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In Search of Key Success Factors for E-Learning in Malaysia

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ABSTRACT

With emerging technologies such as the Internet and e-commerce, a rapidly changing market, chronic shortages of knowledge-workers and more demanding customers, the growing importance of e-learning makes it vital for program managers to know the ingredients of a successful e-learning program. The e-learning industry and hence, the literature on this subject are very much in the embryonic stage in Malaysia. This paper first draws insights from a macro-industry study involving expert interviews with 13 pioneers in the Malaysian e-learning industry. Three performance dimensions describing success at the institutional level that emerged were: managerial imperatives, operational excellence and market responsiveness. Then, it incorporates the findings of another study which took this analysis to the program level. The latter study interviewed another set of five experts at program development and management in e-learning. This was further examined by conducting a focus group discussion with a panel of eight lecturers from a leading e-learning university. Six dimensions of success attributes at the program level were found. These are namely, e-supportive committed management, e-reliable efficient system, e-quality learning content, e-knowledgeable instructors, e-independent resourceful learners and e-supporting external factors.

ABSTRAK

Dengan penjelmaan teknologi saperti Internet dan perdagangan-e, pasaran yang pesat berubah, kekurangan yang meruncing dalam bilangan pekerja berilmu serta pelanggan yang semakin cerewet, pentingnya pembelajaran-e kian meningkat. Ini menjadikannya lebih kritikal bagi pengurus program. untuk mengetahui apakah bahan ramuan sesebuah program pembelajaran-e yang berjaya. Industri pembelajaran-e dan juga percambahan karya dalam bidang ini di Malaysia masih di peringkat awal. Rencana ini mengambil ilham dari sebuah kajian di peringkat industri makro yang melibatkan temubual pakar dengan 13 orang perintis dalam industri pembelajaran-e di Malaysia. Tiga dimensi prestasi yang muncul yang menghuraikan kejayaan di peringkat institusi adalah : tindakan teras kepengurusan, kecemerlangan operasi dan sifat responsif terhadap pasaran. Rencana ini kemudian

merangkumi penemuan suatu kajian lain. Kajian kedua ini menganalisis masalah ini di peringkat program pula. Suatu set responden lain terdiri dari lima orang pakar dalam pembangunan dan pengurusan program-program pendididikan-e ditemubual. Ini diikuti dengan perbincangan kumpulan tumpuan dengan suatu panel lapan orang pensyarah sebuah universiti yang mempelopori pendidikan-e di Malaysia. Ini menghasilkan enam dimensi atribut kejayaan di peringkat program. Dimensi ini adalah: pengurusan-e yang komited dan menyokong, sistem-e yang cekap boleh dipercayai, kandungan pembelajaran-e yang berkualiti, pengajar-e yang berilmu, pelajar-e yang berdikari dan beriltizam, serta faktor-faktor luaran-e yang menyokong.

INTRODUCTION

When Malaysia's fourth prime minister, Tun Dr. Mahathir Mohamad - the visionary statesman and strategist, launched the Multimedia Super Corridor (MSC) on 1st August 1996, it is believed that this was an ambitious plan to leapfrog the nation into the information age. Thus, information and communication technologies (ICT) is deemed to be the growth engine to transform the knowledge economy ('k-economy') to an advanced stage by 2020 (Mazelan, Harnevie & Valida 1999). In addition to this, UBS Global Research was commissioned by the Malaysian government to investigate the overall state of readiness of the country for the MSC mega-project. In its report in July 1997, the research agency identified eight critical success factors for evaluation. These were: physical infrastructure, soft infrastructure, adequacy of human workers, international acceptance, funding, international competition sustenance, government support and commercial viability (Teh 2000). Of these, the biggest impediment to the MSC's success was deemed to be the chronic shortage of skilled human workers. (Conversely, the strong commitment of the Malaysian government has been recognised as the MSC's biggest competitive advantage among nations).

Up to October 2003, there are eleven public universities, seven public university colleges, ten private universities, six private university colleges and 700-odd private colleges in Malaysia which confer academic degrees and diplomas/certificates. In 2002, these institutions of higher learning (IHL) collectively served the tertiary needs of 25% of the Malaysian population in the 17-24 year age group. This percentage is relatively lower than that of other industrialized countries such as U.S. (81%), New Zealand (58%) and South Korea (48%) (Abdullah Sanusi Ahmad 2002). This 25% is also short of the 40% target that was to be reached by the year 2000, aspired by the 1999 National Information Technology Council E-Learning Working Group (Danabalan 2000). Increasing student enrollments into local public IHL and the rising number of foreign students since 1996, signal an increasing demand trend for higher education provided by IHL in Malaysia. The rapid

growth and quick obsolescence of knowledge in this information edge are also driving working adults for continuous professional development. Furthermore, the Eighth Malaysia Plan projected an intensification of distance learning programs in Malaysia to cater for 54,000 students in 2005 compared to 36,000 students in 2000.

However, the traditional IHL delivery model faces difficulty to cope with the sudden inflated demand. Consequently, public IHL have been instructed to corporatise, to shorten the duration of their undergraduate programs, increase their enrollment in science and technology-related disciplines, employ distance-learning methods and engage in more R & D projects (Mazelan, Harnevie & Valida 1999; Sulong 1997). Policy-makers and educators have recognised that an electronic learning environment strategically linked to ICT offers vast opportunities to improve access and productivity (NITC E-Learning Working Group Report 1999). Hence, with the convergence of education and ICT, e-learning emerged, and the race to put courses on-line has begun among local IHL. In sum, forces driving towards e-learning include: shortage of knowledge workers (Mazelan et.al 1999; Monroe 1999), globalisation challenges (Low 1998; Monroe 1999) and skills upgrading (Gan 1998; Sulong 1997), apart from the obviously constrained physical resources of universities (Gan 1997). Other forces include Malaysia's Vision 2020, and the advent of ICT and MSC's smart school flagship project that will produce 158,000 internet-savvy smart school graduates annually.

E-LEARNING AS AN EMERGING DISCIPLINE

In this study, 'e-learning' refers to the scope of formal, on-line distance opportunity provided by a university, open learning agency or consortium, that utilizes the process of acquiring and internalizing knowledge using the on-line mode through ICT (Teh 2000). Malaysia's NITC E-Learning Working Group (1999:20) denoted the e-learning environment as a multi-faceted learning program consisting of hardware, software and personnel. It utilizes distance learning, interactive cable TV and the internet to connect learning environments to homes, the workplace and community at large. In this higher education market, learning materials distributed through the internet, or termed 'on-line' learning, should be viewed as an innovative educational service product, developed by bundling various instructional and psychological principles with IT and multi-media tools (Nik Mansor & Ng 1998).

E-learning, short for electronically or digitally-delivered learning, is thus a form of open learning which has evolved from distance learning (Teh 2000). Distance learning is the instructional delivery that allows the student to be in a separate geographical location from the instructor. It serves as a second choice, appealing only to committed students who are sufficiently motivated and resourceful for independent study (Anderson 1998). By

adapting ICT utilization through media such as audiotape, videotape, radio and television broadcasting and satellite transmissions with the use of micro-computers, the internet and world-wide web, distance learning has evolved into 'open learning'. Anderson (1998:2) argued that ".....whereas distance education began with the method, open learning began with a purpose: to develop new strategies to provide access, at an affordable cost for all who seek benefits of higher levels of education and training.....Its leading agencies are now engaged in radical, diverse innovation, redesigning and reorganizing the components of learning, utilizing the increasing power and range of the new ICT, to meet the needs and circumstances of those who cannot or do not wish to enter traditional educational institutions....."

As opposed to the conventional face-to-face system, teaching and learning in open and distance education are conducted by an instructor/ facilitator/tutor separated in space and time from the learner. Elements of distance education are separation of teacher and learner, influence of an educational organisation, media link between teacher and learner to educational content, two-way communication exchange, learners as 'individuals' rather than student groups and education as an industrialised form (Jegede 1998). From largely (lecture-style) teacher-oriented approach emphasizing pedagogy in traditional campus-based learning, the modus operandi is shifting to a learner-oriented mode with participative learning emphasizing on andragogy, rather than classroom-based pedagogy. With provision of a highly interactive learner-oriented environment, the problems with distance learning encountered by students can thus be alleviated, if ideal open learning or e-learning systems are effectively managed. This is consistent with the new shift in the knowledge-economy's educational requirement from skills to knowledge, from mandated, instructor-led methods to library of self-directed learning methods, from passive participation to active participation and from product-centric to learner-centric modes (Syed Othman Alhabshi 2000).

Open and distance learning was introduced in Malaysia in the early sixties, starting with the external degree programs offered by established U.K. universities. Later, this approach was followed by Universiti Sains Malaysia (USM) and later, MARA Institute of Technology (UiTM) in their own versions of 'off-campus' programs. The mode of delivery then was largely print-based, with most tutorials conducted face-to-face, since the internet and web-based technology were absent at that time. Today, technologies such as virtual reality, artificial intelligence and knowledge systems are gradually taking over. These delivery systems create flexibility on time, place and pace of study.

E-learning is thus, an intriguing new opportunity window of learning, but the literature on this subject is very much in the embryonic stage in Malaysia. While a proliferation of discussions on e-learning have emerged

during various conferences held in Malaysia in the past three years, much discourse are still at the conceptual development stage. Prior to the commencement of Teh's study in 1999, we could not find any local empirical research initiated, exploring the strategic implications of ICT on Malaysian higher education at the industry, institutional or program levels. However, since the year 2000, commendable efforts by universities such as the Multimedia University (MMU), Universiti Tun Abdul Razak (UNITAR), Universiti Kebangsaan Malaysia (UKM), Universiti Tenaga Nasional (UNITEN), Universiti Utara Malaysia (UUM) and International Medical University (IMU), should be congratulated for initiating conferences, with themes specially focusing on the impacts of ICT on the higher education, business and services industries.

Seeking competitiveness in the global arena entails development and promotion of information-rich professionals thriving on highly responsive and functional education systems. Othman Yeop Abdullah (1999) asserted that this is largely dependent on strategies implemented by Malaysian IHL. Thus, this makes it even more vital for Malaysian IHL to know, understand and to meticulously plan the ingredients of a successful e-learning program, especially from a strategic standpoint. The potential benefits of e-learning comprise life-long learning including continuous professional development, enhanced productivity and access, improved quality of learning and accountability of IHL. However, issues such as access to ICT from marginalized groups, infrastructure, people and culture-bound factors, have to be tackled before these potential benefits can be realized.

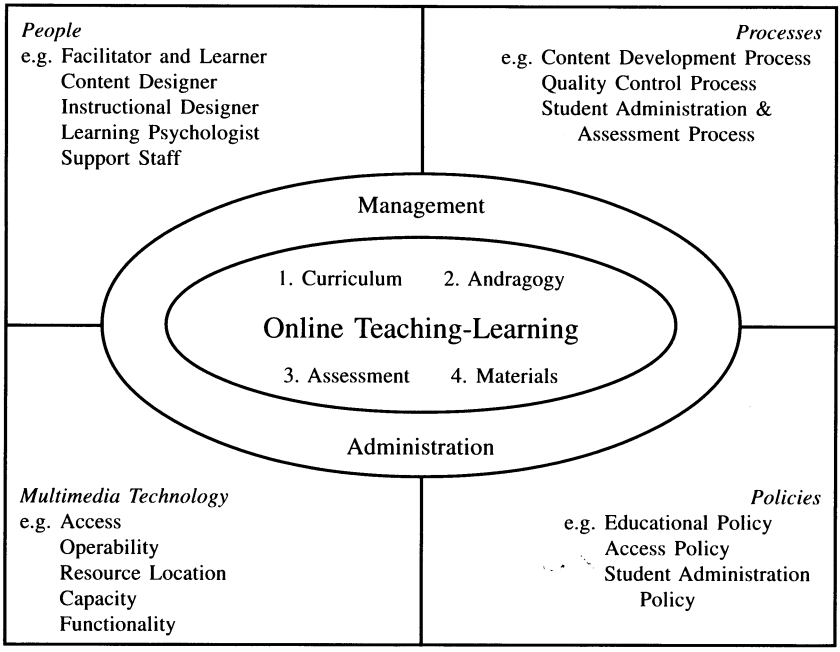
STUDY OBJECTIVES

This paper aims to achieve the following objectives:

1. to assess current practices of e-learning programs by Malaysian universities, with a view to understanding the main service delivery modes; and,
2. to explore underlying performance dimensions towards identifying key success factors that will make an institution successful in developing e-learning programs. Specifically, what will constitute this 'success' - (a) at the institutional level and (b) at the program level?

E-LEARNING DELIVERY MODES

Four major inputs and their elements form the domestic e-learning environment *per se* (Teh 2000). Figure 1 shows the elements managed within the interlinking e-learning inputs comprising people, processes, multi-media technology and policies. In Malaysia, delivery systems of e-learning prevail in four ways. These are namely, as (1) a direct provider of distance



Source: Teh (2000), p. 108.

FIGURE 1. E-Learning environmental input-elements

learning to students using ICT to deliver courses, tuition support and to perform student administration, course materials development, learning assessments, examinations, student counseling, etc; and (2) institutions using ICT to support their campus-based teaching to add value and increase productivity (such as the 90 smart schools project). Another method involves (3) a facilitating organization formed through alliances (such as the Open Learning Agency of Australia and Malaysia's MahirNet Sdn. Bhd.), and the fourth method, being (4) large corporations that have developed internal virtual programs on human resources training and development (Teh 2000).

Rowley, Lujan and Dolence (1998) classified virtual university experience into ten virtual learning environments, forming a range of six categories (depending on how extensive the enhancement or delivery of a module, course or program is conducted via the e-learning mode). Three virtual university categories are also grouped based on whether a core faculty is employed into providing a full-credit digitally-delivered college programs, or any form of digitally-delivered learning opportunity. Rowley et al's (1998) 'category 10's 'virtual learning indexes' houses indexes of databases, allowing a knowledge-seeker a choice of opportunities to develop or augment personal knowledge databases.

Three basic forms of e-learning initiatives are found among Malaysian universities (Arsiah & Cheah 2002). The first is termed as *structured initiatives* exemplified by those practised by Universiti Tun Abdul Razak (UNITAR), a private university, and the International Islamic University (IIUM), a public university. These two universities were found to date, to offer degree programs using the e-learning mode at the undergraduate / graduate levels. Since 1998, UNITAR has fully implemented 12 programs in three faculties via e-learning up to the graduate level. With five programs already accredited by the National Accreditation Board of the Ministry of Education, Malaysia, it employs the virtual on-line instructional support system (VOISS) – a hybrid model containing more than ten different functions such as on-line tutorial, e-mail, bulletin board, announcements, assignments, quizzes, and examinations. Since 2000, IIUM offers two programs virtually (the executive BBA and certificate in Islamic Studies) through its Centre of Excellence in Continuing Education and Distance Learning. This group of IHL seem to fall more into two of Rowley et al's (1998) categories, namely the 'virtual university category 1' and 'digitally-delivered program'.

The second form is termed as *semi-structured initiatives* where universities offering degree-conferring programs are using a mix of conventional face-to-face instructional means with the e-learning modes of education. In this context, e-learning initiatives are integrated into the existing conventional system, serving primarily to enhance knowledge delivery and facilitate student-instructor interactions. These semi-structured initiatives are practised either at faculty level or individual instructor's level in universities such as the MMU, UKM, Universiti Teknologi Malaysia (UTM), Universiti Malaya (UM), Universiti Teknologi MARA (UiTM), Universiti Putra Malaysia (UPM), Universiti Sains Malaysia (USM), Universiti Malaysia Sarawak (UNIMAS), and Universiti Malaysia Sabah (UMS). Finally, the third form of practice, categorized as *non-structured initiatives,* still prevails in other existing universities and university colleges where the traditional, campus-based teaching and learning mode are predominant, with relatively minimal e-learning systems in place. For instance, teaching notes may be posted via the Internet for easy access in their distance learning programs. The second and third groups of IHL above seem to fit into any one or a combination of the first six categories of Rowley et al's (1998) classification, in the form of digitally-delivered or enhanced module, course or program.

In Malaysia, open and distance learning is slowly gaining acceptance. In fact, five of the ten key objectives of the human resource policy thrusts of its national policy on education, are concerned with open distance learning (Abdullah Sanusi Ahmad 2002). Open University Malaysia (OUM) was incorporated as Malaysia's seventh private university in August 2000, with its owners as a consortium of eleven public universities. Its student enrollment of 900 in 2001 has risen to 6,500 in 2002; it offers 13 academic programs

up to-date. This is compared to 'open learning' IHL in other countries such as the Open Polytechnic of New Zealand with 200,000 learners (after 50 years of operation), Indira Gandhi National Open University, India, with 600,000 learners (after 25 years of operation), Open University, U.K. with 200,000 learners (28 years) and Universiti Terbuka Indonesia with 400,000 learners (15 years) (Abdullah Sanusi Ahmad 2002). Besides offering a flexible duration of study, providing an option between individualized learning and cohort-based learning system, it also adopts a multi-mode learning approach incorporating self-managed learning (with print-based modules with text books, study guide, CD-ROMS, audio/video tapes specially developed by its Centre for Instructional Design and Technology), on-line learning (via e-mail, web-sites, multi-media learning materials, bulletin board, chat rooms) and face-to-face interactions (Abdullah Sanusi Ahmad 2002).

The following two sections describe the methodology used and findings of this study conducted in two phases. Essentially, the focus is on the second research objective.

SUCCESS AT THE INSTITUTIONAL LEVEL

Phase 1 of the research was an exploratory study designed to assess universities' roles and aspirations in developing the e-learning industry in Malaysia. It attempted to identify the key performance dimensions and success attributes. Phase 1 of the study took a macro-industry perspective. The unit of analysis was Malaysian universities that have begun to be involved in the process of delivering distance learning educational programs employing the on-line mode. It drew insights from very recent conference papers and incorporated input from a panel of thirteen industry experts identified to be pioneers and key players in conceptualizing and developing e-learning strategies in this industry. These experts drawn from twelve institutions, were personally interviewed in-depth at their offices, using an interview schedule consisting of ten main probing questions. Each interview session lasting between thirty minutes to ninety minutes was taped and fully transcribed. Content analysis of the full-text, ad verbatim interview transcriptions, then followed (Ereaut 2002; Feder 1997; Kolbe & Burnett 1991; Sayre 2001 and Varki, Cooil & Rust 2000). The findings are reported in this paper in synthesized form.

Phase 1 aimed to assess current practices of e-learning programs by Malaysian universities and to further explore performance dimensions that will make an institution successful in developing e-learning programs (Aliah & Teh 2000b). The approach takes an institutional perspective. These industry experts interviewed were questioned on 'how institutional success in e-learning can be defined for the Malaysian industry'. Their most

TABLE 1. Sample opinions in search of 'institutional success' and their implications

Statement	No of Respondents	Performance Dimensions
Internet is a level playing field, so quality with cost competitiveness is a must for survival	6	Market Responsiveness
The role of the teacher will change; i.e. to a facilitator rather than the centre of knowledge. The shift is towards student-centred learning	5	Operational Excellence
It means increased competition; conventional universities need to be proactive about this intensified international competition	5	Managerial Imperative
The universities need to be globally competitive, the offer needs to be world-class	5	Managerial Imperative
Students of higher learning are increasingly demanding and discerning. If a university does not use quality staff to produce quality products, they will go elsewhere. The customers demand value-for- money	5	Operational Excellence
The university needs to focus on its market niche; what segment it can serve best. What it can do best and to leverage its strength	4	Managerial Imperative
Teachers need to be retrained, retooled and updated with new ICT	3	Operational Excellence
IT infrastructure needs to be made ready	3	Market Responsiveness
In the shrinking and borderless marketplace, those who do not have an internet strategy will be left behind; only the fittest will survive	3	Managerial Imperative
Currently, competition is not a worry, as demand exceeds supply and our costs (incurred by students) are relatively low	2	Operational Excellence

Note: The number of experts interviewed (n=13) who shared similar comments on the issue, is shown in the second column. The third column denotes the category assigned under each of the three performance dimensions developed. (The relatively most dominant categories are selected)

common opinions regarding this stated that: (1) e-learning should be pedagogically-driven, and not vice versa; (2) whether it is e-learning or not, eventually it is still about quality of the educational process; it is not the "e" part – it is about learning; (3) e-learning is not about transferring textbook

TABLE 2. Key success factors based on three performance dimensions (Depth interview findings - phase 1)

Managerial Imperatives	Operational Excellence	Market Responsiveness
a. Pro-active strategic planning	a. Cross-functional integration and team-based program development	a. Use market mechanism and be responsive to market needs
b. Function as a private enterprise	b. High quality content/ teaching material	b. Service quality and output meeting global standards
c. Leadership at all levels	c. Active in R & D (e.g. to search for most effective pedagogy for e-learning	c. High concern towards customer satisfaction (students / all marketing publics)
d. Clearly defined vision	d. Ensuring that pedagogy governs technology and not vice-versa	d. Mass-customization to meet individual student's needs
e. Top management commitment	e. Well-structured and systematic content development value chain	e. Curriculum design meeting target market needs
f. Service-oriented thinking	f. Efficient and reliable operational and delivery system	f. Exploring and systematically adapting to new ICT's and students' proficiency levels
g. Identification of market niche by maximizing on institutional strength	g. In-built artificial intelligence enabling	g. Keeping track of competition and business opportunities
h. Definition of institutional value-chain	h. teaching to be custom-tailored for students' needs	h. Effective marketing strategy
i. Staff with expertise and of high quality	i. Proficient project management	
j. Overcoming obstacles to change	j. Efficient logistics management	
k. Culture of continuous improvement	k. Creativity in ICT adoption	
l. Thinking globally and targeting of world-class standards	l. Ready to access to digitized resource centre	

material to the computer screen – mapping old processes onto new technology is not going to work; and (4) technology is merely a tool or enabler; it should be a means and not the end. Table 1 shows a sample of opinions shared by these industry experts on the subject of defining institutional success for initial goal setting. Such opinions are then categorized into three common themes, which are subsequently classified into three performance dimensions.

Literature review on innovation of new services revealed that Cooper, Easingwood, Edgett, Klienschmidt and Storey's (1994) performance dimension framework on U.K.-American financial service institutions can adequately capture Malaysia's e-learning industry context. Cooper et al. (1994) used a methodology designed to test the significance of eleven underlying factors that distinguished major new product winners from the 'ordinary' success in the financial sector. Financial services and e-learning share similar service features and both studies aimed to develop winning strategies. Therefore the idea behind the success dimensions of Cooper et al's (1994) study, namely financial performance, relationship enhancement and market development dimensions have been adapted into the e-learning environment to become 'managerial imperatives', 'operational excellence' and 'market responsiveness'. This is to better capture the intricacies of the e-learning environment (Table 2). A definition of each of the three performance dimensions that emerged for e-learning institutions, will be given in the ensuing paragraph.

Managerial imperatives focuses on the strategic management aspects of an institution with dual emphasis on both academic leadership and strategic planning, which is deemed crucial to drive the institution towards goal-setting and continued growth of e-learning. 'Operational excellence' is quality in the development, delivery and daily operational activities of educational programs and their package of complimentary services, with the ultimate aim to achieve world-class standards in quality and innovation. 'Market responsiveness' complies with the need to serve the industry's marketing publics at the highest level. The marketing publics in the e-learning industry comprise six markets: the customer market (learners); the referral market (school counselors, education consultants, foreign embassies); the supplier market (instructional content providers, course designers, pedagogy/andragogy consultants, multi-media experts); the employee market (teachers, course facilitators, educational administrators); the influencer market (Ministry of Education, National Accreditation Board, popular media) and the internal market (k-personnel, university's internal staff) (Aliah & Teh 2000a).

A common goal explicit across the three performance dimensions identified, is achieving excellence in the global playing field, the 'open skies – borderless world' window of opportunities, and to tackle problems and challenges which they bring forth. Packaged as such, the three performance dimensions yield *seven key success factors at the institutional level* with managerial implications – (1) a need for sturdy management at all levels, (2) pro-active strategic planning with top management commitment, (3) adopting a private enterprise paradigm, (4) world-class customer-oriented quality of service, (5) cross-functional teamwork and network, (6) sound pedagogical grounding, and (7) well-structured content development process that yields

high-quality learning materials. It should be noted that in search for world-class innovation and quality for a successful e-learning program, the dual engagement of total quality management (TQM) and relationship marketing is integral. TQM acts as the internal success driver in the market's value chain whilst relationship marketing ensures that bonds, through strategic alliances and networks with the external public, can be fostered and nurtured for mutual benefit (Aliah & Teh 2000a).

It is interesting to note how this varies with Syawe, Jamil and Duncan's (2002) eight-point guideline when they adapted the Malcolm Baldridge Quality Assessment's seven-point criteria, in assessing UiTM Sarawak's implementation of its total quality management initiatives since 1996. The eight perspectives generated by their ROKUM framework were: leadership; information and analysis; strategic planning and operation; development and management of resources; education management processes; innovation; products; and customer satisfaction. Of course, the UiTM context here is the 'semi-structured' e-learning initiatives identified earlier, while this study assumes the holistic elements of 'structured e-learning initiatives' being fully in place.

SUCCESS AT THE PROGRAM LEVEL

Phase 1 sought to explore performance dimensions for *the institution* in its entirety, to succeed. Phase 2 of the research took the analysis to the program level, seeking to examine, to what extent can the performance dimensions and success attributes within the identified strategic dimensions, be manifested at the program level, to achieve and develop winning strategies. In other

Exhibit 1. Basic interview schedule used in phase 2

1	How would you define e-learning in your institution?
2	How are you conducting the program(s) using the e-learning approach?
3	What are the factors that need to be considered in order to have a successful e-learning program?
4	How would you measure the success of your e-learning approach?
5	Aliah and Teh (2000b) suggested the following framework with 3 performance dimensions (Table 2). Do you agree?
6	If yes, why? If not, why not?
7	What other factors besides these three performance dimensions that you feel are important that have been left out?
8	How can the three performance dimensions be fitted into your existing program?
9	Do you think Malaysia has the prospect of engaging herself in this e-learning program / industry successfully in the light of globalisation? What are the possible challenges?

words, we sought to answer : 'what factors can make a particular e-learning *program* succeed'? Data collection was conducted in three stages over a period of seven weeks.

The first stage was to identify by name, potential respondents who have been involved in the planning, designing, marketing and implementation of e-learning programs at their relevant institutions. Five respondents were selected for personal in-depth interviews to be conducted in the second stage. Three interview schedules were devised accordingly, as the interviews progressed from general explanations to probing discussions of specific success measures (Exhibit 1 illustrates the basic interview schedule comprising the original set of nine questions used). Duration of the interviews ranged from forty-five minutes to two hours for each session, conducted at the respondents' offices. All the interviews were tape-recorded with the respondents' consent; they were fully transcribed with detailed notes taken

TABLE 3. Key performance dimensions of e-learning at program level – (Findings from Phase 2's in-depth interviews)

Instructors	Students	Contents
1. Team work spirit	1. Prepared	1. Design to enhance learning
2. Motivated	2. Willing to allocate time	2. Takes into account the human cognitive nature
3. Ready assimilate the system	3. Good time management for working students	3. Human friendly
4. Correct mind set	4. Be prepared for the new system	4. Hands-on materials
5. Willing to be continuously trained	5. Independent	5. Multi-media delivery
6. Focus on facilitating rather than lecturing	6. Proficient in language, especially in English	6. Easy to understand courseware
7. Techno-savvy	7. Motivated	7. Systematic course plan
8. Ready to change	8. Resourceful	8. Interesting multi-media presentation
9. Nurture knowledge-seeking attitude among students	9. Hardworking	9. Continuously improved &updated
10. Dedicated	10. Problem-solving skills	
11. Prepared mind	11. Mature	
12. Give proper and timely attention to students	12. Ready to adapt to the new way of learning	
13. Motivate students	13. Understanding life-long learning	
	14. Adaptable to the system	
	15. Have love for knowledge	
	16. Team esprit de corps	
	17. Comfortable using the different type of instructional media	
	18. Utilizing the system fully	

TABLE 3 (continued)

System/Infrastructure	Management	Other Factors
1. Enhance the knowledge delivery	1. Focus on students' needs	1. Government support
2. Efficient and up-to-date	2. Trying to focus on students' expectations	2. Society's readiness to accept the e-learning concept
3. Continuously improved	3. Service oriented	3. Sufficient demand from the market (volume of business)
4. Strong technical support system	4. Willingness to invest	4. Reliable and efficient internet system
5. Reliable system	5. Identify right target market	
6. Efficient customer relationship management	6. Give full and strong financial support	
7. Efficient internal system of delivery	7. Strategic alliances / networking with other players (internal / external)	
8. World class technology to produce courseware	8. High coordination with all the staff involved	
9. Reliable vendors engaged	9. Produce high quality service and output	
10. Integrated intelligent management support system	10. Allows flexibility in credit transfer	
11. Strong material development centres	11. Aggressive marketing	
12. Combining different methods of delivery including face-to-face mode	12. Open-minded	
13. Good infrastructure	13. Able to change	
	14. Able to convince society	
	15. support life-long learning	
	16. Customer focus	
	17. Treat the staff accordingly	
	18. Cater for the needs of all – open up opportunities to as many as they can	
	19. Engaged in competitive pricing	
	20. provide conducive environment for the new system of learning	
	21. Giving efficient service	
	22. Productive	
	23. Committed	
	24. Giving continuous training to staff	
	25. Motivate staff	

Note: The dimensions and attributes are put in random without any particular order or ranking

Exhibit 2. Focus group administration plan used in phase 2

1 Facilitators explain the research objective, the importance of the study and give some background of the series of in-depth interviews conducted earlier.
2 Facilitators distribute the table containing the six dimensions shown in Table 3. Facilitators explain what the contents of the table mean, especially in terms of 'dimensions' and 'attributes'.
3 Focus group panelists study the table.
4 Facilitators ask the panelists the following questions:
   Q1 Do you agree with all the six dimensions shown? Why or why not?
   Q2 Do you agree that the attributes fall into each dimension as labeled? Why or why not?
   Q3 What other dimensions or attributes do you think are missing from the list? Why?
   Q4 Do you think some of the dimensions listed are more important relative to the other factors?
   If yes, please arrange them according to level of importance.
   If no, why?
5 Facilitators ask the panelists to suggest the name of the descriptors for each of the dimensions.
6 They are asked to include additional suggestions for any new dimensions or attributes that they would like to add.
7 Facilitators end the session by giving their appreciation to all the participants involved in the focus group discussion.

throughout the sessions. From the interviews, the success dimensions of e-learning at program level that emerged were as follows: (A) Instructors, (B) Students, (C) Content, (D) System / Infrastructure, (E) Management, and finally, (F) Other factors (This is shown in Table 3). These six categories generated 82 concepts attributing institutional success towards the implementation of e-learning programs. These six categories are to be further deliberated in the next stage.

The third stage of data collection proceeded to a focus group discussion conducted by two moderators, namely Doctoral Students undergoing the Advanced Marketing Research course under the first author's supervision (who also conducted the earlier interviews in Phase 1) (Arsiah & Cheah 2002). Content analysis was used to categorize concepts developed from the full-text responses generated from both the interviews and focus group discussion (Hirschman 1986, Kolbe & Burnett 1991, Varki et al 2000 and Zimmer & Golden 1988). This focus group comprised a voluntary panel of eight lecturers, sourced from a leading university that is more advanced in practising e-learning than the other Malaysian IHL. The focus group discussion procedures are illustrated in Exhibit 2 (Greenbaum 1999; Krueger & Casey 2000). This discussion lasted for an hour and forty-five minutes. In this

TABLE 4. Key success dimensions in e-learning at program level (Findings from phase 2's focus group discussion)

e- Supportive Committed Management	e-Reliable Efficient System	e-Knowledgeable Dedicated Instructors
1. Focus on students' needs	1. Enhance the knowledge delivery	1. Team work spirit
2. Trying to match students' expectations	2. Efficient and up to date technology	2. Motivated
3. Customer and service oriented	3. Continuously improved	3. Ready to assimilate the system
4. Willing to invest	4. Strong technical support system	4. Correct mind set
5. Identify right target market	5. Reliable system	5. Willing to be continuously trained
6. Giving full commitment through strong financial support	6. Efficient customer relationship management	6. Focus on facilitating rather than lecturing
7. Strategic alliances / networking with other players (internal and external)	7. Efficient internal system of delivery	7. Techno-savvy
8. High coordination with all the staff involved	8. World class technology to produce courseware	8. Ready to change
9. Capable of enforcing high quality standard of service and output	9. Reliable vendors engaged	9. Nurture knowledge-seeking attitude among students
10. Allow flexibility in credit transfer	10. Integrated intelligent management support system	10. Dedicated
11. Aggressive marketing	11. Strong material development centres	11. Prepared mind
12. Open-minded	12. Combining different methods of delivery including face-to-face mode	12. Give proper and timely attention to students
13. Able to change	13. Good instructions	13. Motivate students
14. Able to convince the society	14. Having the standard for the implementation of all the activities involved	14. Ready to adapt to the changes
15. Management style that supports life-long learning		15. Have mutual trust with the learners
16. Treat the staff accordingly		
17. Cater for the need of all – open up opportunities to as many as they can		
18. Engaged in competitive pricing		
19. Provide conducive environment for the new system of learning		
20. Capability to give efficient service to internal and external customers		
21. Management stress on productivity		
22. Giving continuous training to staff		
23. Motivate staff		
24. Strong believer of e-learning		
25. Techno-savvy		
26. Have a clear vision and direction		
27. Giving full commitment towards e-learning		

TABLE 4 (continued)

e-Quality Up-to-date Content	e-Resourceful Independent Learners	e-Supportive External Factors
1. Designed to enhance learning	1. Prepared	1. Government support
2. Takes into account the human cognitive nature	2. Willing to allocate time	2. Society's readiness to accept the e-learning concept
3. Human-friendly	3. Good time management for working students	3. Sufficient demand from the market (volume of business)
4. Hands-on materials	4. Be prepared for the new system	4. Reliable and efficient internet system
5. Multi-media delivery	5. Independent	5. Government and relevant bodies to accept the real meaning / concept of e-learning
6. Easy to understand courseware	6. Proficient in language, especially in English	6. Government and relevant bodies to set a standard for the implementation of e-learning in IHL
7. Systematic course plan	7. Motivated	
8. Interesting multi-media presentation	8. Resourceful	
9. Continuously improved/updated	9. Hardworking	
	10. Problem-solving skills	
	11. Mature	
	12. Ready to adapt to the new way of learning	
	13. Understanding life-long learning	
	14. Adaptable to the system	
	15. Have love for knowledge	
	16. Team esprit de corps	
	17. Comfortable using the different type of instructional media	
	18. Utilizing the system fully	
	19. Techno-savvy	
	20. Correct mind-set	
	21. Committed	

Note: a. The performance dimensions are ranked according to perceived level of importance – the first dimension being the most important and the last dimension being the least important dimension.

b. The attributes under each dimension are not ranked according to the respondents' perceived order of importance. These attributes generated from content analysis of the depth interviews earlier, have been modified in the focus group discussion.

discussion, researchers sought the lecturers' opinions to reaffirm the grouping of concepts (attributes) within the six performance dimensions identified in the earlier phase (Table 3). (Krueger 1997). This panel of experts expanded Table 3's performance dimensions and re-labeled each dimension with a suitable descriptor. They are also made to rank these new dimensions in their

perceived order of relative importance (Fern 1982, 2001; Lautman 1981 and Stewart & Shamdasani 1990). The ranked, newly- labeled set of six dimensions that emerged here in order of perceived importance, are as follows [with (1) as the most important] namely, (1) e-supportive committed management, (2) e-reliable efficient system, (3) e-knowledgeable dedicated instructors, (4) e-quality up-to-date content, (5) e-resourceful independent learners, and the least in order of importance, (6) e-supporting external factors (Table 4).

The most important dimension perceived is the *e-supportive committed management* (with 27 attributes), which must be supportive of the new learning mode, engaged throughout the entire process, to ensure the program's success. Top management firstly, must be willing to invest heavily in setting up the infrastructure needed to run the system efficiently. The next performance dimension is *e-reliable efficient system* (with 14 attributes), which requires a delivery system that facilitates interactions between instructors and learners. This process will enable them to transfer and access knowledge without interruptions or without any distortion to the meaning of the knowledge being conveyed. The system should enhance knowledge delivery expeditiously and should reach all learners and instructors alike from any point, by means of up-to-date technology and media. Next in importance is *e-knowledgeable dedicated instructors* (15 attributes). Here, e-instructors are perceived as the most important direct players in the e-learning environment as they are a special breed of highly dedicated, knowledgeable and skillful educators who are adaptive to the system, and ever ready to facilitate students in their e-learning quests.

E-quality up-to-date content (with nine attributes) requires materials that provide a stimulating learning response, since the paradigm priority has shifted from pedagogy (teacher-oriented learning tied to a classroom setting) to andragogy (student-centred learning). Hence, content substance and presentations in learner-friendly and interesting formats and styles using multi-media and forms that encourage participative learning are sought. Another performance dimension is *e-resourceful independent learners* (21 attributes). In the e-learning environment, it is crucial that learner-students are self-motivated, independent and resourceful, well adept at sourcing information from diverse sources, and very well aware that instructors are mere guides to the learners' individual quests for self-discovery and truth. The students are expected to be skillful in handling various forms of instructional media, be prepared for on-line tutorials, and employ good time-management and study skills towards achieving their individual goals.

While the five preceding performance dimensions are deemed to be internal to the institution, the last key factor, *e-supportive external factors* (with six attributes), is also deemed to make a difference in the program's success. The factors include support of regulatory / government authorities,

internet service providers / inter-connected networks and influence of other players in the referral market and influencer market such as the press and print media. Figure 2 illustrates visually the interlinking roles of the six program-level success factors described (Aliah, Arsiah & Cheah 2002).

IMPLICATIONS AND RESEARCH DIRECTIONS

While drawing insights from Cooper et al.'s (1994) study on the success factors in developing innovative new services, the findings of Teh's (2000) and Aliah, Arsiah and Cheah's (2002) studies imply that Malaysian universities contemplating to embark on new e-learning developments, can be guided with four ingredients at the strategic level: (1) Implement a market-driven, customer-focused new service development process; (2) Market launch strategy has to be done proficiently. This entails adequate use of marketing communications, customer service and contact; (3) Product / program design factors, such as product advantage and product responsiveness should

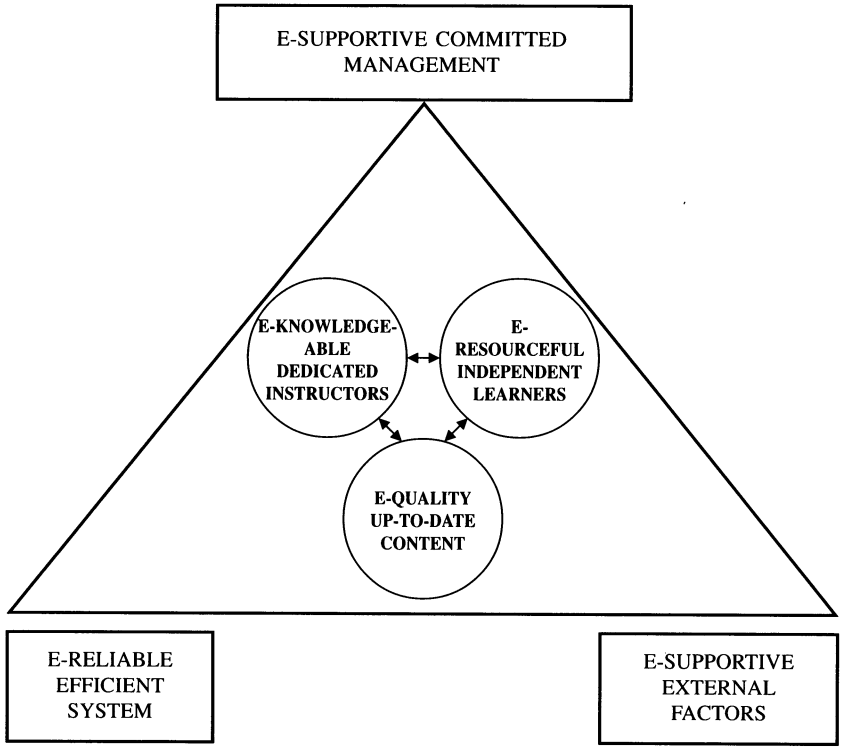


FIGURE 2. E-Learning success pyramid at program level

Source: Aliah, Arsiah & Cheah (2002)

become success drivers as determinants of operational excellence and market responsiveness. For example, too many new courses or teaching materials have been known to be rushed into development without a full understanding of current and future learners' needs. Also, if there are floods of requests for system changes or 'product tweaks' to suit students' requirements, these should have been anticipated in the original product design stage earlier; and (4) Select and prioritize new products / materials carefully, with consideration to market synergy, managerial and financial synergy, as well as product advantage and product responsiveness (Aliah & Teh 2000b).

However, it should be forewarned that venturing into e-learning challenges traditional beliefs and wisdom on issues regarding the customer, products, quality and process. The participants in Phase 1's study have identified four pre-requisites towards successful implementation of e-learning programs in IHL. First, it requires a shift into a 'private enterprise operating model' where quality, customer satisfaction and continuous improvement are the backbones of its management philosophy. Secondly, IHL should clearly define their primary and secondary target markets. The third challenge is to identify instruments to measure quality in e-learning. Finally, the fourth challenge requires IHL to identify what constitute the processes in e-learning delivery, and to strategize how these processes can be improved through an integration of total quality management and relationship marketing in practice (Aliah & Teh 2000b)

With this kind of scenario, it is very appropriate that studies be conducted and inter-linked to answer key questions such as : Are Malaysian universities adequately (physically and technically) equipped for fully-structured e-learning initiatives? What e-learning objectives can be prioritized and targeted? What particular performance indicators should be used for particular e-learning objectives? Without further research, it would indeed be naïve to assume that the key factors identified, will guarantee immediate success, but certainly they are vital input to be considered by universities embarking on the structured initiative form. However, in the final analysis, theoretical arguments can only be realized at the implementation level to assure success that is sustainable.

To deliver superior learning quality on-line, universities with Web presence must firstly understand how their learners perceive and evaluate on-line customer service. Thus, rigorous attention is needed to measure and understand the concept of 'quality of e-learning delivery'. Measuring service quality of e-learning delivery would involve a comprehensive examination of the antecedents, composition and consequences of such service quality (Zeithaml, Parasuraman & Malhotra 2002a). The e-SERVQUAL scale that Zeithaml et al. (2002b) have developed is one such example, that probably need to be adapted into the e-learning context. As the study of quality of e-

learning delivery has not taken off in Malaysia, we can learn from the study of 'service quality delivery through web sites'. (Recent studies on electronic service quality (e-SQ) point towards this construct as multifaceted and includes dimensions such as ease of use, privacy/confidentiality, reliability and site design. Also, 'e-SQ' affects satisfaction, intent of purchase and purchase) (Zeithaml et al. 2002a).

Consequently, while research in all areas in the Malaysian e-learning spectrum are critically needed, we believe that top priority should be given to research focusing on e-learner characteristics, e-learner needs and their value expectations (Jegede 1998). Alam (2002) suggested user (i.e. learner) input and involvement in new service development as an important area of inquiry, which we think is most relevant for success in developing new e-learning programs, especially at the program's system design and testing stages. Furthermore, learning in itself, is a cultural-bound activity (Gan 1998), while Robinson (1998) revealed that there are cross-cultural differences between Chinese learners and the established western models. Research on e-learning should therefore, take into account the differences in learning behavioral patterns and needs of targeted learners. Implementation of any e-learning initiatives also need to be tailored to conform to government policies and legal requirements, especially to meet the current demand of the multi-racial and multi-cultural Malaysian learner market, and later, for the global market.

Success is a multi-dimensional construct and is therefore difficult to measure. In recognizing this, Griffin and Page's (1996: 478) study hypothesized that the appropriate measures of a product development program's overall success should depend on the firm's innovation strategy. For example, a university that values being first to the e-learning market, will measure success in different terms from those used by a firm that focuses on maintaining a secure market niche. Also, the most appropriate measures of program-level success will depend on the university's business strategy. For instance, innovative universities need to assess their program's contribution to their institutional growth, while those placing little emphasis on innovation need to focus on measuring the efficiency of their program development. Clearly defining their business, goal setting and market-targeting together with market positioning to attain strategic priorities, need to be done and well-researched continuously, for an institution to gain a successful foothold in the Malaysian e-learning industry. Even after the dot.com boom has lapsed (April 1995 – 2000 in the U.S.), the Internet remains a vibrant marketing tool, and Kalyanam and MacIntyre (2002) argue that a 'new vocabulary' is necessary to understand the extent to which e-marketing will cause changes in long-accepted learning practices and the marketing methods used. To this, they propose the 'e-marketing mix' which may be especially relevant for e-learning program managers to adopt. This

'e-marketing mix' includes new elements such as personalization, privacy policy and Web site design.

Success in e-learning approaches can also be viewed in terms of the ability to transfer not only explicit knowledge but tacit knowledge as well. While explicit knowledge can tap instructors' knowledge and skills that can be readily documented and transferred to the learner, tacit knowledge gained mostly on experience-based learning, or wisdom acquired through individual context-specific experiences, is difficult to document and transfer, and this becomes an inherent challenge for developers of e-learning programs. This is deemed vital as the core service offering of a university is not merely transferring existing knowledge but creating new knowledge as well. Besides actively driving research activities, for knowledge creation to occur, the learning generated requires a more direct and frequent instructor-learner interaction process, especially at the post-graduate program levels. Can the e-learning or virtual environments be optimally used to foster this?

Ideally, an education system should be designed to enable an institution's graduates to become creators of knowledge and wealth, possessing the qualities and values of becoming balanced, wholesome intellectuals. This paper has described the formidable challenges that IHL face, from the 'success factors framework'. While e-learning provides the impetus for Malaysian IHL to ease the acute shortage of knowledge workers for business and government establishments, ability to manage wisely these success attributes will pose as a test, in their quest to advance the dream of making education a life-long journey of self-discovery for Malaysians.

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