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Chapter

Internationalization of China's E-Commerce Higher Education: A Review between 2001 and 2019

Wenying Huo, Mingxuan Wu and Jeffrey Soar

Abstract

The purpose of this chapter is to review the development of China's higher education in electronic commerce (e-commerce) and explore the requirements of the internationalization of China's e-commerce higher education. The Benefit-Driving Model (BDM) was adopted to explain the reasons for the internationalization of China's e-commerce higher education. The literature review spans 20 years from 2001 when the first 13 e-commerce programs were offered from China's 597 universities. By 2019, 328 e-commerce programs were offered by 831 universities. There is a sustainable growth from 2001 (2.17%, 13 of 597) to 2019 (39.47%, 328 of 831). Currently, six universities offer two e-commerce programs with different majors. Eight universities established specialized e-commerce schools. There are also six jointly founded or cooperative e-commerce programs run in China with overseas universities. This research may be valuable for any international organization interested in collaboration with China's e-commerce higher education. A limitation is that this research focuses only on bachelors of e-commerce programs. Further research will explore factors for success in jointly founded e-commerce programs with China's e-commerce educators.

Keywords: e-commerce, e-commerce education, e-commerce program, higher education, internationalization

1. Introduction

In the past 40 years, China's higher education has undergone the transition from elite focused education to popular and mass education. In 2019, the number of students enrolled in China's higher institutions was 8.2 million, and the enrollment rate was 79.53% [1]. Students enrolled in the bachelor program of China's universities were 4.22 million, while the enrollment rate was 43.3% [2]. It is estimated that the enrollment rate of higher education will reach over 60% by 2035 [3]. Comparing the number of students enrolled (0.27 million) and the enrollment rate (5%) in 1977 [4], this is a remarkable growth in the development of China's higher education.

Since the Internet started to become popular with the public in 1994, the electronic commerce (e-commerce) market has evolved from a simple counterpart of brick and mortar retail to a shopping ecosystem; when looking at the e-commerce landscape, a relatively mature market with established players and a clear set of rules can be seen [5]. Among them, China's e-commerce market is expected to grow

by 20% annually over the 5 years since 2018 which is twice as fast as the United States or the United Kingdom [6]. Thus, the e-commerce industry requires quality talent in e-commerce.

However, a number of issues are challenging China's e-commerce higher education. Business managers feel that it is still difficult to find satisfying e-commerce talents. In the meantime, e-commerce graduates found that it was difficult to get appropriate job positions. Research shows that managers' Knowledge has become one of the critical success factors (CSFs) for small and medium enterprises (SMEs) for adopting e-commerce successfully [7]. Staff competency is also vital to successful e-commerce adoption [7, 8]. The probability of the acceptance of e-commerce is linked to higher individuals' awareness and knowledge of e-commerce [9]. Regular training may help staff in better understanding new and updated systems adopted for business processes. Organizations with strong technical expertise and e-commerce knowledge that provide e-commerce training are most likely to realize e-commerce implementation success [10].

The purpose of this chapter is to review the development of China's e-commerce higher education and explore the requirements of the internationalization of China's e-commerce higher education. The Benefit-Driving Model (BDM) was adopted to explain the reasons for the internationalization of China's e-commerce higher education. The literature review spans a 20-year review since 2001 when the first 13 e-commerce programs were offered. The following section will explain the benefits driving the internationalization of China's higher education. The third section will review China's e-commerce higher education. The fourth section will discuss the internationalization of China's e-commerce higher education. The fifth section will provide four suggestions for the further development of China's e-commerce programs. The last section will focus on conclusions, research limitations, and further research.

2. The benefit of driving the internationalization of China's higher education

Wu and Yu [11] developed the Benefit-Driving Model (BDM) for illustrating the factors influencing the internationalization of China's higher education. The BDM will explain the reasons for the internationalization of China's e-commerce higher education. According to BDM, there are three driving factors pushing China to open her educational market linked to three prominent benefits for China (see **Figure 1**).

2.1 The first driver for the growth is students' demands

China's students' demands drive quality improvement in China's higher education. Students' desires are to obtain advanced educational training so as to improve competitive capacity and to increase career opportunities. This pressure from students pushes China's universities to improve their educational quality and to catch up with the recent advances in higher education [11].

By 2019, 21 joint-founded universities had been successfully established in China (see Appendix A). There are about 450,000 students in international cooperational programs in China, which are 1.4% of the number of students enrolled in China's universities [12].

2.2 The second driver is marketing globalization

The second driver is the marketing globalization, which benefits the two-way exchanges. International cooperative programs do not only provide opportunities

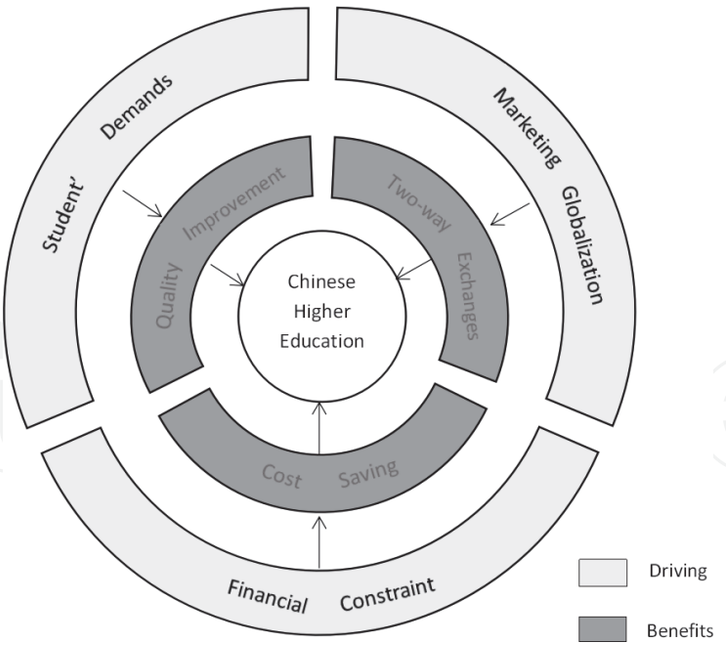


Figure 1.
The Benefit-Driving Model ([11], p. 211).

for students to accept overseas higher education in China, but opening an educational market can also attract overseas students to study in China. Many international cooperative programs and several cooperative universities are operating in China. This is an explicit trend that China has increasingly become one of the international education providers.

China has undergone a transition from a one-way education outflow to a two-way student exchange market. The number of Chinese students studying abroad in 2018 was over 662,100 [13, 14]. At the same time, the number of overseas students from 196 countries studying in China had increased to more than 492,200 including 258,122 studying at China's universities [14]. In 1950, there were only 33 foreign students from Eastern European countries studying in China [15].

2.3 The third driver is financial constraint

The driver of financial constraint provides an opportunity for international higher education providers to joint-found or cooperate international programs in China. Cooperative programs may reduce the costs of moving overseas. Expensive tuition fees prevent many Chinese students from studying overseas. Cooperative programs provide the opportunity for those students who wish to access the advanced educational resources offered by overseas higher educational institutions. The students just pay about $5000 per year for enrolled in such joint-founded or cooperated programs in China [16]. It saves approximately 70% of tuition fees compared to studying overseas.

3. China's e-commerce higher education

The world's first undergraduate e-commerce program was offered by Acadia University, Canada, in September 2000 [17], where the University of California, San Diego offered a master's degree in e-commerce in 1998 [18]. China's universities started to recruit students in bachelor of e-commerce programs in September 2001 [19]. Thirteen of China's universities offered a bachelor of e-commerce program in 2001. As one of the international pioneers, China's education sector

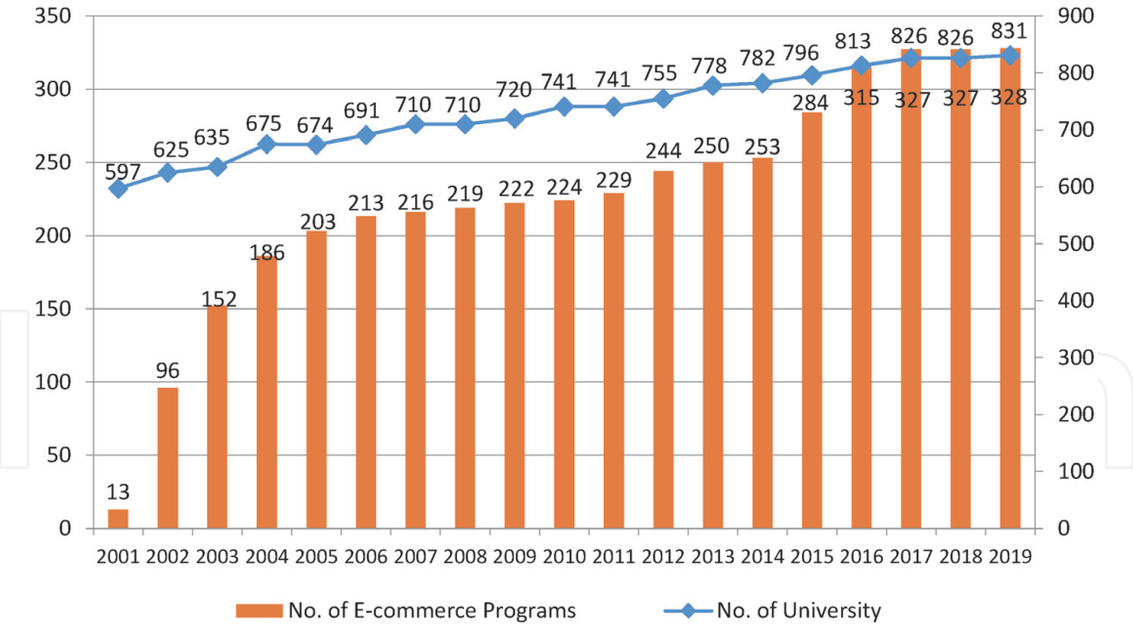


Figure 2.
The development of China's e-commerce higher education between 2001 and 2019 (Source: Data in 2001–2015 from Wu et al. [20]; Data in 2016–2019 from MOE [3, 21, 22]).

Schools	No.	%
Economics Management	120	36.59
Business	62	18.90
Management	33	10.06
MIS	31	9.45
Computer Science or IT	23	7.01
Business Administration	15	4.57
Management Science	11	3.35
Economics and Trading	8	2.44
E-commerce	8	2.44
Transportation and Logistics	5	1.52
International	4	1.22
Business Planning	1	0.30
Intellectual Property	1	0.30
Tropical Agriculture and Forestry	1	0.30
Science, Technology, and Art	1	0.30
Innovation and Entrepreneurship	1	0.30
Arts, History, and Law	1	0.30
Humanities	1	0.30
Big Data Engineering	1	0.30
Sum	328	100

Table 1.
E-commerce programs by 16 schools.

has been involved in e-commerce programs since the beginning of the twenty-first century [20].

3.1 Run with different majors

By September 2019, 831 universities had been established in China and 328 universities (39.47%, 328 of 831) offered e-commerce programs. This is a sustainable growth since 2001 (2.17%, 13 of 597) (see **Figure 2**). They are currently provided by 19 different schools including Economics Management; Business; Management; Management Science; Management Information System; Computer Science or IT; Business Administration; Economics and Trading; E-commerce; Transportation and Logistics; Business Planning; Intellectual Property; Tropical

University	School	Major	Reference
Zhongnan University of Economics and Law	Business Administration	Marketing Management	ZUEL [23]
	IT and Security	Computer Science and IT	ZUEL [24]
Capital University of Economics and Business	Business Administration	E-commerce	CUEB [25]
	IS	MIS	CUEB [26]
Shandong University	Business	E-commerce	SDU [27]
	Management	E-commerce	SDU [28]
Shenyang University of Technology	Management	Logistics Management and E-commerce	SUT [29]
	Business	E-commerce	SUT [30]
Zhejiang Wanli University	Logistics and E-commerce	E-commerce	ZWU [31]
	Law	E-commerce and Law	ZWU [32]
Southwest University	Computer and Information Science	E-commerce	SWU [33]
	Applied Technology	E-commerce	SWU [34]

Table 2.
Offering two programs within the university.

No.	University	School	Established	Reference
1	Henan University of Economics and Law	E-commerce and Logistics Management	2009	HUEL [35]
2	Henan College of Animal Husbandry and Economics	Logistics and E-commerce	2015	HNUAHE [36]
3	Luoyang Normal University	E-commerce	2015	LYNU [37]
4	Jiujiang University	E-commerce	2015	JJU [38]
5	Zhejiang Wanli University	Logistics and E-commerce	2016	ZWU [39]
6	Nanyang Institute of Technology	E-commerce	2016	NYIST [40]
7	Zhejiang Technology and Business University	Management Engineering and E-commerce	2017	ZJSU [41]
8	Zhejiang International Studies University	Cross-border E-commerce	2018	ZISU [42]

Table 3.
E-commerce schools established in China.

Agriculture and Forestry; International; Science, Technology and Art; Innovation and Entrepreneurship; Arts, History, and Law; Humanities; and Big Data Engineering (see **Table 1**).

Most of China's e-commerce programs focus on the field of business and management (73.47%, 241 of 328) including Economics Management (36.59%, 120 of 328), Business (18.90%, 62 of 328), Management (10.06%, 33 of 328), Business Administration (4.57%, 15 of 328), Management Science (3.35%, 11 of 328), and only 9.45% (31 of 313) and 7.01% (23 of 313) focus on MIS and Computer Science (IT) in 2019, respectively (see **Table 1**).

3.2 Two e-commerce programs offered within the same university

Six universities offer two e-commerce programs with different majors by different schools within the same university (see **Table 2**). These specialization majors in e-commerce include Marketing Management, Computer Science, MIS, Logistics Management, and Law, which are offered by the schools of Business Administration, Business and Management, Management, Logistics and E-commerce, IT and Security, IS, Computer and Information Science, Applied Technology, and Law.

3.3 Eight e-commerce schools established

As the first mover, Henan University of Economics and Law established a school of E-commerce and Logistics Management in 2009. Three universities followed and established e-commerce schools in 2015. Henan College of Animal Husbandry and Economics established a school of Logistics and E-commerce; Luoyang Normal University and Jiujiang University established a school of E-commerce; in 2016, Zhejiang Wanli University established a school of Logistics and E-commerce; and Nanyang Institute of Technology established a school of E-commerce. In 2018, Zhejiang University of International Studies established the school of Cross-border E-commerce. Thus, eight China's universities established e-commerce schools as shown in **Table 3**.

4. Internationalization of China's e-commerce higher education

The University of Nottingham, UK, in partnership with Zhejiang Wanli University, China, launched the first overseas joint-founded university – the University of Nottingham, Ningbo China in Autumn 2004 in China [43]. Many countries have since then exported their advanced higher education programs to China. It is predicted that the coverage of cooperative educational programs is likely to continue to increase substantially.

The first joint-founded e-commerce programs run in 2004. Clearly, China's e-commerce higher education took steps to keep up with the internationalization of education, while China is embracing the world's economy and markets since entering the twenty-first century. In the internationalization's review of China's e-commerce programs, six joint-founded or cooperative e-commerce programs are run in China with overseas universities (see **Table 4**).

Beijing University of Posts and Telecommunications and the Queen Mary University of London were firstly joint-founded the bachelor of e-commerce and law in 2004. Three joint-founded programs were then followed and run by Zhengzhou Institute of Light Industry jointed with Edinburgh Napier University, UK; Jilin University of Finance and Economics jointed with Charles Sturt University, Australia; and Beijing Normal University jointed with Hong Kong Baptist University in

China's university	Cooperative university	Country	Program	Year	Reference
Beijing University of Posts and Telecommunications	Queen Mary University of London	United Kingdom	E-commerce and Law	2004	BUPT [44]
Zhengzhou Institute of Light Industry	Edinburgh Napier University	United Kingdom	E-commerce	2005	ZZULI [45]
Jilin University of Finance and Economics	Charles Sturt University	Australia	E-commerce	2005	JLUFE [46], MOE [47]
Beijing Normal University	Hong Kong Baptist University	Hong Kong	E-business Management and Information Systems	2005	UIC [48]
Nankai University	Neoma Business School	France	E-commerce	2017	Nankai [49]
Guizhou University of Finance and Economics	Marshall University	United States	E-commerce	2017	Xuezhangbb [50]

Table 4.
Joint-founded e-commerce programs.

2005. Two programs run in 2017 including Nankai University jointed with Neoma Business School in France and Guizhou University of Finance and Economics jointed with Marshall University in the United States.

These programs were jointly founded in 2004 with five different countries and regions including the United Kingdom (2), Australia (1), France (1), the United States (1), and Hong Kong, China (1). China's e-commerce higher education sector has been involved in the internationalization of higher education.

5. Suggestions for the development of China's e-commerce programs

For the better development of China's e-commerce programs further, the following four suggestions will be provided and discussed.

5.1 Learning curriculum from international experience

Although there are 328 e-commerce programs run in 2019, there are only six joint-founded or cooperative e-commerce programs run with overseas universities. **Table 5** shows the international pioneers in e-commerce education [20]. China's e-commerce educators could learn the experience of curriculum development from these international pioneers.

5.2 Integrating e-commerce courses into postgraduate programs

CEO and senior staff IT/e-commerce/e-commerce marketing knowledge play critical roles for SMEs successfully in adopting e-commerce [51]. If the decision-maker is knowledgeable about the issues and reliability problems on the Internet, he/she is likely to make a more informed decision about e-commerce adoption [52]. The higher the managers' knowledge of e-commerce, the higher the probability of the acceptance of e-commerce [52]. Senior business management knowledge is highly relevant to e-commerce success.

Year	Country	E-commerce program provider	Program
July 1998	United States	University of California, San Diego	Master degree program in e-commerce
July 1999	United Kingdom	University of Portsmouth Business School	MA marketing with e-commerce
January 2000	United States	Boston University's Metropolitan College	Master of science in e-commerce
September 2000	Canada	Acadia University	Bachelor of computer science with a specialization in e-commerce
March 2001	Australia	Central Queensland University	Master of e-commerce
October 2001	United Kingdom	Liverpool University	Undergraduate degree in e-business
2001	New Zealand	The University of Waikato	Undergraduate degree in e-commerce

Table 5.
The international pioneers in e-commerce education.

5.3 Developing teaching materials based on industry requirements

Although many real business cases have been discussed, teaching materials still lag the business and industry requirements. Although some China's universities have established the number of joint programs with industries, China's e-commerce education needs improvement in business practices, industry requirements, and industry involvement [20]. Innovative technologies have not yet been introduced into e-commerce education, such as virtual reality (VR), augmented reality (AR), and mixed reality (MR). Apple has developed ARKit as its own Augmented Reality platform for iOS, and Google has developed ARCore as its own Augmented Reality platform for Android [53]. The emerging innovative technology of VR, AR, and MR may be widely used for developing immersive e-commerce systems and enhancing customer online experience. It should be encouraged to adopt the real industry project into teaching materials and study assessments.

5.4 Offering specialization major in cross-border e-commerce

Despite a slowing Chinese economy, a shift in purchasing power from the U.S. and Europe to China and Southeast Asia has begun [5]. China's cross-border retail e-commerce sales are projected by eMarketer to reach $245 billion by 2020 [54]. China has announced another 24 cities as pilot zones for cross-border e-commerce to boost exports in December 2019 [55]. Cross-border e-commerce has thus expected as one of the dominating industry sectors and contributors to impetus the development of China's economy. There is only Zhejiang Foreign Studies University that offers a specialization major in Cross-border e-commerce.

6. Conclusions, limitations, and further research

Since 2004, Chinese higher educational institutions have taken steps to catch up with the internationalization of education in terms of collaboration with overseas

universities. The purpose of this chapter is to review the development of e-commerce higher education in China and address the requirements of the internationalization of China's e-commerce higher education.

The Benefit-Driving Model (BDM) was adopted to address the reasons for the marketability of internationalization of China's e-commerce higher education. A 20-year review of China's e-commerce program found that there was sustainable growth from 2001 (2.17%, 13 of 597) to 2019 (39.47%, 328 of 831). Three hundred and twenty-eight e-commerce programs are run by 19 different schools. Six universities offer two e-commerce programs with different majors. Eight universities established specialized e-commerce schools. There are also six joint-founded or cooperative e-commerce programs run in China with overseas universities. There are opportunities to improve including adopting the learning curriculum from international experience, integrating the e-commerce courses into postgraduate programs, developing the teaching materials based on industry requirements, and offering the specialization major in cross-border e-commerce.

Although this research focused only on China's e-commerce higher education, the increasing demand will also affect international higher education providers. This research should be also of interest for any international education organizations attracted to China's e-commerce higher education.

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Appendix

21 Sino-foreign cooperative universities

Cooperative university	China's university partner	Foreign university partner	Country/ religion	Established
University of Nottingham Ningbo China	Zhejiang Wanli University	University of Nottingham	British	2004
United International College	Beijing Normal University	Hong Kong Baptist University	Hong Kong, China	2005
Xi'an Jiaotong-Liverpool University	Xi'an Jiaotong University	University of Liverpool	British	2006
NYU Shanghai	East China Normal University	New York University	United States	2012
Duke Kunshan University	Wuhan University	Duke University	United States	2013
Wenzhou Kean University	Wenzhou University	Ken University	United States	2014
The Chinese University of Hong Kong, Shenzhen	Shenzhen University	Chinese University of Hong Kong	Hong Kong, China	2014
Shenzhen MSU-BIT University	Beijing Institute of Technology	Moscow State University	Russia	2016

Cooperative university	China's university partner	Foreign university partner	Country/ religion	Established
Guangdong Technion – Israel Institute of Technology	Shantou University	Israel Institute of Technology	Israel	2016
SWUFE-UD Institute of Data Science at Southwestern University of Finance and Economics	Southwestern University of Finance and Economics	University of Delaware	United States	2019
FESTU Transport Institute of Dalian Jiaotong University	Dalian Jiaotong University	Far Eastern State Transport University,	Russia	2019
Kyiv College at Qilu University of Technology	Qilu University of Technology	Kyiv National University of Technologies and Design	Ukraine	2019
MSU Institute, Nanjing Agricultural University	Nanjing Agricultural University	Michigan State University	United States	2019
FedUni Information Engineering Institute, Hebei University of Science and Technology	Hebei University of Science and Technology	Federation University Australia	Australia	2019
Aulin College, Northeast Forestry University	Northeast Forestry University	University of Auckland	New Zealand	2019
Portland Institute, Nanjing University of Posts and Telecommunications	Nanjing University of Posts and Telecommunications	Portland State University	United States	2019
Ulster College at Shaanxi University of Science & Technology	Shaanxi University of Science and Technology	University of Ulster	United Kingdom	2019
Detroit Green Technology Institute, Hubei University of Technology	Hubei University of Technology	University of Detroit Mercy	United States	2019
SDU-ANU Joint Science College, Shandong University	Shandong University	Australian National University	Australia	2019
Don College of Shandong Jiaotong University	Shandong Jiaotong University	Don State Technical University	Russia	2019
Chengdu University of Technology Oxford Brookes College	Chengdu University of Technology	Oxford Brookes University	United Kingdom	2019

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