

# Technical and Non-technical Aspects of World E-business Education

Marcelline Fusilier<sup>1+</sup> and Subhash Durlabhji<sup>2</sup>

<sup>1</sup>American University of Kuwait

<sup>2</sup>Blue Ridge, Georgia, USA

**Abstract.** Technical and non-technical course content was investigated for 153 e-business degree program curricula based in different parts of the world. Data were collected from university web pages for bachelor's and master's degree programs. Results suggested programs based in North America tended to include more business coursework while those based in Europe were moving toward more e-business and technical course coverage. Findings further suggest that e-business education could be adapting to local needs and conditions.

**Keywords:** E-business Education, Global, Technical Content.

## 1. Introduction

The Internet presents tremendous potential for wealth creation but these opportunities place new demands on businesses. Based on a survey of 363 executives across a variety of industries in eight countries, Oxford Economics [1] reported that 71 percent identified difficulty in finding skills as a moderate or serious risk to the digital transformation of their businesses. The survey results further indicated 73 percent of the respondents identified lack of understanding of the benefits as a risk to successful digital transformation. An Organization for Economic Co-operation and Development [2] report suggested that the Internet is transforming existing value chains and business models. The report identified development of ICT skills and employment as the number one ICT policy priority for economic recovery in OECD countries. Technology diffusion to businesses was identified as a longer term priority. Education is needed to help organizations to take advantage of these opportunities by enhancing skills for identifying opportunities and applying technology effectively as new markets and technologies develop.

### 1.1. E-business Education

Universities around the world have responded to the demand for education in the area of e-business. Research has documented the growth and nature of e-business education at the bachelor's and master's levels in the U.S. and in other parts of the world [3, 4, 5]. E-business curricula appear to include more nontechnical required business courses, on average, than technically oriented required courses [3]. Fusilier and Durlabhji [6] found that curricula based in North American tended to require more business courses than programs based in other parts of the world. The larger proportion of business courses may be a reaction to the dot-com crash of 2001 when online business failures were typically attributed to non-technical factors such as inadequate business models [7]. This non-technical emphasis might result in neglect of e-business content in curricula [6, 8]. Topics such as IT-business process integration and e-business strategy are not traditional business topics but have repeatedly emerged as drivers of e-business success [9, 10]. An under-emphasis on e-business coursework could account for findings of inadequate e-business practice, for example, security vulnerabilities were detected in up to one-third of Fortune 500 corporations' retail e-commerce [11].

### 1.2. Purpose of the Study

The present study addressed the issue of technical versus non-technical courses in e-business degree programs. New data from master's and bachelor's degree programs from around the world were used to (1) investigate the average numbers of business, e-business non-technical, e-business technical, and technical courses in curricula, and (2) compare the course types in programs according to the continents on which the programs are based.

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<sup>+</sup> Corresponding author. Tel.: (+965) 2224-8399 ext. 3536  
E-mail address: mfusilier@auk.edu.kw.

## 2. Method

Data were collected in 2010 following up on the sample of e-business master's programs identified by Fusilier and Durlabhji [6] and bachelor's programs identified in Durlabhji and Fusilier [4] and Fusilier and Durlabhji [5]. Curriculum information was obtained from university web sites.

### 2.1. Course Coding

Program curricula were examined according to the (a) number of technical courses included in the program, (b) numbers of technical and non-technical e-business courses, and (c) number of business courses. Courses were classified as required or elective. The specific method used for assigning courses to the categories follows:

**Business:** Regular business offerings found in traditional business programs, such as accounting, finance, etc. were included in this category. Examples of actual course titles coded as Business include "Cost Analysis", "Administrative Principles", and "Supply Chain Management".

**E-business-Technical:** Courses specifically incorporating e-business/Internet in their titles and also "technical" in nature were classified as e-business - technical. Examples include "E-commerce Technology", "Web Programming and Design."

**E-business Non-Technical:** This designation was used for courses that contained e-commerce/Internet in their titles but were non-technical in that they focused on functional areas, such as e-marketing, e-management, and legal issues in e-commerce. Examples of course titles include "Principles of Internet Marketing", and "Legal Issues in E-commerce."

**Technical:** Courses that traditional computer information systems programs typically offer and other courses that presume a technical background were categorized as technical courses. Examples include "Database Management" and "Practical Computer Architecture."

## 3. Results and Discussion

Numbers of e-business degree programs included in the sample by the continent on which they are based are presented in Table 1. of the 163 master's programs identified in Fusilier and Durlabhji [6], 116 still existed in 2010. Means and standard deviations are presented in Table 2 for each course type by continent on which the programs are based.

Table 1: E-business degree programs by type and location

Type/Location	North America	Europe	Asia	Australia and New Zealand	Total
Bachelor's	27	3	0	7	37
Master's	58	27	8	23	116
Total	85	30	8	30	153

Table 2: Means and standard deviations by course type and program location, all programs

Continent	North America		Europe		Asia		Australia/NZ	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
Required Course Type								
Business	7.81	5.76	2.73	3.22	1.50	3.12	5.90	7.01
e-business Tech	1.44	1.80	3.03	3.32	2.50	1.60	1.03	1.27
e-business Non-Tech	1.81	1.94	1.97	1.54	1.50	1.07	1.17	1.15
Technical	2.80	3.14	4.07	4.84	1.50	1.69	1.80	1.50

Multiple regression analysis was used to compare required categories of courses across the continents in which the programs were based. A separate equation was computed for each of four dependent variables: the number of required courses in a program coded as (a) business, (b) e-business - technical, (c) e-business - non-technical, and (d) technical. The predictors of these dependent variables were the type of program (bachelor's or master's) entered into the equation first and dummy-coded continent variables, entered next. The North American sample was coded as the reference group so that the regression coefficients in the

equation provided a comparison between the North American sample and each other continent represented. Further comparisons between the other pairs of continents were made using t-tests for differences between the regression coefficients [12].

A statistically significant difference was detected for the dependent variable of required business courses between programs based in North America and those based in (a) Europe and (b) Asia. See Table 3. Programs based in North America apparently required more business courses. Further statistically significant findings suggest more required e-business technical and technical courses for the programs based in Europe versus North America. See Tables 4 and 5.

Table 3: Multiple regression results for the dependent variable: required business courses

Variable	Beta	R	Adj. R <sup>2</sup>	F	R <sup>2</sup> Change
<i>Step 1: Program type</i>					
Bachelor's versus Master's	-.58**	0.58	0.34	78.07**	0.34**
<i>Step 2: Continent dummy variables</i>					
Europe vs. North America	-3.50**				
Australia/NZ vs. North America	-1.32				
Asia vs. North America	-4.01**	0.63	0.39	24.87**	0.06**

Table 4: Multiple regression results for the dependent variable: required e-business technical courses

Variable	Beta	R	Adj. R <sup>2</sup>	F	R <sup>2</sup> Change
<i>Step 1: Program type</i>					
Bachelor's versus Master's	-.04	0.02	0.01	0.06	0.01
<i>Step 2: Continent dummy variables</i>					
Europe vs. North America	0.30**				
Australia/NZ vs. North America	-.38				
Asia vs. North America	1.14	0.33**	0.08	4.471**	0.11**

Table 5: Multiple regression results for the dependent variable: required technical courses

Variable	Beta	R	Adj. R <sup>2</sup>	F	R <sup>2</sup> Change
<i>Step 1: Program type</i>					
Bachelor's versus Master's	-.41**	0.38	0.14	25.05**	0.14**
<i>Step 2: Continent dummy variables</i>					
Europe vs. North America	0.24**				
Australia/NZ vs. North America	-.02				
Asia vs. North America	-.09	0.46	0.19	10.13**	0.07**

Results of Fusilier and Durlabhji [6] identified only one difference: more required business courses in the sampled North American programs versus those in Europe and Australia/New Zealand. The present results suggest that European programs are moving toward more e-business technical and technical coursework. This may reflect an effort to address the possible deficit in coverage of e-business topics pointed out in the earlier literature [6, 8].

Figure 1 shows required technical and e-business technical courses as a percentage of the total required courses for programs on each continent. Both bachelor's and master's degree programs were included in the analysis. Results of z-tests suggest the programs based in Europe have proportionately more technical content than those based in (a) North America ( $z=3.86, p<.01$ ) and (b) Australia ( $z=3.52, p<.01$ ).

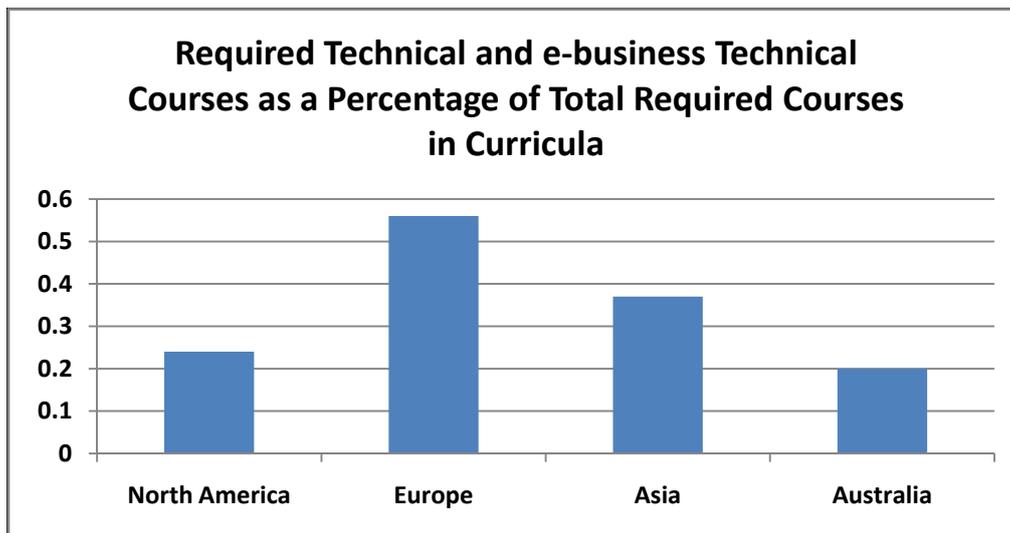


Fig. 1: Required technical and e-business technical courses as a percentage of total required courses in e-business curricula by continent.

Differences in curricula according to their continents suggest adaptation to local needs and conditions. On the basis of the multiple regression analysis results, program type and continent explained up to 39 percent of the variance in the dependent variables. This finding supports the conclusion of Rosli and Azizi [13] that e-business practice and education across countries is an exciting area for further investigation.

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