Strategic Effectiveness of e-Learning: A Pilot Study

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ABSTRACT

This paper presents a pilot study of a group of e-learning initiatives - within six Asian tertiary educational institutions. This is the 2nd Phase of a study initiated in 2010. In Phase I, based on review of literature within the last decade, a model for strategic evaluation of e-learning solutions was established. In Phase II, a pilot study was completed – to evaluate the effectiveness of the model and to establish a first impression of reality of value added by e-learning solutions. The outcome of Phase II confirms that the model can be used effectively. The six e-learning initiatives analysed suggest that in this small focus group of institutions, there is no conclusive evidence having achieved strategic gains as defined by the model.

Keywords

e-learning, technology assisted learning, strategic advantage, pilot study.

1. INTRODUCTION

The review of literature published throughout the last decade suggested that the Internet and Web-based technologies have both had a major impact on the way(s) in which educational and training organizations operate (Asgarkhani & Clear, 2011). Various studies (e.g. Baynton, 2001; Burns et al., 2001; Dobbs, 2000; Higgins, 2002; Rosenberg, 2001) suggest that in early 2000s we witnessed rapid advancements in ICT – which has in turn contributed towards the emergence of a globally and electronically connected world. A paradigm shift with regards to the ways in which the transfer and management of knowledge is handled was witnessed. A review of e-learning cases (e.g. various cases in online learning in the Training Magazine, Asgarkhani, 2003; Kiser, 2001; Montanden, 2002; Pan et al. 2010; Rossett, 2002) in early 2000s suggests that most tertiary educational institutions and professional training organizations (within ICT enabled and globally networked countries) had acknowledged to some extent the strategic importance of using technology-based education and learning through Web-based applications.

At the same time, emphasis on the technology aspect of e-learning without looking at broader educational and strategic issues is not sufficient for delivering state of the art technology solutions for learning. On the whole, some electronically delivered programmes/courses appear to have been developed and implemented in a somewhat reactive manner, and in isolation - more specifically, without much thought being given as to strategic implications: global developments, cultural issues, digital divide and the complexity of today's knowledge management systems. A review of cases (Asgarkhani & Clear, 2011) shows that solutions which did not consider strategic values did not deliver expected value. As mentioned earlier, this paper outlines the outcome of phase II of a research project - mainly the result of evaluating effectiveness of the model that was established in Phase I.

2. AN OVERVIEW OF PHASE I OUTCOMES

In the evolution of technology assisted learning, we seem to have been experiencing a paradigm shift in transfer of knowledge and learning. More specifically, we are dealing with educational solutions that are concerned with:

- Providing flexible access (anytime/anywhere)
- Focusing on outcomes
- Shifting the focus from physical facilities to networked facilities
- Placing emphasis on online rather than paper-based delivery
- Facilitating real time rather than cyclic learning

Considering the history of technology in learning, we have witnessed a progression of employing technology such as:

- Film
- Advanced TV technologies and video tapes
- Mainframe computer based "teaching machines"
- Early microcomputers as a basis for Computer Based Training (CBT)
- Touch screens and interactive videodisks based on "InfoWindows" hardware technology
- Power PCs, CDs and VCDs
- Global networking advancements and web-based solutions

Today the e-learning industry is diverse. Numerous universities have developed profit orientated e-universities offering courses and degree programs. The e-learning industry also includes companies that support the establishment of learning infrastructures and networks for higher education institutions (as well as corporations) including course management and delivery tools such as Blackboard, WebCT and Moodle. The key characteristics of e-learning solutions in early 2000s (Rosenberg, 2001) were seen to be as follows:

- Being based on computer networking technologies.
- Being delivered to the learner via a computer that is connected to standard Internet technologies.
- Focusing on the broadest view of learning.

Today, the learning and educating industry seems to have moved on from technology based learning merely representing e-learning. New concepts such as m-learning (Mobile learning) and b-learning (Blended learning) have emerged.

There was considerable debate in early 2000s (e.g. Dobbs, 2000; Industry Report, 1999; Kaeter, 2000; Kiser, 2001) over the effectiveness of e-learning. Many people (e.g. Kushnir, 2009; Rosenberg, 2001) considered technology-based learning disappointing at its best - as they argued that its impact has been relatively minimal. Others (Dobbs, 2000; Kiser 2001; Kruse, 2002a) argued that the benefits of e-learning outweighed its drawbacks. The perceived importance of digital learning had motivated some governments to develop national guidelines and strategies for introducing e-learning solutions (e.g. New Zealand e-Learning Advisory Group, 2002). Overall, e-learning appeared to be taking root in organizations of all sizes - even though there were often different views concerning the ways in which e-learning can benefit individuals or organisations.

Other studies of learners' attitudes towards e-learning within tertiary educational institutions (e.g. Burns et al, 2001; Asgarkhani, 2003) indicated that there was an increasing demand for online courses. It appeared that the demand for quality online courses with multifaceted person-to-person interaction (recently known as b-learning) would increase rapidly in the future.

At the same time, there were also barriers to consider. Access to information and communication technologies (ICTs) is critical for economic and social development. Developing effective digital learning and solutions depends on the state of the ICT industry and electronic readiness (e-readiness) of countries, organizations and societies. This was discussed in early 2000s by numerous researchers (e.g. Asgarkhani 2002b; Information Society Index, 2001; Kurilovas et al, 2011; META Group, 2000; OECD Workshop, 2000).

Overall, it was discussed that differences in diffusion and use of ICTs and electronic networks could lead to:

- Divides between countries
- Social divides within countries
- Divides within countries related to income, education, age, family type, and location
- Business divides related to sector, region, and firm size

In November 2001, at the time that the benefits of distance learning via the Internet was being heavily promoted, the global communications company Marconi (2001) called on government and private stakeholders in South Africa to accelerate the introduction of e-learning centres in remote, rural and disadvantaged areas - suggesting that economic and educational benefits could have an immediate and measurable impact on poverty in South Africa. Higgins (2002) viewed e- learning as a tool that can play a significant role in bridging the digital divide in the APEC region. However, the digital divide can also be considered as a barrier to successful rollout of e-learning solutions. Some of the causes of digital divide that can (even today) also limit successful implementation of e-learning solutions can include:

- Lack of telecommunications and network infrastructure
- Limited PC access
- Lack of financial resources for developing an infrastructure

- Lack of ICT literacy
- Limited Internet access
- Cultural resistance
- High access costs to global networks and the Internet
- High cost of business investment
- Strategic business impediments – applicability; the need to reorganize; the need for skills, security and privacy considerations

3. STRATEGIC APPROACH TO TECHNOLOGY ASSISSTED LEARNING

In Phase I (Asgarkhani & Clear, 2011), it was also established that, even though technology is a major component of e-learning, improving technology and infrastructure is not sufficient to produce outcomes that deliver value. The development and delivery of quality e-learning and knowledge sharing/management (KM) solutions needs to be strategic. A strategic approach to e-learning can optimize the application of technology within learning environments (Asgarkhani, 2003; Gallagher et al, 2002; Hsieh, 2003; Kruse, 2002d; Rosenberg, 2001; Rossett, 2002).

A review of some of the most widely used frameworks for strategy development (Asgarkhani, 2002a; Boar, 2001; Heath, 2003; Robson, 1997; Rossett, 2002) suggests that it (the process) should consist of at least three specific components/phases: Analysis, Choice and Implementation. Some researchers suggest a fourth component (Review) is also to be considered.

Integrating all the components of the strategic process for developing e-learning solutions is cyclic. The key elements of this cycle are:

- Strategic Analysis – involves establishing an understanding of the current situation, including: aspects of the environment, current technology infrastructure, available resources, expectations, broad objectives, and power bases.
- Strategic Choice – involves the formulation of the strategy itself through understanding various options, evaluating options and making a decision on a suitable strategy.
- Strategy Implementation – involves tactical issues such as resource assessment and planning, identifying human resources and systems, contents, determining organizational structure, and so forth.

Strategy development and implementation is an on-going process. A strategy plan for technology assisted learning is considered to be a living document. It needs to be

- redefined and adjusted as the environment and requirements change or new technological options become available, and
- examined on an on-going basis against the mission and vision of your institution (a solution provider or a learners' institution)

To ignore the iterative nature of any strategy would eventually compromise the quality of the outcome.

4. A STRATEGIC MODEL FOR ASSESSING THE BENEFITS OF E-LEARNING INITIATIVES

In Phase I of the project (Asgarkhani & Clear, 2011), the review of perceived benefits (literature review including Asgarkhani; 2003;

Kruse, 2002b; Kruse, 2002; Rosenberg, 2001; Sitze, 2001; Burns et al, 2001; Young, 2001) led to developing a theory as a strategy model for assessing e-learning and knowledge sharing solutions. This is a two-dimensional model developed to assess the value of e-learning by considering three key strategic parameters (efficiency, effectiveness and growth). For each parameter, three functional aspects were taken into consideration (time, distance and creativity)

4.1 Efficiency
- Time: Accelerating business processes and activities that are concerned with training and educating managers.
- Distance: Reducing geographical and distance inhibitors/barriers and allowing managers in various regions to be able to participate in learning practices.
- Creativity: Enhancing existing business processes and activities from the point of view of educators

4.2 Effectiveness
- Time: Improving the flow of information and business intelligence throughout the supply and the value chain components. This facilitates both time effective delivery of learning and more profitable learning and educating processes for educators.
- Distance: Enabling integrated control of the supply and the value chain processes. Even though this may be seen as a more business driven value and initiative, it can enhance value of educating and being educated in management courses considerable.
- Creativity: Enabling new (and/or modified) processes to allow innovative and more exciting methods of learning.

4.3 Growth
- Time: Obtaining early market entry/presence for educators who are seeking internationalization.
- Distance: Introducing new management learning products to new markets
- Creativity: Developing new products and services that are related to educating and learning for managers.

5. FINDINGS OF THE PILOT STUDY
For the pilot test of the strategy model developed earlier, six broad e-learning initiatives (as case studies) were analysed. The initiatives were projects at institutional level (strategic) – such as establishing e-learning units or re-engineering management of e-learning within the institution. Panels of 2-3 participants were asked to use the strategy model discussed earlier and rate the e-learning initiative concerned within their institutions. Panel members represented the same institution to allow the e-learning project rated by more than one person. Panels represented tertiary educational institutions in Taiwan (2), Hong Kong (3) and Thailand (1). Four panels had 2 members and the other two had three members each. The main purpose of the exercise was to assess the effectiveness (practicality and ease of use) of the model. However, it also provided an opportunity to establish a first impression of real strategic gains in these institutions.

The rating for strategic gain was as follows.

Overall, the panels agreed that it was reasonably straightforward to make use of the model. However, they suggested that for the broader study to follow, a more specific list of criteria or "signs to watch" in order to rate initiatives to be considered. For instance, what would be seen as evidence that there is strategic gain in efficiency with regards to time.

- Strong Strategic Gain – 5
- Moderate Gain – 3
- Small Gains – 1
- No Gain – 0

The outcome of ratings is displayed in Table 1.

Table 1. Ratings of strategic gain

Efficiency	
Time	2.42
Distance	3.67
Creativity	2.25
Effectiveness	
Time	2.42
Distance	3.33
Creativity	1.75
Growth	
Time	1.50
Distance	2.58
Creativity	2.00

The score is the average weighted score for strategic gain in each area as rated by all panels. Even though at this point in time there is no benchmark to compare these results with, there was an expectation that these projects have resulted in moderate to strong strategic gains.

Minimising "Distance" barriers seems to have scored the biggest gains. _Efficiency_ related to _distance_ scores the highest gain. However, the gain in _growth_ related to _distance_ seems to be only just above average.

It should be noted however that the average gain in all categories except for _creativity_ in _effectiveness_ and _time_ in _growth_ is above 2 (low to moderate gains). That is to say, there is some gain in most strategic categories. Overall, the outcome of the pilot study regarding strategic gains is not conclusive. Once again, it should be noted that a broader study is more likely to result in more conclusive outcomes.

6. CONCLUSIONS
In early 2000s, many educators and educational technologists believed that we would witness considerate value gains in education by employing web technologies. At the same time, the potential benefits of e-learning could only materialize when the solutions were introduced as part of a well-planned and adequately supported education/training environment. It was pointed out that technology alone could not drive e-learning development. In other words, access to the right technology for delivering learning solutions was (and is) essential but insufficient. Effective online learning and knowledge sharing is inevitably reliant on the development strategies that optimize the application of technology.

Based on the analysis of the outcome of literature review and case study reviews, a model for perceived benefits and strategic value of e-learning was developed. This model was used in Phase II of the project to firstly assess the effectiveness of the model and secondly to establish a first impression of the reality with regards to strategic value of e-learning.

The pilot study established that the model developed for evaluating e-learning solutions was workable. Furthermore, it demonstrated that only in limited areas the gain has been significant. At the same time, in most categories there seems to have been moderate gains. It has to be noted however that this is a pilot study; the results of the study can only be generalized when the scope of the study is broadened further.

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