E-Business Education For Everyone: Developing and Implementing Breakthrough Strategies

Rumel V. Atienza

De La Salle University, 2401 Taft Avenue, Manila, Philippines, Tel: (632)5244611, Fax: (632)5240563, coerva@mail.dlsu.edu.ph

ABSTRACT

Since its inception at the close of the old millennium, e-business has continuously changed the conduct of business at a mercurial pace. However, the incoming generation of work force, particularly those who do not have sufficient exposure to computer technology and business, may not be able to cope. Information technology practitioners and academicians can turn this threat into an opportunity by adopting a system of breakthrough practices in e-business education based on benchmarking studies in universities in Asia-Pacific. The system proved to be highly effective basing on its pilot run.

INTRODUCTION

As the new millennium ushered in, the new global order of the Internet-kind unfolded and exponentially changed the way people live. One of life's facets that have been most affected by this new order is the conduct of business, where products are now sold and bought online within what is now called e-business.

But developments in e-business and technology have been so mercurial, courtesy of the handful e-business and computer demigods, that most mortals may soon find themselves inadequate or obsolete. Will such nightmare be a reality? What can be done before it happens?

PROBLEM STATEMENT

This paper addresses the following problems:
- How ready are the incoming work force of the Philippines vis-à-vis their counterparts in the Asia-Pacific in facing the challenges of e-business?
- What breakthrough strategies can IT practitioners and academicians implement to help them prepare?
- How effective are these strategies?

FRAMEWORK OF RESEARCH METHODOLOGY

Graduating students from the top four universities in the Philippines were surveyed to assess their e-business readiness.

To have a global benchmarking, graduating students from three universities in the United States, Canada and the Philippines were surveyed. These universities were chosen because they were reputed to be pioneers in e-business education in their state, province and country, respectively. Subjects were students enrolled in degree programs in engineering, science, education or arts that had less curricular exposure to e-business than students enrolled in computer or business-degree programs. They were assumed to be the ones that would be most likely left in the cold in e-business education.

The e-business programs of the three universities were reviewed to develop a system of breakthrough practices that could be adopted in the Philippines and the rest of the world. To determine the market feasibility of this system in the Philippines, a second survey among Philippine students was conducted. Using the survey, a group of students brainstormed to enhance the system.

To determine its effectiveness, the system was pilot-run and the results were evaluated.

ANALYSIS OF RESULTS

E-business Preparedness of the Future Philippine Managers

Graduating students from the reputed top four universities in the Philippines [Asiaweek, 2000], [CHED Bulletin, 2000] were surveyed to assess the e-business preparedness of the future Philippine labor force. (Note: Questionnaire is not shown in the paper for brevity).

From this survey (with sampling sizes of 81 to 95 per university), the following were revealed: (Please see Table 1 and Table 2).

1. On a scale of 5, student's knowledge of the e-business was at a moderate average of 3.87. 12% admitted that they did not know what e-business was. This was startling considering that the students spent relatively long time in surfing the internet. At 7.1 hours per week, it was at par with the United States' university student's average. [www.student.net].

2. This lack of knowledge of e-business could be explained by the meager 8.8 hours the student spent during his entire stay in the university to study about e-business or the internet in classes. Follow-up interviews revealed that less than one hour of this time was spent on discussions about e-business.

3. Students enrolled in Computers(Comp) or Business(Bus) knew e-business better than students in Arts/Education(Art/Edu), Engineering/Science (Eng/Sci). This was mainly due to the higher average surfing time(SURF) and time spent in studying e-business(STUDY) by the former. Regression analysis proved that knowledge of e-business(KNOW) was greatly influenced by SURF and STUDY at 95% confidence level, as embodied in the regression line

$$KNOW = 1.21 + 0.1774\ SURF + 0.1349\ STUDY,$$
with $R^2 = 0.8726$, $(t = 2.9)$ $(t = 2.7)$

Table 1: E-business preparedness of Philippine students, by university

(As of January, 2001)	Universities				
	A	B	C	D	Ave
(USE) Ave. time spent using computer for past 6 mos. (hours/week)	15.1	11.2	14.6	14.8	13.9
(SURF) Ave. time spent surfing the internet for past 6 mos. (hours/week)	7.8	4.6	7.4	8.6	7.1
(STUDY) Time sepnt in class studying about Internet or e-business for past 3 years (hours/week)	9.3	4.4	9.6	11.9	8.8
(KNOW) Knowledge of e-business (on scale of 5)	3.96	3.53	3.93	4.04	3.87
(NOT FAD) Percent of students who believe e-commerce is not a fad	0.918	0.93	0.91	0.88	0.91

Table 2: E-business preparedness of Philippine students, by course

	Course				
	Comp	Bus	Eng/Sci	Art/Edu	Ave
USE	20.53	15.49	11.39	8.30	13.93
SURF	9.02	8.78	6.52	4.35	7.17
STUDY	14.35	9.25	8.15	3.54	8.82
KNOW	4.29	4.14	3.75	3.25	3.86
NOT FAD	1.00	0.89	0.89	0.86	0.91

Computer usage time (USE), was not significantly correlated with KNOW.

4. Most Philippine students (93%) believed that e-business would not be just a fad. All Comp students agreed.

E-Business Preparedness: Benchmarking in Three Countries

To benchmark with other countries, surveys and interviews were also conducted in two universities in the US and Canada (sample size of 60 and 70, respectively). The results were compared with those of a Philippine(RP) university. Respondents in these surveys were limited to the graduating students of Eng/Sci, and Art/Edu since they were the ones most likely unexposed to e-business (as was partly proven by the results of the earlier survey). (Please see Table 3)

Table 3: E-business readiness of students in US,, Canada and RP

(As of January, 2001)	Country of University			
*Students in Arts/Education/Eng'g/Science	US	CN	RP	Ave
USE	12.8	11.8	10.3	11.6
SURF	10.3	7.1	5.8	7.7
STUDY	24.4	7.3	5.1	12.3
KNOW	4.19	3.51	3.39	3.7
NOT FAD	0.95	0.93	0.88	0.9

Philippine students lagged behind in USE, though not far behind. The gaps, however, became pronounced in SURF, STUDY, KNOW, and NOTFAD. The difference between the Philippine and US universities was 12.3 hours in STUDY, almost a full point in a 5-point scale in KNOW and 7% in NOTFAD.

This information proved that Philippine students in non-computer/business courses were not as prepared as their counterparts in USA and Canada in facing the challenges of e-business.

The Best and Breakthrough Practices

The e-business curricular programs of the three universities were also reviewed to develop a system of breakthrough practices that could be adopted by academicians and practitioners in the Philippines, and hopefully, the rest of the world. These were:

1. Establish an e-business institute that utilizes faculty and business professional expertise. The institute will expose its academic community to real world applications to develop an e-business knowledge base. It will develop partnerships with corporate sponsors and government to establish and promote the university and its locale as a leading e-business center.
2. The Institute will not be affiliated with any of the faculty departments to entice students from any department to enroll in the institute.
3. It will bestow on every graduate of the Institute the title of Fellow of the Institute. This title is expected to open doors in e-business-related careers. To be a fellow the student must
   a. Be enrolled in a degree program of the university;
   b. Complete an e-business training program;
   c. Write an e-business paper;
   d. Participate in at least 40 hours of E-business professional activity.
4. The training program will include e-business courses (regular courses offered by the departments which were deemed e-business related), lecture series (with speakers from private and government entities), and course modules.
5. Students not in the Fellowship program may attend the lectures for free on a first-come-first-served basis to entice them to e-business.
6. The institute will also offer a certificate program for non-students (professionals, educators, out-of-school youth) for a fee to widen the patronage of e-business.

Feasibility of Adopting the System

The feasibility of the system in the Philippines was initially tested through a second survey of graduating students in the top four Philippine universities (sample size of 360).

Graduating students were asked which option and number they would choose if they were given the chance to go back to sophomore and take for half-term period each of the following subjects listed in Table 4.

The numbers and corresponding options were
(1) Do not enroll in that particular e-business subject
(2) Pay half the tuition fee but would not get any certificate or earn credits
(3) Pay the tuition fee equivalent and earn equivalent units
(4) Pay the tuition fee and earn a certificate

Note: The option "Take for free" was not offered because it was financially draining to any university.

Table 4: E-subjects to be taken in the university if given the chance

E-Subjects	Desire to Take Subject Universities				
	A	B	C	D	Ave
Introduction to E-Commerce					2.77
E-Marketing					2.63
E-Operations Management					2.58
Website Development					2.82
E-Hardware & Security					2.54
E-Legal and E-Personnel & E-Financial Management					2.43
E-Commerce Strategy					2.53
Overall	2.59	2.67	2.59	2.57	2.61

Table 5: Desire to take subject, by course

E-Subjects	Course				
	Comp	Business	Eng/Sci	Art/Edu	Ave
Introduction					2.77
E-Marketing					2.63
E-Operations					2.58
Website					2.82
E-Hardware/Security					2.54
E-Legal/Personnel/Financial					2.43
E- Strategy					2.53
Average	2.80	2.70	2.50	2.39	2.61

As shown in Table 4 and Table 5,
1. The overall desire to take e-business subjects was 2.6 in a scale of 4. This meant that students like the idea of taking e-business as a course, but were not willing to pay fees just to earn a certificate. The responses were relatively kurtotic with deviation of 1.2.
2. Introduction to e-business and Website development were the most desired with a significantly higher rating than the rest, while E-Legal/E-Personnel/E-Financial Management was the least desired. (Descriptions of these subjects were provided in the questionnaire but are omitted in this paper for brevity).
3. By course, the overall ratings were highest for Comp and lowest for Art/Edu. Introduction to E-business was the only subject rated significantly well by the students from Eng/Sci and Art/Edu.

From Table 6 and Table 7, the top reasons for not taking specific e-business courses were failure to see relevance (25% of respondents) and lack of interest (24% of respondents)Top reasons for taking specific courses were the desire to learn something new and be well-rounded.

Enhancement of the System

Using the survey results, 72 students from a Philippine university brainstormed to develop the following enhancements to the system. Among hundreds of other ideas, these were judged by students as critical.

1. Evoke Exigency. Students should be made aware that knowledge of e-business is a critical need in their profession and in every aspect of their lives.

Table 6: Reasons for not taking a particular subject, by course

	% of Responses Course				
	Comp	Busi	Eng/Sci	Art/Edu	Ave
I do not see its relevance to my degree	.024	0.26	0.26	0.25	0.25
I do not have the aptitude for such topics	0.18	0.18	0.14	0.15	0.16
I am not very adept with computer subjects	0.12	0.15	0.11	0.14	0.13
I am not interested in topics such as those	0.27	0.18	0.24	0.25	0.24
I do not have the time	0.18	0.22	0.23	0.15	0.19
I do not think E-commerce will last for long	0.00	0.01	0.02	0.05	0.02

Table 7: Reasons for taking a particular subject, by course

Reasons for Taking a Particular Subject	% of Responses Course				
	Comp	Busi	Eng/Sci	Art/Edu	Ave
I want to get the certificate/ units for whatever purpose	0.15	0.14	0.17	0.18	0.16
I want to get certificate/ units for a possible career in IT	0.23	0.25	0.17	0.19	0.21
The subject is a critical success factor in my profession	0.21	0.23	0.12	0.23	0.20
I like computers and computer-related topics	0.12	0.09	0.19	0.08	0.12
I like the topics even if there is no EC component	0.03	0.04	0.10	0.12	0.07
I like to learn something new and be well-rounded	0.26	0.25	0.25	0.20	0.24

    a.   Introduction to E-business should be included in every curriculum to enlighten the students on the benefits of both e-business and knowledge of e-business. Co-curricular training should also be provided in the form of symposia, conferences, etc. Gradually, essential transactions in student life, such as enrolment, reservation should be made online to intensify their dependence on e-business and hunger for e-business education.

    b.   Practitioners should stipulate in hiring that applicant's knowledge of e-business is preferred. Gradually, stages in hiring must be carried out online to reiterate this point.

2. Develop Desire. Students must be lured to e-business by addressing their wants and psyche.

    a.   For starter, students in all courses should be offered an e-business course that they like very much, such as website development and introduction to e-commerce, as main course or elective, to whet their cerebral appetite for e-business. Then, additional courses may be offered that include topics such as: E-marketing, E-commerce strategic management. The priority ranking in offering these courses in various fields should follow the rankings based on the second survey.

    b.   Then incorporate e-business discussions in regular courses. Through constant exposure to e-business, students' desire or learning and getting into it will intensify.

    c.   Provide online gimmicks such as campus survival tips, fashion 911, social affair monitor, and freebie goods so that students will always surf.

    d.   Practitioners will reinforce this desire by having promotional gimmicks online.

3. Blur the Borders. Impress on the students that e-business causes blurring of geographical, functional and temporal boundaries. As such, e-business education is also borderless and is not a course under a particular college, yet, is strongly supported by all.

    Industry, academe and government must institutionalize their concerted programs to push e-business education. Exchange of resources must be seamless.

4. Reap the Rewards. Once the student becomes adept in e-business, he will be able to do more things productively, and be more marketable both as a student and as a professional.

    The practitioner will be able to employ highly productive personnel who will create demand, reduce cost, and deliver on time, among other benefits

The academician will be happy and content that he was able to help at least two souls, the student and his future employer wile his institution's enrollment soars.

Testing the Waters through a Pilot-run

To test the system's effectiveness, some strategies were pilot-run in the engineering college of the Philippine university involved in benchmarking. Some could not be tested because of time and resource constraints. The strategies pilot-run, their manner of implementation and the results are discussed below.

Strategy : 1. Evoke Exigency (a) and (b). (Please refer to the previous section for details).

Manner: On the 3rd trimester of SY 2000-01, posters and newspaper articles on the benefits of knowing e-commerce to the careers of non-computer or non-business students were posted on bulletin boards in the college. A one-page article on e-commerce and its benefits to one's career and day-to-day life was published on the student newspaper. Two announcements for job openings that stipulated "knowledge of e-commerce preferred" were also posted for two consecutive weeks.

The college offered "Introduction to E-commerce" for the first time in the first trimester of SY 2001-2002 as an elective along with two other new electives.

Thirty students enrolled were surveyed as to whether the "media blitz" of the previous trimester influenced them to enroll in the course.

Results: The two e-commerce sections were filled-up with 75 enrollees on the first day of enrolment while the two other electives had only a total of 10 students enrolling. This validated the study's finding that non-business/computer students would enroll in e-commerce provided they earn units.

Among the students surveyed as to the effectiveness of media blitz, only one-third saw at least one of the media announcements, and all of these admitted they were greatly influenced by the announcements in enrolling. Of the other two-thirds, 75% had learned from other media sources the importance of knowing e-commerce. The remaining 25% were convinced by their classmates that the course would be useful to them in the future.

Strategy : 2. Develop Desire (a)

Manner: The e-commerce subject offered to the engineering students contained the following topics, enumerated with % of time devoted to them: website development (50%), introduction to E-commerce (15%), E-marketing (10%), E-commerce strategic management (10%), E-hardware/security (5%), E-legal/ personnel/ finance (10%).

At the end of the trimester, 30 students were surveyed as to how much they liked the subject and the different topics offered.

Results: The students liked very much the contents of the topics and the manner they were taught (4.90 and 4.75, respectively, in a scale of 5). The topic that a significant number wanted to put more time on was E-hardware and security. Although the survey did not ask why, it might be because being engineering students, they were very interested in hardware and machine aspects.

Strategy: 3. Reap the Rewards (a), (b) and (c)

Manner: The students developed websites for 20 professors and ten companies who evaluated the students' works later.

Results: The faculty members and company managers liked the websites very much and rated them with averages of 4.5 and 4.75 in a scale of 5, respectively. All six managers expressed their willingness to hire the students either as computer analysts or engineers.

CONCLUSIONS

1. The incoming work force of the Philippines is not well prepared in facing the challenges of e-business, more so when compared to their counterparts in the Asia-Pacific

2. However, practitioners and academicians, particularly those in information technology, can help them overcome these predicaments by adopting breakthrough strategies. These strategies can be divided into four stages, namely, *evoke exigency, develop desire, blur the borders and reap rewards.*

3. The strategies that were implemented in a pilot-run proved to be very effective.

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