DO ACCOUNTING COURSES FULFILL ACCOUNTANTS' PRACTICAL NEEDS CONCERNING E-COMMERCE EDUCATION? AN EMPIRICAL STUDY IN BRAZIL

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ABSTRACT

Electronic commerce presently occupies a distinguished position in companies and has had a significant impact on accounting activities in an extremely competitive digital economy. It is surely known that electronic commerce has come to stay and that it will undoubtedly affects the lives of all accounting professionals. This fact has generated a demand for new knowledgeable professionals in this field. This work presents the results of an investigation based on the study carried out by Rezaee et all and involve 32 Accounting programs(undergraduate and graduate) and 169 accounting practitioners in Brazil and concerns the perceived importance of electronic commerce and how it can be integrated in the curricula of accounting graduate/undergraduate programs in Brazil. Although the respondents

agree on the perceived importance of e-commerce education for accountants and the methods of delivery of e-commerce education, the results shows that there are some differences between academicians and practitioners regarding about how several e-commerce topics should be offered in Accounting Curricula. These results can be used as subsidies in the restructuration of accounting curricula in Brazil. Educational institutions must produce qualified professionals in both the accounting area and technology in a digital economy if they intend to prepare students for the challenges and opportunities of professional life.

Keywords: e-commerce, accounting, academicians, practitioners, accounting curricula.

Objective

The primary purpose of this study is to identify and quantify the importance perceived by academicians and practitioners concerning the importance of e-commerce education in the Accounting Curriculum in Brazil.

1. Introduction

Many discussions have presently been held concerning the restructuration of accounting education in order to meet accountants' practical needs (DUTRA & MARINO, 2001), (REZAEE & ELAM & CASSIDY,2001)(SILVA & CRUZ, 2002)(WILLIAMS,1991). Among the various areas in accounting curricula, electronic commerce can be distinguished as one of the subjects that certainly have an impact on the activities of future accountants and that should be integrated to accounting curricula according to various reports by the American Institute of Certified Public Accounts (AICPA) (AICPA,1996), (ALBRECHT & SACK,2000). Electronic commerce was regarded as the most important opportunity and the greatest technological challenges to Certified Public Accounts (CPAs) in 2000 (TIE,2000) and the second most important technology to affect accountants in 2001 as seen in Table 1 (AICPA,2001). Later survey conducted by (TIE,2001) showed the changes in the position of e-commerce as a critical issue, falling to position number 8 in 2001, but this does not mean less e-commerce since the same survey showed that the amount of business has increased from 4% (2000) to 9%(2001) for several e-companies and still remains on of the significant business issues. Studies conducted by the International Federation of Accountants (IFAC) (Education Guideline nº 11, 1995) suggest that accountants should have specific knowledge in education technology(AICPA,2004).

Information Security an controls
E-business
Electronically based financial reporting
Privacy
Training
Disaster Recovery
Qualified Personnel
Quality of service
Electronic audit trail
Application service providers

Source: AICPA information technology team, 2001, www.toptentechs.com.

Table 1 - The Top 10 Technology Issues

This growth in electronic commerce has generated a demand for the education of new qualified professionals, which has created an opportunity for colleges and universities to design courses or concentration areas in electronic commerce in both undergraduate and graduate levels within knowledge fields such as business administration and accounting.

In face of this reality and of future perspectives, this study proposes a detailed study concerning higher education in accounting, particularly in the area of electronic commerce in Accounting programs in Brazilian colleges/universities. It also proposes a study of academicians' and practitioners' views concerning electronic commerce education in Accounting, thus providing subsidies for the restructuration of Accounting Curriculum in Brazil so as to meet the emerging needs of future accounting professionals in a digital economy.

2. – Higher Education in Accounting

First we would like to make a picture of the Accounting Higher Education in Brazil and than find out witch are the ways that we can make the necessary changes. Any contribution must go through description and knowledge of reality.

To make any changes we must find out who are the actors in this change: The Government with Federal Council of Education, the Academics and Accountants. By Table 2 and 3 we may find out that we have a great number of undergraduate programs and few graduate programs. With few graduate programs may result fewer qualified professionals on accounting issues for the 4.7 million (2001) of companies in Brazil (SEBRAE) for a competitive global economy. According to government source, there is a very low degree among practitioners and a high level among academicians (Table 4 and 5).

Accounting Undergraduate Programs (MEC/INEP,2002)	
Courses in 2002	640
Active students in 2002	147,362
New undergraduate students in 2002	46,759
New graduated students in 2002	20,886

Accounting Graduate Programs (MS/Phd) (CAPES,2002) www.capes.org.br	
Programs	8
New MS students in 2002	234
New Phd students in 2002	15
Active MS students in 2002	570
Active Phd students in 2002	40
Concluded MS degree in 2002	196
Concluded Phd degree in 2002 (total since 1985-2002 = 116)	13

Table 3 – Accounting Graduate Programs

Practitioners´ degree estimation	
Bachelor´s (www.cfc.org.br – 2003)	150,489
Master of Science	300
PhD	80

Table 4 – Active Accountants (2003)(BOARIN,2003)

Academicians´ Degree from all Accounting graduate programs in Brazil (MS and Phd)	
Master of Science (all fields)	9
PhD (all fields)	118

Table 5 – Academician degree (2002) (www.capes.gov.br)

On the Government side we can find several laws regarding the Accounting Curriculum. The Law of Directives and Bases for National Education 4.024/61, article 9, and later the University Reform Law 5540/68, article 26 (MEC,2004), established that the Federal

Education Council was responsible for designing minimum curricula for undergraduate programs (in which there was a set of required courses in all higher education programs) with the purpose to facilitate the transfer of students from one institution to another and ensure minimum professional uniformity as well as the equality of opportunities among accounting graduates. That law reduced the level of freedom of institutions in the organization of their programs according to their own pedagogical projects and in the adaptation of new curricular activities and contents resulting from new scientific, technological and environmental requirements.

The Laws of Basic Directives (LDB 9131/95 and 9394/96) and Resolutions CES/CNE 776/97, 583/2001 and 100/2002, by means of the National Curricular Directives (MEC,2004), replaced the minimum curricula so that higher education would be a continual, autonomous and permanent process with a solid training based on theoretical and practical competence. In this way, curricular flexibilization and the institution's autonomy and freedom to innovate undergraduate pedagogical projects would be observed in order to follow continual and emerging changes and challenges that future professionals must be prepared to face.

The general directives of the National Curricular Directives for the undergraduate program in accounting are:

- Inclusion of a pedagogical project
- Curricular design with the possibility of the institution's exerting its innovative and creative potential with freedom and flexibility.
- Required supervised training and complementary activities in which internal and external activities should be included, such as tutoring, projects, seminars, symposia, congresses, external courses, etc.
- Follow-up and evaluation in which specific and alternative forms of evaluation must be included.
- Optional monograph/program conclusion activity.

However, the new curriculum for the accounting undergraduate program must meet the following interconnect axes for students' education:

- I – Basic education content: studies related to other knowledge areas, particularly Business Administration, Economics, Law, Quantitative Methods, Mathematics and Statistics.

- II – Professional education content: specific studies regarding Accounting Theory, in addition to its relationships with actuarial accounting, auditing, controlling and their peculiarities in the public and private sectors.
- III – Concepts of theoretical and practical education: Curricular Supervised Training, complementary activities, independent studies, elective contents, practice in a computer laboratory using updated accounting softwares.

Due to this new flexibilization by the National Education Council (CNE), a new opportunity arises for schools to include electronic-commerce-related aspects in accountants' education, thus preparing them for the new digital economy. The next step for this change is to hear the opinions from the academics and accountants. Before hearing them, we must measure the importance and potential of e-commerce in Brazil. The more importance we find out, the more relevance should be given to the changes.

3. The Internet and Electronic Commerce in Brazil

The internet began to be used in Brazil experimentally in 1990 under the coordination of the National Research Network (RNP). The commercial phase began as of 1995. Globally, Brazil is ranked 8th (2004) in the number of hosts (Network Wizards,2004). Although figures are still low if compared to those in the United States, the leading position in Latin America is to be pointed out – both in number of users and hosts. As far as hosts (3.163.349)(2004) are concerned, Brazil has exceeded the total number of all Latin American countries (Network Wizards, 2004). In 1997, the country was ranked as low as 22nd for the number of hosts (68.685).

Latin America one of the fastest growing region in terms of Internet usage. However, it is still largely the domain of the top socio-economic quintile of the population. From an estimated 18 million users in 2000, Internet usage has reached 49 million in 2004 (Table 6). As a region, Latin America itself, currently accounts for 6.5% of the World Wide Web population (Table 6). Brazil accounts for 58% (20,551,168) of all Net users in South America (Table 7).

World Regions	Population (2004 Est.)	Internet Usage, (Year 2000)	Internet Usage, Latest Data	User Growth (2000-2004)	Penetration (% Population)	% of Table
Africa	905,954,600	4,514,400	**10,095,200**	123.6 %	1.1 %	1.3 %
Asia	3,654,644,200	114,303,000	**236,591,317**	107.0 %	6.5 %	31.2 %
Europe	728,857,380	100,993,093	**204,802,658**	102.8 %	28.1 %	27.1 %
Middle East	259,166,000	5,272,300	**14,472,500**	174.5 %	5.6 %	1.9 %
North America	326,695,500	108,096,800	**226,409,994**	109.5 %	69.3 %	29.9 %
Latin America/Caribbean	546,100,900	18,068,919	**49,504,287**	174.0 %	9.1 %	6.5 %
Oceania	31,892,487	7,619,500	**15,654,781**	105.5 %	49.1 %	2.1 %
WORLD TOTAL	6,453,311,067	358,871,012	**757,530,737**	111.1 %	11.7 %	100.0 %

NOTES: (1) Internet Usage and Population Stats were updated on April 30, 2004. (2) Click on each World Region for detailed regional data. (3) Demographic (population) numbers are based on data contained in the web site gazetteer.de. (4) The most recent usage information comes from data published by Nielsen//NetRatings, International Telecommunications Union, local NIC's, local ISP's and other reliable sources. (5) Data from this site may be cited, giving the due credit and establishing a link back to InternetWorldStats.com.

(source http://www.internetworldstats.com/stats.htm in May/2004)

Table 6 - Internet Usage and Population for South America

SOUTH AMERICA	Population (Est. 2004)	Internet Users, Latest Data	Use Growth (2000-2004)	% Population (Penetration)	% of Table
Argentina	37,740,400	**4,100,000**	64,0 %	10.9 %	11.6 %
Bolivia	8,879,600	**270,000**	125.0 %	3.0 %	0.8 %
Brazil	183,199,600	**20,551,168**	311.0 %	11.2 %	58.0 %
Chile	15,482,300	**3,575,000**	103.4 %	23.1 %	10.1 %
Colombia	45,299,400	**2,000,000**	127.8 %	4.4 %	5.6 %
Ecuador	12,664,700	**537,900**	198.8 %	4.2 %	1.5 %
Falkland Islands	2,400	**-**	-	-	n/a
French Guiana (FR)	196,800	**2,000**	0.0 %	1.0 %	0.0 %

Guyana	869,100	**125,000**	4066.7 %	14.4 %	0.4 %
Paraguay	5,469,600	**100,000**	400.0 %	1.8 %	0.3 %
Peru	27,553,000	**2,500,000**	0.0 %	9.1 %	7.1 %
Suriname	460,300	**20,000**	70.9 %	4.3 %	0.1 %
Uruguay	3,428,900	**400,000**	8.1 %	11.7 %	1.1 %
Venezuela	24,120,500	**1,274,400**	34.1 %	5.3 %	3.6 %
TOTAL	**365,366,600**	**29,204,300**	**104.3 %**	**8.0 %**	**100.0 %**

NOTES: (1) South America Internet Usage and Population Statistics were updated on February 29, 2004. (2) Detailed data for individual countries and regions may be found by clicking country names. (3) Population numbers are based on data contained in gazetteer.de. (4) The usage information numbers are updated frequently, see the surfing and site guide. (5) The most recent usage comes mainly from data published by Nielsen//NetRatings , ITU , and other local sources. (6) Data on this site may be cited, giving due credit and establishing a link back to InternetWorldStats.com .

(source http://www.internetworldstats.com/stats.htm in May/2004)

Table 7 - Internet Usage in South America

In 2003, Brazil reported US$ 16.3 billion worth in electronic commerce , of which US$ 11.8 billion is for B2B(4,94% of the total) and US$ 4.5 billion is for B2C (2,08% of the total). (IDG Now,2004)

Brazil has taken the lead in electronic commerce within Latin America. Brazil has an 88% share of Latin American e-commerce.(ECATT, 2004)

Another success example is the internal revenue federal system: in 2004, approximately 97,3% of income tax declarations (18.274.568 out of 18.774.568) were sent by the Internet (FSP, 30/April/04).

A total of 29,204,300 million internet users are in South America (2004), and Brazil will report 58% of that total (InternetWorldStats,2004). Only 14,2% (2002) of the Brazilian population has computer at home and 10,3%(2002) has Internet access at home. This number has a great opportunity to grow in Brazil since we have 61,6%(2002) our homes have telephone and 77,8%(2002) has TV (www.inep.org.br). Only 2% of the Internet access are broad band. There is a expectation to reach 5% by 2007 according to Yankee group (FSP,5/April/2004).

Brazil's population comprises 180 million people with a GDP of US$ 450 billion ('02)(www.fiesp.org.br).The State of São Paulo alone holds 33% of the GDP, with a population of 35 million. Ribeirão Preto, in São Paulo State, has a population of 500 thousand (2000), a

GDP of US$ 4 billion. The Ribeirão Preto region has a population of 4 million and GDP of US$ 22 billion (CODERP,2000).

Since we have potential numbers in e-commerce, we must find out how to make the necessary changes in the Accounting Curriculum to prepare more qualified professionals for the new e-commerce business.

4. Material and Methods

This study used a mail survey of both academicians and practitioners to find out the point of view about demand, perceived importance, integration and content of e-commerce education in Accounting Curricula. The response from 1160 practitioners and 350 schools (accounting faculty) can contribute to make the necessary changes to Accounting Curricula.

Based on the study by Rezaee & Elam & Cassidy (REZAEE & ELAM & CASSIDY, 2001) two questionnaires were developed for practitioners and academicians. Since we have different levels of academicians, practitioners, education, market and companies, the questionnaires had to be adapted to the Brazilian reality and consisted of two main sections. Section I, with socio-economic questions, contained 5 questions in the academic version and 7 questions in the practitioner version. Section II was common to both versions and included the demand and the future interest perceived by the respondents with regard to education concerning electronic commerce in accounting college programs in addition to the respondent's suggestion in relation to 50 topics concerning electronic commerce to be included in higher accounting education (including undergraduation, MS, PhD and MBA programs). The 5-page questionnaire was designed, pretested and sent to the sample.

5.1 Sample of practitioners

Letters with pre-addressed postage-paid return envelope were mailed to non-academic accountants in the Ribeirão Preto region (São Paulo state/Brazil) in order to identify their perceptions regarding the content of accounting undergraduate/graduate programs (more specifically concerning electronic commerce). Altogether, 1,160 accountants were contacted. Their names/addresses were obtained through the São Paulo Sate Regional Accounting Council (CRC-SP). A pre-addressed postage-paid return envelope was also sent for their reply. The reply rate was of 14.6%, which corresponded to 169 respondents among the practitioners.

In practice, few practitioners have MS or PhD, as observed in Table 8, where the degrees most frequently found among the respondents are presented. There seems to be a greater interest in the MBA (Lato Sensu) rather than in Strictu Sensu programs, such a those targeted at a Master's or Doctoral Degree. In general, MBA programs are offered only on

weekends and do not require so much dedication as that required by master's or doctoral programs.

Degree	%
Bachelor´s	**68.64%**
MBA	14.79%
MS	4.14%
PhD	0.59%

Table 8 – Practitioners´main degrees (88,16%)

Regarding the time of professional activity, a concentration of respondents was observed in the range over 10 years (over 69% according to table 9). If the fact that the commercial use of the Internet was made available in Brazil only in 1995 is taken into account, it can be observed in Table 5 that a large number of respondents had began their professional activities and got their bachelor degree before the rise of the commercial Internet.

Professional experience	**%(0,65% did not answer)**
Less then 10 years	**30.32%**
11-15	27.10%
16-30	35.48%
Over 30	6.45%

Table 9 – Professional experience

A pulverization in the fields of performance among the respondents was identified and only three fields showed higher concentrations than 9%, as observed in Table 10.

Fields	%
Controller	**21.94%**
Tax Accounting	18.71%
Financial	9.03%
Others	50,32%

Table 10 – Higher concentration Fields

The respondent practitioners came from small and medium-sized companies with fewer than 100 employees (60% of the cases) and year revenues lower than R$ 1 million or US$ 0.330 million (61.97%).

5.2 - Sample of academicians

Letters with pre-addressed postage-paid return envelope were mailed to faculty institutions (chair of the accounting department) of accounting programs in Brazil whose addresses were provided by the CRC-SP(São Paulo Sate Regional Accounting Council). The coordinators' names were obtained directly from their own institutions or via the Internet. A total number of 350 letters were sent and 700 questionnaires were distributed among the academicians in all Brazilian regions. A pre-addressed postage-paid return envelope was sent with the questionnaire (2 copies) in addition to a presentation of the research under development. The reply rate was of 9.14%, which corresponded to 32 schools and 50 academicians.

The academician's degrees were far lower than what was expected by research institutions, as observed in Table 11. This numbers are lower than the ones the government has (CAPES) as seen on table 5. Only 8.16% of the academicians comprising the sample had a doctoral degree. In Brazil, we have only 8 Brazilians´ institutions(PUC-SP, USP, FECAP, VISC CAIRU-SALVADOR, UNISINOS, UNB/PERNAMBUCO e UERJ e UFERJ) that offers MS degree in Accounting and 1 that offers PhD (USP) degree in Accounting. Fortunally we can expect to have very soon more then 68% of the academic with at least a Master Degree. The bad point is the low level of Phd professors in our research Institutions in Brazil.

Academic respondents´ degree	%
Master degree	**38,78**
MS degree(incomplete)	30,62
PhD degree (incomplete)	8.16
PhD degree	8.16
Bachelor´s	6.12
Others	6.12
Graduate degree (MBA)	2.04

Table 11 – Academic respondents´ degree

The academicians in the accounting programs which comprised our sample had majored in Accounting and Business Administration, as observed in Table 12.

Practitioners´ field	%
Accounting	**96%**
Business administration	4%

Table 12 – Practitioners´ degrees

The investigated institutions had been established recently and up to 15 classes of students had graduated from most of them (71.42%). Also, the respondents were mostly from private institutions, as observed in Table 13. According to IBGE/PNAD/2001 in (FSP,2002) 69,2% of the educational institutions (all fields) in Brazil are private.

Educational Institution	%
Private	**77.55**
Public	22.42

Table 13 – Respondents´ Institutions

6. – Results and Analyses

At first, the present initiatives by the higher education institutions under study concerning electronic commerce will be distinguished. There were already some respondent institutions which offered some e-commerce education into existing courses.

Level of e-commerce courses offered	%
Undergraduate	**36.73**
None now, but expected to offer soon	28.57
None now and not expected to offer soon	24.49
MBA	18,37
MS Degree	2.04
PhD Degree	0

Table 14 – Level of e-commerce courses offered (the respondent could chose from one or more choices)

Most of the courses offered area from the undergraduate level (table 14). Regarding graduate programs, it can be observed that some initiatives have been taken in relation to master's programs, although none have been verified in doctoral programs. A predominance of graduate courses concerning e-commerce was found in MBA programs. Since most of our sample had their degree before the rise of the Commercial Internet use in Brazil, we expected more programs offers in graduate programs concerning e-commerce to attend the professionals without experience in e-commerce (like MBA, Ms and Phd). Since MBA requires less effort than the other choices, this is the customers´ best choice today.

It was a big surprise that over 24% of the education institutions do not expect to offer e-commerce courses soon.

Additionally to the fact that they offered courses in an isolated fashion, it was possible to identify, among the respondent institutions, those which had already provided electronic commerce education in several levels, as shown by Table 15.

E-commerce offers	**%**
None now, but expected to offer soon	**53.06**
None now and not expected to offer soon	32.65
Offer an e-commerce track at undergraduate level.	10.2
Offer an e-commerce undergraduate degree program	2.04
Offer an e-commerce track at MS degree program	2,04
Offer an e-commerce track at graduate level (MBA)	2.04
Offer an e-commerce MS degree program	0
Offer an e-commerce track at PhD degree program	0
Offer an e-commerce degree at graduate level (MBA)	0
Offer an e-commerce PhD degree program	0

Table 15 – E-commerce offers in progress (each respondent could choose from one or more choices)

Although a hesitant initiative by the institutions comprising the study sample was observed, the data indicated an intention (53%) to provide courses in the field of electronic commerce. These facts may reflect an increasing demand stemming from the changes affecting companies' management, which has been caused by the impact o electronic commerce in the world market.

Although the e-commerce are affecting the way the companies operates and the activities the practionners, the education institutions area not having more e-comerce offers for the accountant. Further research should be done to find out the companies´ expectation for the accounting profession.

The findings in this study were analyzed according to the 4 groups of questions present in the designed questionnaire: Demand for education in electronic commerce, Perceived importance of education in electronic commerce, methods for integration of electronic commerce to the curricula of

accounting programs and Electronic commerce education contents in the curricula of accounting programs.

6.1 - Demand for electronic commerce education

According to the results obtained from the sample under study, most academicians and practitioners identified an increasing demand for electronic commerce education among accountants. Using Fisher test (0.0183) we observed that there is a significant difference between academician and practitioners regarding de future demand for e-commerce education .Whereas 86% of the academicians believed that a growth would take place, such acceptance increased to 96.13% among practitioners. This fact points out the importance attributed by accounting professionals to electronic commerce education. This is a result of the faster transformations occurring in companies due to emerging digital commerce in Brazil. Companies must increasingly demand qualified professionals in the field of electronic commerce. The accountant should expand their accounting limit with e-commerce education to get new opportunities in the market.

6.2 - Perceived importance of electronic commerce education

As a result of the growth in electronic commerce, a need from accountants to enhance their knowledge in the field of electronic commerce as a competitive advantage was observed. Table 16 shows the answers concerning the reasons for the importance of electronic commerce to practitioners and academicians. It was possible to observe that the greatest importance attributed by both the academicians and the practitioners concerns the “prepare students to be able to continue professionally in an information technology era”. The lowest importance given by the academician was to “coverage of e-commerce in business curriculum is required to stay academically competitive”, whereas the practitioners´ choice was to “job openings in e-commerce are numerous”. Apparently, the practitioners have not yet seen e-commerce as a great opportunity for them. The academicians, on the other hand, seem to believe that electronic commerce education in accounting has not yet acquired importance in the academic milieu. We must recall that most of our sample got their bachelor´s degree before the Internet arise in Brazil.

Perceived importance of e-commerce education	Practitioners mean	Academician mean
Make students more desirable in marketplace	4.0	3.
Prepare students to be able to continue professionally in an information technology era	4.2	3.
Meet accreditation education requirements	3.7	3.
More organizations use e-commerce for their business activities	4.0	3.
Job openings in e-commerce are numerous	3.6	3.
Coverage of e-commerce in business curriculum is required to stay academically competitive	3.8	3.

Table 16 – Perceived importance of e-commerce education

6.3 - Methods for integration of electronic commerce in accounting curricula

The respondents were required to express their opinions concerning the forms of integration of electronic commerce education to accounting curricula. Table 17 shows the suggestions presented by academicians and practitioners in relation to such forms of integration. The practitioners' and academicians' responses were similar in relation to the highest means of the proposal for integration of electronic commerce in accounting curricula. Both groups expressed that the best form would be in two directions: To "**Infuse e-commerce education into existing core required courses at both undergraduate and /or graduate level**" and to "**Offer an e-commerce degree program at graduate level (MBA, MS or PhD)**". This may mean that the respondents believe that initial effort job should be done into existing courses and further development of that theme should occur (optional) in graduate rather than in undergraduate level. The item "**Offer e-commerce courses as electives at existing undergraduate level**" had the lowest grade for practitioners and the item "**Offer an e-commerce undergraduate degree program**" was the last choice for academician.

Integration of e-commerce in the accounting curriculum	Practitioners mean	Academician mean
Infuse e-commerce education into existing core required courses at both undergraduate and /or graduate level	3.6	3.
Offer e-commerce courses as electives at existing undergraduate level.	3.2	3.
Offer e-commerce courses as electives at existing graduate level.	3.3	3.
Offer e-commerce courses as electives at both undergraduate and graduate level.	3.4	2.
Offer an e-commerce concentration track at undergraduate level	3.5	2.
Offer an e-commerce concentration track at graduate level.	3.4	2.
Offer an e-commerce concentration track at both undergraduate and graduate level.	3.5	2.
Offer an e-commerce degree program at graduate level (MBA, MS or PhD)	3.6	3.
Offer an e-commerce undergraduate degree program	3.4	2.
No plans to offer any e-commerce education	1.4	1.

Table 17– Integration of e-commerce in the accounting curriculum

6.4 – Content of e-commerce education in accounting Curriculum

The respondents (practitioners and academician) were also required to express their opinions concerning the integration of 50 topics related to the field of electronic commerce to accounting curricula. Table 18 shows the suggestions given by academicians and practitioners concerning the form of integration of such 50 topics to that Curriculum. Both group expressed that most of the 50 topics should be offered at undergraduate level (47 out of 50 for academician and 39 out 50 for practitioners). This confirms that respondents opinions about the question 6.3 For the academician the topics should be offered (at undergraduate level) by core required courses (24%) and elective courses (76%). For the academician the topics also should be offered (at graduate level) by core required courses (36%) and elective courses (64%). For the practitioners the topics should be offered (at undergraduate/graduate level) by core required courses (52%) and elective courses (48%).

	Academicians (respondent could make both choices or none)				Practitioners(respondent could make both cho		
	Undergraduate (respondents could make only one choice)		Graduate (respondents could make only one choice)		undergraduate(respondents could make only one choice)		graduate(respo make only one c
D´s items	Core Required	Elective	Core Required	Elective	Core Required	Elective	Core Required
D1	29*	17	23	9	104	53	1
D2	16	28	9	25	71	82	
D3	6	33	9	29	38	110	
D4	10	33	16	20	59	90	
D5	22	25	19	16	80	74	
D6	39	8	25	9	104	47	1
D7	11	31	13	22	58	89	
D8	14	30	15	19	67	78	
D9	21	24	15	17	86	63	
D10	19	26	18	15	87	64	
D11	40	9	23	11	139	22	1
D12	8	33	11	27	52	95	
D13	15	27	15	22	59	91	
D14	17	27	20	14	89	62	
D15	24	23	20	14	101	53	
D16	15	28	18	18	78	71	
D17	9	36	12	22	58	93	
D18	16	28	13	22	61	93	
D19	5	35	6	32	44	102	
D20	4	34	7	32	46	102	
D21	12	31	16	23	52	99	
D22	22	21	23	13	97	56	1
D23	14	26	13	24	53	99	
D24	16	27	13	25	88	63	
D25	21	23	17	18	76	78	
D26	28	15	17	16	100	61	
D27	31	13	19	14	119	40	

	Academicians (respondent could make both choices or none)				Practitioners(respondent could make both cho		
	Undergraduate (respondents could make only one choice)		Graduate (respondents could make only one choice)		undergraduate(respondents could make only one choice)		graduate(respo make only one c
D´s items	Core Required	Elective	Core Required	Elective	Core Required	Elective	Core Required
D28	28	17	22	15	109	47	
D29	8	31	9	28	61	92	
D30	4	35	8	30	35	110	
D31	4	36	7	30	42	103	
D32	18	26	21	15	89	69	
D33	5	34	10	27	45	106	
D34	18	25	17	19	96	56	
D35	8	32	10	26	62	89	
D36	21	19	21	16	97	58	
D37	23	17	23	15	81	70	
D38	14	24	16	22	68	80	
D39	5	31	13	25	52	97	
D40	13	28	14	23	64	81	
D41	15	24	19	19	66	83	
D42	19	23	19	19	100	54	
D43	13	27	17	20	79	73	
D44	17	26	18	18	75	79	
D45	32	13	26	11	95	60	
D46	24	19	23	14	95	58	
D47	22	22	23	12	82	74	
D48	17	23	19	18	77	76	
D49	12	30	15	22	79	76	
D50	12	31	17	20	82	70	

Table 18 – E-commerce topics in the accounting Curriculum (* means that 29 academicians thinks that topic D1 should be offered at undergraduate level and not graduate level within a core required courses and not elective courses)

7.- Discussions, Conclusions and Suggestions

Electronic commerce teaching has been boosted by the exponential growth of electronic commerce, and consequently, the demand for professional development arises in order to follow technological advancement. This indicates a restructuration of accounting teaching in educational institutions with the purpose to meet accounting professionals' needs in the digital era.

Most of academician and practitioners has the opinion that the demand of e-commerce education will increase, with a higher value given by the practitioners.

At first a hesitant offer of electronic commerce courses in Brazilian accounting programs was identified and most of the respondents (academicians and practitioners) believed that the best form to integrate the subject in the accounting curriculum would be to include the subject as one

of the existing core required undergraduate/graduate courses and further development of the theme should occur at graduate level with a e-commerce degree program (MBA, MS or PhD).

It was observed for both groups that the most perceived importance of electronic commerce education is related to professional qualification in Information Technology. This result is the same obtained from REZAEE study (REZAEE & ELAM & CASSIDY,2001).

Both group expressed that most of the 50 topics should be offered at undergraduate level. For the academician the selected topics should be offered more by elective courses than the core required courses at undergraduate/graduate level. For the practitioners the topics should be offered more by core required courses than the elective courses at undergraduate/graduate level.

Some challenges faced by educational institutions in this hard task of qualifying present and future accounting professionals were observed. Some critical problems to be overcome for educational institutions' achievement of their objectives can be pointed out:

- Hardware and Software Resources;
- Unavailable or outdated teaching materials;
- Qualification of academicians and support technicians.

Looking back in 1991 (WILLIAMS,1991) the 6 majors concerns from agenda of the Accounting Change Commission (AECC) are Institutional Environment, Curriculum, Faculty Incentives, Instructional materials, accreditation and professional examinations we sure conclude that little was done to change this scenario and respond more effectively to this challenge that focus on customer and quality.

It is surely known that electronic commerce has come to stay and that it will undoubtedly affects the lives of all accounting professionals. Since most of the companies should be offering e-commerce in the future we view this as a great job opportunity for qualified Accountants. Educational institutions must produce qualified professionals in both the accounting area and technology in a digital economy if they intend to prepare students for the challenges and opportunities of professional life. The academia will be obliged to, although within their budgetary limits, gradually overcome obstacles and reach that objective.

This study can offer some subsidies so that the necessary changes can be made within the time and space on which each institution can depend.

Appendix A:

Block II

B – Demand in e-commerce education on accounting education:

1 – In your opinion the future demand and interest in e-commerce education will:

( ) Increase

( ) Remain the same

( ) Decrease

C – Perceived importance of e-commerce education

2 – Reasons why e-commerce education may be important to accounting education

Use five-point Likert scale ranging from “unimportante” to “very important” .

A – Make students more desirable in marketplace

A - | 1 | 2 | 3 | 4 | 5 |

B - Prepare students to be able to continue professionally in an infromation technology era

B - | 1 | 2 | 3 | 4 | 5 |

C – Meet accreditation education requirements

C - | 1 | 2 | 3 | 4 | 5 |

D – More organizations use e-commerce for their business activities

D - | 1 | 2 | 3 | 4 | 5 |

E – Job openings in e-commerce are numerous

E - | 1 | 2 | 3 | 4 | 5 |

F – Coverage of e-commerce in business curriculum is required to stay academically competitive

F - | 1 | 2 | 3 | 4 | 5 |

3 – How should accounting education offer in e-commerce education?

Use five-point Likert scale ranging from “unimportance” to “very important” .

A – Infuse e-commerce education into existing core required courses at both undergraduate and /or graduate level.

A - | 1 | 2 | 3 | 4 | 5 |

B – Offer e-commerce courses as electives at existing undergraduate level.

B - | 1 | 2 | 3 | 4 | 5 |

C – Offer e-commerce courses as electives at existing graduate level.

C- | 1 | 2 | 3 | 4 | 5 |

D – Offer e-commerce courses as electives at both undergraduate and graduate level.

D - | 1 | 2 | 3 | 4 | 5 |

E – Offer an e-commerce concentration track at undergraduate level.

E - | 1 | 2 | 3 | 4 | 5 |

F – Offer an e-commerce concentration track at graduate level.

F - | 1 | 2 | 3 | 4 | 5 |

G – Offer an e-commerce concentration track at both undergraduate and graduate level.

G - | 1 | 2 | 3 | 4 | 5 |

H – Offer an e-commerce degree program at graduate level (MBA, MS or PhD)

H - | 1 | 2 | 3 | 4 | 5 |

I – Offer an e-commerce undergraduate degree program

I - | 1 | 2 | 3 | 4 | 5 |

J – No plans to offer any e-commerce education

J - | 1 | 2 | 3 | 4 | 5 |

D – Where should the e-commerce topics should be included in accounting education?

*** core requirements**

	Undergraduate required*	Undergraduate elective	Gradu required*	Gradu el
1 – Business strategies.....	1	2		
2 – Intelligent agents**.....**	1	2		
3 – ***Servers´ architecture of electronic commerce***.	1	2		
4 – Architecture of electronic commerce**.....**	1	2		
5 – E-commerce emerging issues and technology.....	1	2		
6 – System Auditing**.....**	1	2		
7 – B2B.....	1	2		
8 – B2C**.....**	1	2		
9 – Cyber banking and personal finance.....	1	2		
10 –Data communication and networking**.....**	1	2		
11 –Accounting and taxation for e-commerce.....	1	2		
12 –Data Mining**.....**	1	2		
13 –Data WareHouse.....	1	2		
14 –Data base design and management**.....**	1	2		
15 –Legal and ethical issues in e-commerce.....	1	2		
16 –Economy digital**.....**	1	2		
17 –EDI	1	2		
18 –Distance education on the Internet**.....**	1	2		
19 –Extensible Business Reporting Language (XBRL).....	1	2		

20 –Extensible Markup language (XML).....	20	1	2				
21 –Suppply chain management.....	21	1	2				
22 –E-commerce impacts on business.....	22	1	2				
23 –Designing virtual business.....	23	1	2				
24 –Implementing e-commerce business(resources).....	24	1	2				
25 –Intranet and Extranet	25	1	2				
26 –Introduction to the Internet.....	26	1	2				
27 –Introduction to e-commerce.....	27	1	2				
28 –Just – in – Time and e-commerce.....	28	1	2				
29 –Hyper text markup language.....	29	1	2				
30 –Virtual reality modeling language (VRML).....	30	1	2				
31 –Javascript and Java programming.....	31	1	2				
32 –Marketing on the Internet.....	32	1	2				
33 –Measuring Web site´s efficiency.....	33	1	2				
34 –Business model.....	34	1	2				
35 – Browser and naviagtion on the Internet.....	35	1	2				
36 –E-commerce in various industries.....	36	1	2				
37 –E-commerce opportunities and strategies.....	37	1	2				
38 –Privacy standards, policies, and systems.....	38	1	2				
39 –Web page design.....	39	1	2				
40 –Design and maintenance of e-commerce.....	40	1	2				
41 –Intellectual property protection and copyrights.....	41	1	2				
42 –Internet Risk and security.....	42	1	2				
43 –E-commerce security.....	43	1	2				
44 –CRM.....	44	1	2				
45 –ERP.....	45	1	2				
46 –Electronic payment systems.....	46	1	2				
47 –Decision support systems technology.....	47	1	2				
48 –E-commerce technology.....	48	1	2				
49 –Telecomunication over the Internet.....	49	1	2				
50 –Themes and trends in e-commerce.....	50	1	2				

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