e-commerce programs. Whilst a few studies (e.g. Durlabhji and Fusilier, 2002; Featherstone et al., 2004; Ngai, 2004) have explicitly expressed the view that e-commerce education is part of business education, most studies have remained silent on this issue.

When e-commerce is considered as a business-oriented discipline, e-commerce programs are administered by the business faculty. In these situations emphasis is placed on the managerial aspects of e-commerce and business subjects dominate the contents of the programs. On the other hand, when ICT or science faculties assume control of e-commerce programs the focus is more of a technology-oriented one. In these situations technical subjects such as programming and web site design are emphasised.

Perceptions on Distinctiveness of E-Commerce

Another question to be examined in this study is the universities' perceptions on whether e-commerce should be considered as a distinctive discipline. E-commerce programs can be implemented as disciplinary majors in existing programs or as stand-alone programs. Decisions such as this represent an individual institution's perception of the distinctiveness of e-commerce as an academic discipline.

If an institution considers e-commerce as a distinctive discipline, e-commerce programs are more likely to be structured as stand-alone programs, with unique program structures. In these situations the programs

are designed to include selected subjects from multiple disciplines. Alternatively, e-commerce programs are implemented as disciplinary majors in existing programs that share the same program structures and core subjects with programs in other disciplines.

Research Design

Data Collection

The data for this study was collected by performing searches on the official websites of all thirty-nine Australian universities. The URL address for each university was found using Google Australia http://www.google.com.au. At each of the websites, the author performed a two-stage search to identify e-commerce education programs. In the first stage the author performed a keyword search using the website's online program catalogue. The keywords used were: e-business; e-commerce; electronic business; and electronic commerce. In the second stage the author examined all education programs listed on the business and ICT faculties' websites to identify e-commerce programs that were implemented as disciplinary majors of existing programs. A pilot study of the keyword searches was conducted in April 2005 and the full study was conducted in August 2005.

Data Analysis

For the purpose of this study an e-commerce program was defined as any coursework education program that emphasised the study of e-business or e-commerce at the bachelor level or above. The types of awards included in this study were: bachelor; graduate certificate; graduate diploma; and master. Graduate certificate, graduate diploma and master were counted as postgraduate level awards, whilst bachelor was the only undergraduate level award included in this study. When a postgraduate program had one or more exit point, only the highest level award was counted. For example, when a master program allowed students to exit the program with a graduate diploma or a graduate certificate after having completed part of the program, it was counted as one master program in the study.

A program was classified as a business-oriented program if it was offered as: a) a disciplinary major in a business education program, or b) a stand-alone program that was administered by a business faculty. Likewise, a program was classified as a technology-oriented program if it was offered as a) a disciplinary major in an ICT/science education program, or b) a stand-alone program that was administered by an ICT/science faculty.

When an e-commerce stream was identified in an education program, the structure of the program would be examined. If the e-commerce stream constituted one of the independent sequences of study (major) in the program, it was counted as one program. If an education program had more than one e-commerce stream (e.g. e-commerce technology and e-commerce management) and each stream constituted an independent sequence of study, each stream was counted as a separate program. Programs with e-commerce streams that did not constitute an independent sequence of study (minor) were excluded from the study.

When an e-commerce education program had a unique program structure and distinctive award title, it was classified as a stand-alone program. To avoid distortion from inactive or discontinued programs, only active programs that accepted new enrolments were included in the study as closure of new enrolment was considered as a signal of termination or major changes on a program in near future.

Results

Descriptive Statistics

There were 84 e-commerce programs identified in this study. With regards to the levels of the programs, 55% of identified e-commerce programs were undergraduate programs (N=46). This was different from the findings of previous US-based studies (Etheridge et al., 2001; King et al., 2001). Among the postgraduate programs, 89% of them articulated to master level qualification (N=34).

Figure One: Number of E-Commerce Programs in Australian Universities
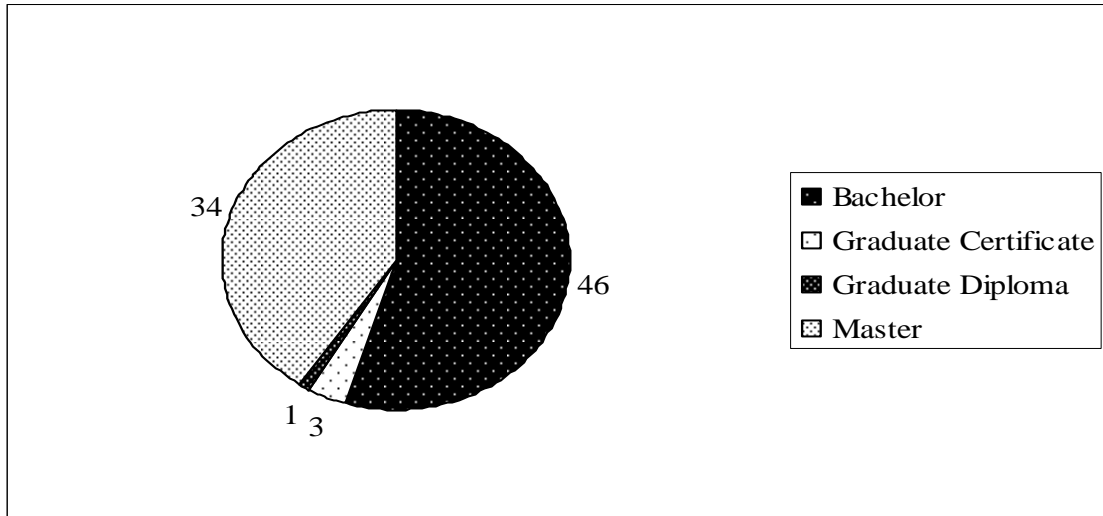
Figure Two: Number of Australian universities that offered e-commerce programs

Level of e-commerce program offerings		
	N	%
Undergraduate only	8	25%
Postgraduate only	2	6%
Both Undergraduate and Postgraduate	22	69%
Total	32	100%
Number of e-commerce program offerings		
	Undergraduate	Postgraduate
One	18	13
More than one	12	11
Total	30	24

Among the 39 Australian universities, 82% of them offered e-commerce programs (*N*=32). The number of programs offered by universities ranged from 1 to 5, with a mean of 2.63 and a standard deviation of 1.21. Unlike their US counterparts, most Australian universities offered e-commerce programs at both undergraduate and postgraduate levels. Some 69% of the universities that offered e-commerce programs had both undergraduate and postgraduate programs (*N*=22). Only 8 universities limited their e-commerce program offerings to the undergraduate level and another 2 universities offered e-commerce programs at the postgraduate level only.

At the undergraduate level 40% of the universities offered multiple e-commerce programs (*N*=12), whilst at the postgraduate level 46% of the universities had multiple offerings (*N*=11). Among the universities that offered multiple e-commerce programs, only 3 offered multiple e-commerce programs at both the undergraduate and postgraduate levels.

Figure Three: Orientation of E-Commerce Programs

	Undergraduate	Postgraduate
Business-oriented	30	28
Technology-oriented	16	10
	46	38

Perceptions on Orientation of E-Commerce

Among the 84 e-commerce programs identified in this study, 69% of them were classified as business-oriented programs (*N*=58). At the undergraduate level the percentage of business-oriented programs was 65% (*N*=30). At the postgraduate level 74% of the e-commerce programs were considered to be business-oriented programs (*N*=28).

Australian universities were fairly consistent in their orientations of e-commerce programs. Among the 12 universities that offered multiple undergraduate e-commerce programs, 75% of them had all their e-commerce program offerings with the same orientation (*N*=9). At postgraduate level 82% of the universities that offered multiple e-commerce programs had all of their e-commerce programs with the same orientation (*N*=9).

Perceptions on Distinctiveness of E-Commerce

Most e-commerce programs in Australian universities were implemented as disciplinary majors in existing programs. At the undergraduate level 85% of the e-commerce programs were implemented as disciplinary majors in existing programs (*N*=39). The percentage of postgraduate e-commerce programs implemented as disciplinary majors in existing programs was 68% (*N*=26).

E-commerce programs that were implemented as disciplinary majors in existing programs were more likely to be undergraduate level programs. Undergraduate e-commerce programs that were implemented as disciplinary majors accounted for 60% of programs implemented using this approach (*N*=39). In contrast, most stand-alone e-commerce programs were implemented at the postgraduate level and accounting for 63% of the stand-alone e-commerce programs (*N*=12).

Figure Four: Implementation of E-Commerce Programs

	Undergraduate	Postgraduate
Disciplinary major in existing program	39	26
Stand-alone program	7	12
	46	38

At the university level 91% of universities that offered e-commerce programs implemented one or more of their programs as disciplinary majors in existing programs (*N*=29). The percentage of universities that implemented e-commerce programs as stand-alone programs was 56% (*N*=18). At the same time 47% of universities implemented e-commerce programs as both disciplinary majors in existing programs and as stand-alone programs (*N*=15).

Among the 15 universities that implemented e-commerce programs as both disciplinary majors in existing programs and stand-alone programs, 60% of them implemented the two approaches concurrently at either undergraduate or postgraduate level (*N*=9). There was one university that adopted the two approaches concurrently at both the undergraduate and postgraduate levels.

In 80% of the universities that offered e-commerce programs as both disciplinary majors in existing programs and stand-alone programs concurrently at the same level (*N*=8), all e-commerce programs implemented at the same level had the same orientations. Therefore, the choice of implementing e-commerce programs as disciplinary majors in existing programs or as stand-alone programs appeared to have no relationship with orientations of the programs.

Other Findings

Among the 32 Australian universities that offered e-commerce programs, 66% of them used the term 'e-business' in their award titles (*N*=21). Coincidently, the same number of universities used the term 'e-commerce' in their award titles (*N*=21).

The uses of the two terms had no relationship with the orientations of programs. There were 10 universities used the terms 'e-business' and 'e-commerce' concurrently in their award titles and the orientations of programs that use the two different terms were consistent within all of these universities.

Discussion

In this study award title was found to be a reliable indicator of the orientation of the programs. All except one education program with business-oriented titles (e.g. Bachelor of Commerce, Master of Business Administration) were administered by the business faculties of the awarding universities.

Interestingly, the term 'information systems' seemed to be hijacked by Australian business faculties for their e-

commerce programs. There were 3 e-commerce programs that used this term in their titles and all of them were administered by business faculties.

Apart from these, all other programs with technology-oriented titles (e.g. Bachelor of Information Technology) were administered by ICT or science faculties.

Given the high percentages of e-commerce programs classified as business-oriented programs at both undergraduate and postgraduate levels, it is clear that the majority of Australian universities perceive e-commerce as a business-oriented discipline. This is consistent with the findings of Dunning et al. (2001) and the explicit view on the position of e-commerce education in previous literatures (Durlabhji and Fusilier, 2002; Featherstone et al., 2004; Ngai, 2004).

While most Australian universities were consistent in their orientations to e-commerce programs, there were notable exceptions. For example, a metropolitan university in New South Wales offered two postgraduate e-commerce programs, namely Master of Business Administration in E-Business (MBA) and Master of Information Technology in E-Business Technology (MInfTech). They were administered by business and information technology faculties respectively.

The two programs exhibited significant differences in terms of entry requirements, course structures and course contents. The MBA program was opened to graduates in any disciplines while the MInfTech was opened to ICT graduates only. Both programs consisted of 16 subjects but the numbers of core and elective subjects were different. The MBA program had 8 core subjects and students chose another 8 subjects from e-business electives to complete the e-business major. In contrast, the MInfTech had 5 core subjects only. Students chose 4 subjects from e-business technology electives to complete the e-business technology specialisation and took another 7 subjects from any other ICT areas.

Figure Five: List of Core Subjects and Electives in Two Postgraduate E-Commerce Programs

	Master of Business Administration	Master of Information Technology
Core Subjects	Strategic Management Organisation Analysis and Design Human Resource Management Managing People Accounting for Managerial Decisions Marketing Management Economics for Management Financial Management	Advanced Database Advanced Data Communications Object-oriented Modelling Object-oriented Process Project Management
E-Business Electives	Change Management Strategic Competitive Advantage in the Digital Age Innovation and Entrepreneurship The Virtual Value Chain Accounting and ERP Scenario Planning - New Technology Agents e-Business Marketing Company Valuation and its Implication for Electronic Business Conducting Business Electronically Enabling e-Business Technology Telecommunications and Media Law	Introduction to e-Business Technology Enterprise Systems Architectures, Standards and Technologies Internet Programming Distributed Software Programming Advanced Internet Programming

Figure Five presented the core subjects and e-business electives for the two programs. As predicted in the research question section, the subjects in the two programs demonstrated strong orientations towards the faculties that administered the programs. The MBA program did not include any technology-oriented subject like programming or webpage design. Instead business-oriented subjects like e-business marketing and telecommunication and media law were taught in the program. In comparison, three of the five e-business technology electives in the MInfTech program were programming subjects. The only business-oriented subject prescribed in the program was project management.

The comparison of the two programs clearly demonstrated how different perceptions on orientation of e-commerce influenced the developments of e-commerce education programs. Some of the differences between the two programs, like entry requirements and course structures were inherited from existing programs. However, the faculties were free to choose the elective subjects for the e-business major. As there was no powerful external stakeholder group like accreditation agency that could exert significant influence over the development of e-commerce education programs, the faculties' choices of elective subjects were determined solely by internal factors. Further, different perceptions on orientation of e-commerce in the two faculties played a key role in the choice.

The findings did not provide conclusive evidence on Australian universities' perceptions on the distinctiveness of e-commerce as an academic discipline. While the majority of e-commerce programs were implemented as disciplinary majors of existing programs, more than half of the universities that offered e-commerce programs had stand-alone programs as part of their e-commerce program offerings.

Moreover, two-thirds of the universities that offered e-commerce programs as disciplinary majors in existing programs and stand-alone programs concurrently, had two types of programs at the same level.

The findings could potentially explained by the experience of a regional university in New South Wales. This university started its e-commerce program at business faculty in 1999 and the first e-commerce program offered at the university was an electronic commerce major in its Bachelor of Business (BBus) program. The development of the program was spearheaded by an accounting lecturer who is an e-commerce enthusiast. He became the first e-commerce program coordinator at the university and a suite of postgraduate e-commerce programs including a stand-alone Master of Electronic Commerce (MElectCom) program and an electronic commerce major in the MBA program were subsequently developed under his leadership.

The first e-commerce program coordinator left the university in 2003 and the position was filled by another accounting lecturer who had expertise in both accounting and information systems. After his departure, the university planned to close down the e-commerce programs on the ground of declining enrolments. The second e-commerce program coordinator performed a profitability analysis and found that the e-commerce subjects were profitable despite the declining enrolments to e-commerce programs. It was argued that many students took e-commerce subjects as electives without enrolling to e-commerce programs and the existence of e-commerce programs drew students' attention to the availability of e-commerce subjects. The findings were presented to university management and the university subsequently agreed to retain the e-commerce programs.

The third e-commerce program coordinator took over the position after the departure of the second e-commerce program coordinator in 2005. He was a finance lecturer who did not have expertise in ICT discipline. Under his term the university decided to close down the undergraduate e-commerce program and the MElectCom

program. Two postgraduate programs, namely Graduate Certificate in Electronic Commerce (GradCertElectCom) and an electronic commerce major in the Master of Business (MBus) were retained.

From the experience of this regional university, one could argue that the university had little interests in distinctiveness of e-commerce as an academic discipline. The university started e-commerce programs as both stand-alone programs and disciplinary majors of existing programs when it viewed e-commerce favourably and winded down both types of programs simultaneously when its view towards e-commerce changed. It seemed that the university focused on the question of whether it should run the programs rather than how to run the programs.

It was also obvious that academics' attitudes towards e-commerce played a critical role in the fates of the e-commerce programs. The first e-commerce program coordinator viewed e-commerce positively and took a leading role in the development of the e-commerce programs. Consequently he and his department gained control of the e-commerce programs. The second e-commerce program coordinator, with his expertise in both business and ICT disciplines, understood the importance of e-commerce programs and actively defended the programs. In comparison, the third e-commerce program coordinator showed little enthusiasm to e-commerce and did nothing to stop the university from winding down the programs. The attitudes of the e-commerce program coordinators determined their actions and their perceptions of e-commerce as an academic discipline determined their attitudes.

As discussed in Tse (2005), the uses of the terms 'e-business' and 'e-commerce' were often confusing. Such confusion was also found in this study. As pointed out in the results section, some Australian universities used both 'e-business' and 'e-commerce' in their award titles. However, none of them had attempted to justify the use of the two terms and there was no evidence that the two terms were used in different contexts.

Confusion about the use of the two terms was clearly demonstrated in the website of one university. That university offered a number of e-commerce programs including a stand-alone postgraduate program. In the program information page of the faculty that administered the program, the term 'e-commerce' was used in the title of the stand-alone program. However, in the online student handbook entry for the same program, the term 'e-business' was used instead.

The problem was unlikely to be a simple typing mistake as the titles in both pages included abbreviations of the program based on the terms 'e-business' and 'e-commerce' respectively. Moreover, the website of the university was revamped between the pilot study and the full study and the same different titles were used in both the old and new websites. This finding provides further evidence on the vagueness of e-commerce as a discipline and indicates a need to differentiate the terms e-business and e-commerce and clarify their usage. This was consistent with Tse (2005).

The author acknowledged two weaknesses in this study. Firstly, the study did not include education programs that completely integrated e-commerce materials into existing curriculum. As explained in Mehta et al. (2005), e-commerce contents could be merged into existing academic disciplines such as information systems without identifying themselves as e-commerce programs.

Secondly, the study did not consider other internal factors such as teaching resources that could potentially influence the design and implementation of e-commerce programs. As pointed out in Chen et al. (2004), resource constraints can be a major factor in determining the design and operation of e-commerce education programs.

Notwithstanding its limitations, the study provides valuable insights on how institutional perceptions of an evolving discipline, as an internal force, influence the developments of education programs. It also provides empirical evidence on how e-commerce education programs were developed outside the US.

Conclusion

Without influences from an identifiable professional group or existing common body of knowledge, universities' perceptions on e-commerce as an academic discipline were a major internal force that had shaped e-commerce education programs. This study examined Australian universities' perceptions on the orientations and distinctiveness of e-commerce by examining their program offerings. The findings of the study showed that e-commerce was perceived as a business-oriented discipline, but there was no consensus on the distinctiveness of e-commerce as an academic discipline.

A number of future research opportunities are identified. First, changes in active e-commerce programs over multiple periods can be examined to develop an understanding of the changing perceptions of e-commerce. Second, curriculum of education programs in related disciplines such as business administration and information systems can be examined to investigate the integration of e-commerce education into these disciplines. Third, perceptions of e-commerce can be examined in conjunction with other internal and external factors such as teaching resources and professional accreditations that influence the development of e-commerce education programs.

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Appendix One: List of E-Commerce Programs in Australian Universities

University	Program	Major	Faculty/Division
Australian Catholic University	Graduate Certificate in Electronic Commerce		Sub-Faculty of Business and Informatics
Australian National University	Bachelor of Electronic Commerce		Faculty of Economics & Commerce
University of Ballarat	Bachelor of Business	eBusiness	School of Business
	Bachelor of Commerce	eBusiness	School of Business
	Master of Electronic Business		School of Business
Bond University	Bachelor of Business	Electronic Commerce	Faculty of Business
Central Queensland University	Bachelor of Business	E-Commerce	Faculty of Business & Law
	Bachelor of Electronic Commerce		Faculty of Informatics & Communication
	Master of Information Technology	E-Commerce Technology	Faculty of Informatics & Communication
Charles Sturt University	Bachelor of Business	Electronic Commerce	Faculty of Commerce
	Master of Business	Electronic Commerce	Faculty of Commerce
	Master of Electronic Commerce		Faculty of Commerce
Curtin University of Technology	Bachelor of Commerce	Electronic Commerce	Curtin Business School
	Master of Business Administration	e-Commerce	Curtin Business School
	Master of Commerce	Electronic Business	Curtin Business School
	Master of Electronic Business		Curtin Business School
Deakin University	Bachelor of Commerce	Electronic Commerce Implementation	Faculty of Business and Law
	Bachelor of Commerce	Electronic Commerce Management	Faculty of Business and Law
	Master of Business Administration	Electronic Business	Faculty of Business and Law
	Master of Commerce	Electronic Business	Faculty of Business and Law
	Master of Information Systems	eBusiness Supply Chain Management	Faculty of Business and Law
Edith Cowan University	Bachelor of Business	Electronic Commerce	Faculty of Business and Law
	Graduate Diploma of Business	Electronic Commerce	Faculty of Business and Law
	Master of Management Information Systems	Electronic Business	Faculty of Business and Law
	Master of Management Information Systems	Electronic Commerce	Faculty of Business and Law
Griffith University	Bachelor of Business	eCommerce	Griffith Business School
	Master of eCommerce		Faculty of Engineering and Information Technology
James Cook University	Bachelor of Information Technology	E-business Entrepreneurship	Faculty of Science, Engineering and Information Technology
	Master of Business Administration	E-Business	Faculty of Law, Business and the Creative Arts
	Master of Information Technology	E-Business	Faculty of Science, Engineering and Information Technology
La Trobe University	Bachelor of Business	Electronic Commerce	Faculty of Law and Management
	Bachelor of Electronic Commerce		Faculty of Law and Management
Macquarie University	Bachelor of e-Business		Division of Information and Communication Sciences
University of Melbourne	Bachelor of Commerce	e-Commerce	Faculty of Economics and Commerce
	Master of e-Commerce		Faculty of Economics and Commerce
Monash University	Bachelor of Business and Commerce	e-Business	Faculty of Business and Economics
	Bachelor of Internet Systems and Commerce		Faculty of Information technology

Murdoch University	Bachelor of Commerce	Electronic Business	Division of Arts
	Master of Electronic Business		Division of Arts
University of Newcastle	Bachelor of Business	eBusiness	Faculty of Business and Law
	Bachelor of Information Technology	Electronic Business	Faculty of Science and Information Technology
University of New England	Bachelor of Commerce	E-Business	Faculties of Economics, Business & Law
	Graduate Certificate in E-Business		Faculties of Economics, Business & Law / Faculty of the Sciences
	Master of Commerce	E-Business	Faculties of Economics, Business & Law
University of New South Wales	Master of Commerce	E-Business	Faculty of Commerce and Economics
University of Queensland	Bachelor of Business	Online Business	Faculty of Business, Economics and Law
	Bachelor of Business Management	eBusiness	Faculty of Business, Economics and Law
	Bachelor of Electronic Commerce		Faculty of Business, Economics and Law
	Master of Commerce	Electronic Commerce	Faculty of Business, Economics and Law
Queensland University of Technology	Bachelor of Information Technology	Electronic Commerce	Faculty of Information Technology
	Graduate Certificate in Information Technology	Electronic Commerce	Faculty of Information Technology
Southern Cross University	Bachelor of Information Technology	Electronic Commerce	Division of Arts
	Bachelor of Multimedia	Electronic Commerce	Division of Arts
University of South Australia	Bachelor of Business	e-Business	Division of Information Technology, Engineering and the Environment
	Bachelor of Information Technology	Electronic Commerce	Division of Information Technology, Engineering and the Environment
	Master of e-Commerce		Division of Information Technology, Engineering and the Environment
University of Southern Queensland	Bachelor of Business	e-Commerce	Faculty of Business
	Bachelor of Commerce	e-Commerce	Faculty of Business
	Bachelor of e-Commerce		Faculty of Business
	Master of Business Administration	e-Business	Faculty of Business
	Master of e-Business		Faculty of Business
Swinburne University of Technology	Bachelor of Business	eCommerce	Higher Education Division, Lilydale
	Master of Business	eBusiness and Communication	Higher Education Division, Lilydale
University of Sydney	Bachelor of Engineering	Electronic Commerce	Faculty of Engineering
	Master of Information Technology	E-Business Technologies	Faculty of Science
University of Tasmania	Bachelor of Commerce	Electronic Business	Faculty of Commerce
University of Technology Sydney	Bachelor of Business	Electronic Business	Faculty of Business
	Master of Business Administration	e-Business	Faculty of Business
	Master of Information Technology	e-Business Technology	Faculty of Information Technology
Victoria University	Bachelor of Business	Electronic Commerce	Faculty of Business and Law
	Master of Business	Electronic Commerce and Marketing	Faculty of Business and Law
	Master of Business Administration	Electronic Commerce	Faculty of Business and Law

University of Western Australia	Bachelor of Commerce	Electronic Business	UWA Business School
	Master of Commerce	Electronic Business	UWA Business School
	Master of Electronic Business		UWA Business School
University of Western Sydney	Bachelor of Business	E-Business	College of Law and Business
	Bachelor of Computing	E-Business	College of Science, Technology and Environment
	Bachelor of Information Technology	E-Business	College of Science, Technology and Environment
	Master of Information Technology	E-Business	College of Science, Technology and Environment
University of Wollongong	Bachelor of Information and Communication Technology	eBusiness Management	Faculty of Informatics
	Bachelor of Information and Communication Technology	eBusiness Technologies	Faculty of Informatics
	Bachelor of Internet Science and Technology	Internet Commerce	Faculty of Informatics
	Master of Electronic Commerce		Faculty of Informatics
	Master of Industry-based Information Technology	Electronic Commerce	Faculty of Informatics