USING TECHNOLOGY FOR REMOTE DELIVERY OF EDUCATION SERVICES

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Abstract

This paper considers the use of information technology as a source of competitive advantage for education service providers operating in international markets, with particular reference to Australia. It draws upon the findings of a survey of 315 education institutions in five countries engaged in the export of international education. The importance of effective use of information technology as a source of competitive advantage is highlighted.

Current use of information technology within education institutions is examined. Technologically Mediated Learning is proposed as a viable means of promoting, administering and delivering education services to international markets. In particular, the potential of the Internet to provide graduate business education is given close scrutiny. An established university/corporate partnership is given the best chance of successfully progressing a ***Business Faculty*** at the ***AustralAsian Virtual University***.

Business schools are advised to invest in hardware and software applications to ensure the communications needs of their clients are met.

Information Technology as a source of Competitive Advantage

The use of information technology to offer education programs over long distances is becoming an increasing necessity as government policy in traditional markets changes. There is a noticeable trend towards Australian tertiary education client countries becoming suppliers. Malaysia, for example, has as many students studying overseas as it does at home, resulting in massive outflows of financial and human resources, estimated to be half the county's revenue ($US1.5 bn) earned from tourism (Vatikiotis, 1993). This has led Malaysia to announce a plan to restrict the number of new degree programs offered by private institutions (Ng and Ho, 1995). Under such circumstances it may become difficult for foreign institutions to gain access to these markets if traditional models of promoting and delivering education are used.

Rapid economic growth in the Asia-Pacific rim, particularly China, India and Pakistan, represent enormous opportunities for delivering education. It is estimated that there will be 1.4 million international students from Asia studying world-wide by 2010, and as many as 2.9 million by 2025 (Blight, 1995:4). These same forecasts predict a demand in Asia for an additional 800,000 international university places in the fifteen years to 2010 and as many as 1.5 million places over the following fifteen years.

Mazzarol (1997) in a study of the international marketing strategies of 315 education institutions in key supplier countries has highlighted the importance of information technology as a potential source of competitive advantage.

The survey was targeted at international officers and marketing or recruitment managers within universities, schools and colleges in Australia, Canada, New Zealand, the United States and United Kingdom. Just over half (52%) of respondents listed their function as administration, and 34% as marketing. The majority (75%) had been involved with education for over 10 years and the average length of time in their positions was six years. Seventy five per cent of respondents said they were frequently involved in planning decisions relating to international marketing for their organisations. This suggests that the sample represents an experienced and relatively expert group.

Respondents were asked to consider the importance of a broad range of issues relating to their marketing and business strategies. The final survey instrument comprised 40 questions in eight sections. Included in this survey were twenty-one critical success factors identified as important to the success of any education institution operating within international markets. These factors were identified from a comprehensive review of the literature and reference to an expert panel drawn from tertiary institutions in Western Australia. A full pilot study was undertaken prior to the field trial (Mazzarol, 1994).

The mail survey employed by Mazzarol (1997) examined respondent perceptions of their institution’s performance on the twenty-one critical success factors or ‘distinctive competencies’. Scoring was facilitated by 7-point scales where variables were rated as 1 = totally unimportant and 7 = extremely important to the success of educational institutions operating in international markets. These twenty-one items

were examined from two perspectives. The first, was from the viewpoint of how important they were to any education instituition, while the second was how the respondent felt their own institution was performing in relation to them.

Table 1 shows the mean ratings for the top-ten items in terms of how the institutional respondents viewed their importance to the successful marketing of education institutions. It also shows the difference in ratings of percieved instituitonal performance on these items between those institutions that were identified in the study as being high performers and those identified as low performers. High performers were those institutions that had experienced above average performance on four dimensions – high growth in international student enrollments, greater demand from overseas students than available supply, a high positive outlook in such growth over the next 3 to 6 years, financial benefits from international enrolments exceeding expectations and degree of dependence on overseas student fees.

Table 1: Distinctive competencies - low vs. high success institutions

[Rating of questions: 1 = low importance, 7 = high importance] [* indicates significant difference at the 0.05 level between the low and high success institutions].

Success Factor	Low success mean	High success mean	*t*-value
1. A reputation for quality	5.21	5.62	2.41*
2. To be well known & recognised	3.39	4.80	6.87*
3. Quality and experience of staff	5.60	5.68	0.45
4. Effective use of information technology	4.98	5.59	3.83*
5. Ability to offer broad range of courses & programs	4.59	5.57	4.84*
6. Possession of a customer oriented culture	5.10	5.40	1.57
7. Possession of strong financial resources	4.97	5.55	3.19*
8. The encouragement of innovation	5.62	5.76	0.94
9. Technical superiority	5.07	5.24	1.14
10. To have international strategic alliances and coalitions		3.06	4.19*

A *t*-test analysis of the difference in mean performance ratings of low and high success institutions on these 'distinctive competencies' found significant differences (at the 0.05 level) between the two groups on several items. As shown in Table 1 high success institutions were found to rate significantly higher on their perceived reputation for quality, level of market recognition and awareness, effective use of information technology, course range and depth, financial resources and level of strategic alliances.

These findings are consistent with research undertaken by Hall (1992; 1993) in two national surveys of 847 CEOs in the United Kingdom, covering all industry sectors. When asked to rank the importance of a range of intangible assets to their firm's competitive advantage, the CEOs ranked "company reputation", "product reputation" and "employee know how" as the top three factors for success. Further, these were assets and skills that were felt to be the most difficult for a competitor to emulate, thereby offering the greatest source of sustainable competitive advantage.

The results of the survey represent the perceptions of a relatively large and representative group of experts within the international education sector. They suggest that effective use of information technology ranks along with institutional quality, market reputation, product offering and financial resources as an important factor in institutional success in international markets. In the increasingly competitive market for international education, institutions seeking to obtain a competitive advantage may need to make effective use of information technology in order to assist them with both promotion and service delivery tasks.

Using technology for remote delivery of education services

In November, 1996 Malaysia established the world's largest and most technologically advanced satellite broadcasting network. Fortuitously, Malaysia and Australia (especially the West coast) share similar time-zones making live interactive communications efficacious. Reaching an estimated 30 million viewers in South-East Asia, this communications network, when combined with *twinning* arrangements, is a way of increasing the capacity of Australian institutions to meet emerging demands for high quality education in the South-East Asia. There are identifiable reasons where satellites can be successfully used for educational endeavours (Hosie, 1987). These factors need to be incorporated into any proposed ventures.

While this may constrict potential student volume participating in face-to-face education, for the astute technologically nimble institutions this scenario also presents opportunities for joint offshore learning ventures using Technologically Mediated Learning (TML) (Hosie 1994). There are substantial opportunities for institutions prepared to adopt a mixed mode of delivering education based on models of open learning (Hamer, 1993). *Technologies which can be used to deliver education have suddenly become cheap, ubiquitous and pervasive* (Lundin, 1993). As a consequence the potential to deliver education locally and at a distance is poised to expand exponentially.

Some 'early adopters' institutions are making progress in using TML to deliver education globally. Those desiring a piece of the action will need to mobilise their resources or be overrun by private-sector initiatives (Ives & Jarvenpaa, 1996). Responding to market forces it is not the forte of most traditional universities. Ives and Jarvenpaa (1996: 33) have identified the dynamics of this trend, "Cable operators and telecommunications companies are aggressively developing virtual classrooms, often without university involvement. Publishers and software houses are developing multimedia products that will substitute for, rather than complement traditional classroom education." Corporations have identified an investment market which electronic technology will permit to be developed on an international scale. If traditional business education providers do not respond to the opportunities offered by new communication technology, the corporate sector are likely set the agenda. In the process the foundations of mass education are shuddering.

The Internet has captured the imagination of the public and educators alike. As the fastest growing form of information exchange within our society, the Internet allows multimedia technologies to be available world-wide. Since the effect of the Internet has such profound implications for promotion, delivery and administration of international education, it will be given detailed consideration in this article.

The Power of the Internet?

The Internet is effectively a set of linked computers characterised by protocols that allow it to be used across a wide-range of *hardware* platforms. This means that same information is accessible from any location regardless of the type of computer operating system being used. This offers an improvement on many existing computer-based multimedia technologies that are platform specific and allows for the presentation of multimedia information. Multimedia offers education institutions seeking to promote themselves a means of overcoming some of the difficulties normally associated with traditional advertising. In effect the , "Web is multimedia." (MIT, 1995)

> The Internet is accessible in around 150 countries. It provides the hardware support for many technologies including - e-mail, the World Wide Web, file transfers and remote systems access, which can be used for entertainment, business, social and educational applications. While it is not possible to state, with any great accuracy, the number of world-wide users who access the Internet, estimates place it between 30 and 50m people with the expectation that *these numbers will double every six months*. When issuing the preliminary injunction against the Communications decency Act, *Third Circuit Court of Appeals in Philadelphia* (1996) estimated there are now **40m Internet users** which **will grow to 200m by 1999.**

In addition there are an estimated 9.4m host computers linked to the Internet with about 60% in the USA. At present, the commercial world now dominates use of the Internet with the most popular applications being e-mail and the World Wide Web. More than 80,000 companies are connected, representing more than 1.4m Internet hosts, each supporting many individual users (MIT, 1996). Home, school and workplace education 'on-demand' is likely to rapidly outstrip the current focus on entertainment. The Internet is inspiring a new breed of '*infotainment*' or

'edutainment' by merger information-related activities with entertainment. Regardless of the precision of these guesstimates, a colossal number of people have access to the Internet world-wide; this is growing exponentially, as is the perceived demand for higher education.

Students at all levels of education already make extensive use of the Internet to assist learning. Students can attach documents such as assignments to their e-mail messages. A variety of course information can be readily received and returned in this manner.

Use of information technology for service delivery and promotion

The Internet complements 'resource-based learning' favoured by modern constructs of distance learning (Pritchard & Jones, 1996). Desktop video conferencing allows digitised images, as well as graphical and statistics, to be transmitted simultaneously to several students via ISDN. Desktop video conferencing is easy to use in conjunction with a PC. It is a more intimate form of interaction facilitating simultaneously linking several students together.

Because international education is a highly intangible professional service it does not respond to conventional promotional strategies. Hill and Neeley (1988) have identified the differences between consumer decision making when selecting professional services as opposed to generic services. Professional services generally involve a much greater level of risk than generic services for the consumer who is willing to devote more time to the search and selection process. The promotion of professional services by conventional advertising tends to have a negative effect. By contrast personal referrals, either by professional references or family and friends, are the most commonly used form of promotion. In order to enhance the consumer decision making process for professional services Hill and Neeley (1988) suggest increasing the available external information while simultaneously increasing the consumer's control of the decision process. This implies a greater emphasis upon promotional strategies designed to inform and educate, rather than the conventional "tell and sell" approach. The use of testimonials or carefully targeted direct response letters have been suggested as superior promotional media (Danko, 1986; Fielden, Hilton & Motes, 1993).

Effective use of information technology for competitive advantage

The findings of the multi-country study outlined in this paper suggest that institutions seeking to develop a competitive advantage in the field of international education need to focus upon at least five key factors: i) developing a reputation for quality; ii) gaining a high market profile; iii) making effective use of information technology; iv) offering a broad range of courses; and v) having adequate financial resources. In several respects, the use of information technologies as discussed here offer an opportunity for institutions to achieve many of these objectives.

Most universities now have Web sites, of varying quality, with their student prospectuses on. Even Ivy League business schools (such as *HBS* and *Stanford*) have impressive sites and they hardly need to recruit students! Recent focus group

research conducted with international students from South East Asia Singapore, Malaysia and Taiwan) showed most are aware of Internet and use it regularly with a number indicating they use it to select institutions to study at[1].

Hill and Neeley (1988) suggest that professional services need to be promoted by a process of giving the prospective purchaser a considerable amount of information, as well as the opportunity to control how they use that information. The Internet is efficient at providing this by allowing users to control of how much information they access. As such it is a potentially valuable means of marketing education.

Judicious and creative use of multimedia for promotion purposes also has the ability to enhance an institution's market recognition and profile. Use of the Internet for distribution of course information, and student prospectus publications provides an ideal medium to attract technologically-oriented students. Multimedia presentations enable prospective students to control the flow of information about an institution without the vagaries associated with overseas recruitment agents or government information offices.

As the pace of information technology increases, and the availability of on-line multimedia services grows throughout the world, the critical difference between successful education institutions and the rest may lie in how effectively they use information technology. TML can broaden the range of courses that an institution can offer to international students and increase the flexibility of the student's study program. Advances in educational technology enable students to undertake programs at home or office, and during times of the year when institutions are traditionally closed. The current high level of expertise to undertake such media production in is likely to be tempered by a lack of experience on the part of many educational managers as to suitable applications of the technology (Hosie, Charman & Atkinson, 1991). Indeed the same applies to academics who may be masters of the classroom but find communicating via a television studio, or computer screen, a quite different experience.

Pedagogical considerations

While distance education technologies are expanding at a rapid rate, Sheery (1996) reminds prospective providers of the necessity pay attention to learner characteristics and needs, the influence of media upon the new roles of teacher, site facilitator, and student in the distance learning process. Other critical considerations include,

"... technology selection and adoption, design issues, strategies to increase interactively and active learning, learner characteristics, learner support, operational issues, policy and management issues, equity and accessibility, and cost/benefit trade-offs" (Sherry, 1996:2).

Distance learning is characterised by the separation of teacher and learner in space and/or time (Perraton, 1988), the volitional control of learning by the student rather than the distant instructor (Jonassen, 1992), and non contiguous communication

[1] Research undertaken by T.W. Mazzarol during 1995/96 with students in Australian institutions.

between student and teacher, mediated by print or some form of technology (Keegan, 1986). As Sherry (1996) reminds us, initiatives in open learning, particularly those involving TML, must be based on 'constructivist principles';

"... in which a learner actively constructs an internal representation of knowledge by interacting with the material to be learned. This is the basis for both situated cognition (Streibel, 1991) and problem-based learning (Savery & Duffy, 1995). ... both social and physical interaction enter into both the definition of a problem and the construction of its solution. Neither the information to be learned, nor its symbolic description, is specified outside the process of inquiry and the conclusions that emerge from that process [shifting] focus away from the traditional transmission model to one which is much more complex, interactive, and evolving."

Constructivist education can be achieved in business schools using TML, and more specifically the Internet.

If established business schools fail to respond appropriately to the challenge of promoting, delivering and administering their offerings using TML, more specifically the Internet, dynamic private institutions, resourced by multinationals will respond rapidly to this emerging market opportunity. Individual tutoring for mass audiences is posed to become a reality driven by vigorous advances in information technology. Technological determinism arguments of the 1980s are now largely redundant. Like it or not, the Internet knows no master other than market forces. Students of the multimedia generation are empowered and aware consumers. They expect the same level of technological quality convenient from educational providers as is achievable from their homes.

Higher education played unique role in the development of the Internet in encouraging the free exchange of ideas. As the internationalism of higher education becomes increasingly desirable and achievable it is appropriate to begin the next stage of the journey. For advanced technologies to have substantial impact on higher education open learning principles, incorporating sound instructional design practices, will need to be adopted in conjunction with TML. Effective distance education using TML is an independent form of learning which should be consistent with Keegan's (1986) ideal of an authentic learning experience. The Web's *technological integrative capacity* makes it is sufficiently different from the other technologies to approach the 'killer ed tech app' status. The question is *not whether* long-distance education can be facilitated and delivered via the Internet but *how* this can be most appropriately achieved.

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