

## **Chapter 4:**

### **Achievements and Challenges faced by Private Higher Education**

This chapter will highlight major achievements by private higher education sector in Malaysia, which has taken place throughout the last three decades. The chapter will also focus on the points of challenges faced by private higher education sector in Malaysia. This section covers discussion on weaknesses and obstacles faced by PHEIs with focus on existing policies and conclusion of factors to be considered in policy implementations.

#### **4.1 Achievements**

The term achievements in this chapter are referred to those successful events which have created a better image to certain private Higher Education Institutions (PHEIs) or to the overall private higher education (PHE) sector.

##### **4.1.1 Contribution Towards the Diversity of Curriculum Deemed Relevant for National Economic Development**

In accordance with government priority, private institutions of higher learning are giving greater emphasis to academic programs in the science,

engineering and other technology-based curriculum. Private Colleges are obviously paying heed to government call to help the nation produce much-needed technical manpower for national development. Therefore, PHE sector has achieved the status as one of the contributor to national economic development in three ways.

First of all the sector has contributed towards the national income. Secondly, PHEIs have been playing an important role in producing more skilled and knowledge manpower for the country. Lastly, they have helped government to reduce outflow of currency in foreign exchange, which constitutes a significant deficit in the nation's balance of payment.

#### **4.1.2 The Establishment of Franchised Degree Programs by PHE Sector**

##### ***4.1.2.1 Foreign University Degree Franchised Programs***

It is a breakthrough arrangement for Malaysian private colleges in recognition for their expertise in providing quality education and sound course management. Under this arrangement, the private college is allowed by the foreign university to conduct the entire degree programs for the university in Malaysia. Malaysian Government has approved the 19 major Malaysian private colleges to conduct the franchised degree courses awarded by foreign universities wholly in the country (refer Table 4.1, page 66).

#### ***4.1.2.2 Local Public University Degree Franchised Programs***

While most private colleges initiated their twinning programs with foreign universities, a special group of them have now started collaborating with local public universities through the franchise system. In other words, a student can acquire a Malaysian public university degree by entirely in the designated private colleges. For example, Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM), Universiti Sains Malaysia (USM), Universiti Teknologi Malaysia (UTM) and Universiti Utara Malaysia (UUM) have started to franchise their programs to private colleges (refer Table 4.2, page 67).

#### **4.1.3 The Establishment of Private University and Foreign University Branch Campus in Malaysia**

Currently, there are six conventional private universities and one virtual university in Malaysia. Conventional universities are such as:

- Universiti Telekom (UNITELE) or Universiti Multimedia (MMU);  
Universiti Tenaga Nasional (UNITEN);
- Universiti Teknologi Petronas (UTP);
- Universiti Sains dan Teknologi (MUST);
- Universiti Internasional Komanwel Malaysia (TICUM) and
- Universiti Perubatan Antarabangsa (IMU).

Private universities in Malaysia are owned by established and financially sound corporations, which are offering study courses ranges from diploma level to post-graduate programs.

On the other hand, the first and only virtual university in Malaysia is Universiti Tun Abdul Razak (UNITAR). Virtual education format provides flexibility, letting students plan and study in their own time, pace and space. The university provides revolutionary multimedia coursewares, advanced campus network systems and a host of other innovative technologies to support bachelor's and postgraduate degree studies.

There are three branch campuses of reputable foreign universities in Malaysia. The establishment of foreign university branch campus in Malaysia is not allowed unless they are invited by the Government. Monash University Sunway Campus is the first foreign university branch campus to be set up in Malaysia. The other two foreign university branch campus are Curtin University of Technology Sarawak Campus Australia and University of Nottingham Campus in Malaysia United Kingdom.

#### **4.1.4 The Establishment of More Professional and Vocational Courses**

A variety of exams are conducted by local and foreign professional examination bodies, which can be completed without having to go to

overseas. Most of these qualifications are practical or vocational in nature, as opposed to academic and are designed to produce technically skilled members of the work force. These qualifications can be taken with post-Sijil Pelajaran Malaysia (SPM) via foundation courses or post-Sijil Tinggi Pelajaran Malaysia (STPM) or 'A' levels. Similar to external programs is that students are free to make their own study arrangements. Popular foreign professional courses in Malaysia include ACCA, ICSA, ABE, CIM, CIMA and LCCI as well as various HNDs offered by United Kingdom examination bodies such as Edexcel.

Students can opt to join various local colleges that provide tuition support for such courses but at the same time, they must also register with the relevant professional or examination body in order to be eligible to sit for the exams. These types of courses are very cost-effective compared with obtaining an undergraduate degree. Practical emphasis in these types of courses means that skills and knowledge acquired are easily applied in the real-life working environment. Employment prospects for those with these qualifications perhaps brighter than for straight graduates.

In the case of London Chamber of Commerce and Industry Examinations Board (LCCIEB), it was established in 1887 to improve commercial, technical and secondary education through business qualifications. Today LCCIEB is a major international provider of vocational qualifications

operating in 86 countries across Europe, Africa, Asia and South America, certifying hundreds of thousands of candidates every year. In Malaysia, more than 250 private colleges conduct courses leading to LCCIEB examinations in subjects ranging from accountancy and management to English language proficiency courses. The range of awards offered by LCCIEB in Malaysia can be grouped into 5 main categories, Financial and General Business; Marketing and Customer Service; Secretarial and Administration; Information Technology; and Business English.

#### **4.1.5 The Establishment of Distance Learning or Open Learning**

Distance learning or open learning has the key advantage of flexibility – Anytime, Anyplace, Anywhere. Its other major benefits is cost although to be competitive, large numbers of students have to go through the system for economies of scale to kick in. Thus far, it is early days.<sup>1</sup>

As far as Malaysia is concerned, distance learning is a market dominated by Britain and Australia. Today, UNITAR (a ‘Virtual University’), UNITEM (a Public University consortium) and University on Air (Malaysia’s answer to the Open University) have made a serious moves to offer diploma through master’s courses to the local market. Malaysia’s first ‘Virtual University’ hit cyberspace in 1998 and has got off to a good start. It seems to have been well received, particularly among working

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<sup>1</sup> *Education Quarterly*, “School-Leaver Options”, Issue No. 6, September/October, 1999, p. 62-62.

adults and the new computer savvy generation. UNITAR's strong marketing campaign has provided a solid launchpad and it now hopes that satisfied students will add 'word-of-mouth' testimony to dispel any lingering doubts in the minds of conservative Malaysians.

On the other hand, UNITEM is part of Meteor Distance Learning Sdn Bhd, which was launched in August 1999. It is a consortium of the 11 public universities and is the kind of initiative envisaged under corporatisation, where the idea is to consolidate the various distance-learning programs currently offered by the public sector.

Another new addition to the distance-learning scene is the University on Air (UoA) programs. It provides the process not the product. University on Air will not be conferring degrees. They have an agreement with UNITAR to produce course content and a contract with RTM to transmit it. UoA is a new formula rather than a new concept because it has a successful precursor – the British Open University. It uses common technology, a television, which 90% of Malaysians have. The courses are based in equal part on television programming, self-study and tutorials and will initially focus on IT and Business. UoA belongs to Television Airtime Services Sdn Bhd. UoA should be an exciting addition to the 'democratisation' of education since the TV shows will be available to everyone.

This expansion of distance learning or open learning addition towards the new millennium, as a part of education reform by private higher education sector, has provided a wide opportunity for those from local community or foreign, who for one reason or another have missed the higher education boat. Fulfilling the nations' wants and needs through this education wise is considered as successful events achieved by private higher education (PHE).

#### **4.1.6 Overall Achievements by Private Higher Education Sector**

As a conclusion, private higher education in Malaysia provides not only local community but also foreigners with plentiful of study options and choice of universities to meet their interest and budget. It also provides a quality education with affordable courses fees and reasonable living expenses.

The twinning programs offers our community the best route to go to universities in the USA, the UK, Australia, Canada or New Zealand for higher study. Today, the '3+0' programs as an extension of the '1+2' and '2+1' concept has made possible to local people to complete their final year in Malaysia without having to go overseas. The final year will be done at the local private colleges in collaboration with a foreign institutions or universities mentioned above.



About twenty-two private colleges have now been approved to conduct degree courses on a '3+1' basis. They are such as Asia Pacific Institute of Information Technology (APIIT), Binary Business School, Distef-Stamford Penang, HELP Institute, Institut Teknologi Linton, INTI College Malaysia, INTI College Sarawak, International College of Music (ICOM), Kolej Aman, Kolej Bandar Utama (KBU), Kolej Damansara Utama (KDU) Penang, Kolej Damansara Utama (KDU) Petaling Jaya, Limkokwing Institute of Creative Technology (LICT), Nilai College, Regent Schools of Economics, RIMA College Kuala Lumpur, SAL College, Sedaya College, Sepang Institute of Technology (SIT), Stamford College, Sunway College and Taylor's College.<sup>2</sup>

On the other hand, the simple immigration procedures make it easy for those as a foreigner student to enter Malaysia to study (refer Appendix 4.1/1-4.1/2). All these achievements, which associated with private higher education sector shows the possibility or wide opportunity to make Malaysia a thriving center of educational pursuits.

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<sup>2</sup> *Education Quarterly*, "School-Leaver Options", Issue No. 6, September/October, 1999, p. 62-62.

## **4.2 Challenges**

Challenges faced by private higher education (PHE) sector in Malaysia consists of weaknesses of this sector, obstacles faced by PHEIs to further expand and challenges from the existing higher education policies.

### **4.2.1 Recognition of Courses**

Recognition is based on courses of studies and not on institutions. Therefore it is possible that some courses in an institution are recognized while some other courses offered by the same institution may not be recognized. Since, recognition by the local Government enables one to seek employment with the Government, most of them for sure will prefer recognized courses. For professional courses, recognition by the relevant local professional body will enable one to practise his or her profession in his or her country upon completion of studies.

In this respect, investment by PHEIs to conduct certain courses not recognized by public sector is not worth although those courses are from a well known foreign colleges or university.

The first question from any prospective students before they enroll any course in any PHEI is whether the course concerned is recognized. It means, the more recognized courses offered by certain PHEI the more

students would be enrolled in these PHEI and of course it's reputation will be better off.

#### **4.2.2 Higher Education Policy**

The quality of foreign-linked programs has always been an issue among parents and educators. Concerns have been raised as to whether the quality of twinning programs measured up to similar programs offered at the particular foreign university. Therefore, as a quality control over private higher education, the Malaysian government requires all private colleges to register with the Ministry of Education and to obtain ministry approval for any new programs. The ministry can impose fines or even close down colleges for not complying with regulations, such as employing a noncertified lecturer or conducting classes in buildings that do not meet safety codes. It shows that although the Malaysian government started to liberalize and privatize education, they still regulating and controlling the system to ensure quality and equity.

In 1997 the Malaysian government established a National Accreditation Board (LAN) to accredit all institutions of higher learning, public and private. With so many private colleges around, LAN undertakes quality control of private higher education in Malaysia. It means before a college can run a course, it must first meet "minimum standards" set by LAN. The standard fee for a certificate program is RM5, 000, for a diploma

programme the fee is RM6, 000, while for a degree programme, LAN charges RM7, 000. In addition, these PHEIs have also to pay accreditation fee to LAN, which is the second stage of the quality control process. This accreditation is mandatory if a private college is to admit international students. By getting accreditation, a PHEI enables its students to apply for loans from the National Higher Education Fund Corporation. Another advantage of getting accreditation, as mentioned by the Ministry of Education, is that graduates from these PHEIs may seek employment with the government sector.<sup>3</sup>

For PHEIs that run foreign degrees or diplomas, even though their foreign partners already undertake quality control, the Ministry still requires LAN to take a second look, which has caused some dissatisfaction among the PHEIs (The Star, 5 September 1999).

For foreign universities that are already “recognized” by the Malaysian Public Services Department (PSD), accreditation by LAN would seem to be superfluous for students involved to get a government job. In this respect, many would question whether those graduates from these PHEIs would be intend to enter into civil service.

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<sup>3</sup> Ahmad Mahdzan Ayob and Noran Fauziah Yaakob, “*The New Millennium: Business and Higher Education in the Asia-Pacific*”, Paper presented at the ASAIHL Conference, Auckland Institute of Technology, New Zealand, 6-8 December 1999.

#### **4.2.3 Academic Standard, Students Performance and Reputation**

A rewarding education is one, which meets or just challenges the capabilities of the students. In this sense, nothing demonstrates quality better than the products. In other words, the performance of the enrolled students in examination and the graduates in employment is the most relevant indicator of academic standard in any PHEIs. It insists that PHEIs cannot function in a completely 'laissez-faire' environment or being profit driven without bothering their academic standard. In order to obtain a long-term profit, they have to be quality conscious. If their academic standard is low, they can't expect a better performance of the enrolled students in examination and the graduates in employment. These will cause students in private sector to switch to any other better offer or option. This is a big lose for a PHEIs although they had earned profit at the beginning stage.

Besides, it should also be noted that with a better students' performance and an excellent academic standard, an institution might have certain excellent faculty while average in others. With this, those institutions can get a better reputation or image, which will usually affect the employment prospects of the graduates. This scene shows the importance of maintaining the PHEIs' academic standard, students' performance with excellence and also a good reputation in order to be the best PHEI to attract more students to further their studies there.

#### **4.2.4 Management Challenges**

An institution is as good as the people who run it. The philosophy behind the set up, any control by responsible authority will affect the quality of education more than anything else.<sup>4</sup> The management of a PHEI is a challenging matter. Although the education should not have a price tag according to some of them, on the other hand, as a private sector, PHEIs have to be concerned with the financial aspects. After all, they are operating in a market environment where they have to be completely self-financing without the luxury of government subsidies. Therefore, management has to balance between these two considerations. At the same time, PHEIs also must be pointed out that at the end of the day, they must never compromise the first aspect, that of delivering knowledge to students.

Whether this balance has been achieved is a matter of debate. For instance, besides undertaking research and planning towards the improvement of PHEIs' reputation to face a tremendous competition in higher education market, PHEIs also have to contend with administrative bureaucracy and fees such as rental for the premises<sup>5</sup> and the charges imposed by the National Accreditation Board (LAN).

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<sup>4</sup> WENCOM's Guide to Malaysia-Singapore Higher Education Training '96, Petaling Jaya: WENCOM Information Sdn Bhd, 1996.

<sup>5</sup> There are cases of private colleges, which have been closed down (sealed by public authority) due to their failure in paying the rental for the premises that has been used as a college. This is one of the major weaknesses of PHEIs and it shows that these PHEIs wouldn't have practise a proper or serious planning in their management.

#### **4.2.5 Challenges from Human Capital aspects**

Quality of higher education is also tied to the quality of the teaching staff. The Ministry of Education acknowledges the problems of shortage of qualified people, coupled with the right kind of experience. Although private higher education industry has become an attraction for these people, either after retirement or before, there is still a shortage of well-experienced staff. Teaching or lecturing in most PHEIs in Malaysia handled by younger and often not too experienced staff. Junior staffs, however, legitimately observe that the reason why the 'senior academicians' are in management jobs is precisely because they cannot teach and are out of touch with new techniques and developments. The Ministry also encourages PHEIs to make research and development opportunities available. In reality, it is difficult to see how the private colleges will respond to this requirement.

On the other hand, lecturers in public universities have been restricted to possess at least a master's degree qualification before they can be recruited. As we can see today, many of them also have doctoral degrees. Their job is not only lecturing, but also to do research and engage in consultancies. Their research exposure enhances their credibility as university lecturers. Promotion to higher levels in their career depends on their research and publications. This is where public education institutions differ from the private colleges. Most lecturers in the smaller colleges have only a first

degree.<sup>6</sup> This is deemed sufficient if they only prepare students for diploma courses. It shows the main function of a lecturer in private colleges is teaching.

Generally, for most PHEIs, research will increase their burden in their management aspect and at the same time, it may not bring in any immediate returns. It shows that most PHEIs will not be willing to spend money on research in the academic disciplines that they teach. This activity increases cost and decreases profit. They are even more interested in spending plenty of money in their advertisements. In their advertisements, the colleges will try to draw the attention of the audience to the strength of their foreign partners, such as rankings and future employment prospects but not on the qualification and the credibility of their teaching staffs.

#### **4.2.6 Facilities in Private Higher Education Institutions (PHEIs)**

Academic facilities such as libraries, laboratories and workshops including computers for science and technical courses are essential. Whereas, other non-academic facilities such as recreation facilities, accommodation, student organizations will provide a conducive and comfortable environment for studies. Therefore, these PHEIs have to be concern on

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<sup>6</sup> There are cases where the smaller PHEIs recruit lectures with second class, third class or even with general degree qualification so that they can pay less salary in order to reduce the cost.



these types of facilities in order to draw the attention of the audience to the strength of their institution.

In the case of libraries facilities, many private colleges have small libraries and some of them none. The physical size doesn't matter, but the number of books is very crucial, as well as relevancy of those books, newspapers and magazines (local or overseas). Another aspect of a college library is the inter-loan facilities with the partner-university. Inter-loan facilities allow students to access material from the partner-university for information gathering and for research purposes. In this IT era, the inter-loan facilities should be available online and via the Internet. Some education service providers have teleconferencing facilities to facilitate their communication with partner-universities. This facility enables students to experience the foreign lecturing environment and allows them to participate in the learning process available to students in the partner-universities. To maintain a good and updated library is not an easy affair. The library premises need to provide a conducive environment for reading, studying and for research purposes.

Since physical fitness is an important aspect of a students' development, sports facilities should be provided by PHEIs. There are colleges that mention in their brochures that they have various and plenty sports facilities, but all these don't reflect reality. This is a very disappointing

state of affairs. On the other hand, to cater to the needs of students, PHEIs should have recreation rooms, game rooms, facilities for outdoor or indoor activities and facilities for other extra moral activities including the formation of societies within colleges. Societies in colleges enhance students' learning experience and help develop leadership qualities. Many colleges have the habit of forcing staff members to organize and lead such societies. This is definitely not the way to run these societies. Staff members may propose the formation of such societies and students themselves must be responsible for the running of these societies.

Among the other general facilities that should be considered by PHEIs to place in their institutions are public telephone facilities, lockers for students to keep their daily belongings (need to be strong enough to prevent others from breaking them), cleanliness of colleges' corridors, canteens and toilets and the most important is the Department of Student Affairs.

#### **4.2.7 Competition**

Competition in private higher education (PHE) sector is fierce. According to Ministry of Education, there are more than 600 registered private colleges, although less than half of that number may actually be active. In fact, it is understood that LAN has actually received applications from

only 160 colleges.<sup>7</sup> At the same time, they also have to compete against the might of a 90% subsidized and expanding public education sector. There are no financial incentives (although MSC status is now available for Information Technology education) for PHEIs as best as been given to public sector. Therefore, these PHEIs have to appear as a more competitive and efficient through their hard working and cooperative, especially in the management aspects. It will enable PHEIs to overcome the competition from other higher education institutions (public or private) in order to be the top education center in this arena.

#### **4.2.8 Cultures Issues**

There is a growing trend toward the globalisation of higher education. Advanced countries are keen to export their educational programs, and developing countries are prepared to franchise these programs. These programs not only serve the knowledge and skills to local people, but also transmit global cultural values and attitudes (competitiveness, self-efficiency, high achievement motivation, and an acceptance of the importance of the English language). The curriculum has become a matter of great concern in countries like Malaysia, which view the transmission of the global culture as part of the dominance of Western culture. In this respect, Malaysian government has introduced another educational policy in order to maintain Malaysian identity in higher education. PHEIs are required to conduct their courses in the national language, and if they want

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<sup>7</sup> *Education Quarterly*, "The Business of Education", Issue No. 4, April/June, 1999, p. 46-48.

to conduct any course in English, they must teach Malaysian studies (including Islamic and Asian civilizations), Islamic studies (for Muslim students) and moral education (for non-Muslim students).

Many developing countries tend to neglect their cultural heritage in their way to achieve modernization and to develop economically. For some of them, globalization seems to be harmful to the moral and cultural well-being of the nation. These two circumstances are the challenging part for those involved in private higher education industry. The challenge is how to achieve a balance between the inevitability of accepting the global culture and the need to safeguard cultural identity. Therefore, the PHEIs or the educators in it must be able to choose those necessary values in the way of knowledge and skills for meeting the challenges of changing world order, while preserving as much of the country's cultural heritage as possible.

As of today, most of the institutions begin to show their excellent performance since last decade, which have brought to various achievements and further expansion of private higher education sector. These PHEIs definitely would not hesitate to face any other challenges in future such as ranking system, which probably will take place in Malaysia soon.

On the other hand, not all the PHEIs with licenses in Malaysia are currently in operation and not all of them offer comparable standards, its mainly because they couldn't face those challenges as elaborated above.

As a conclusion, the status of a 'degree' has been devalued. With this, whatever the students' results would be and whatever their financial means, some private education institution, somewhere, will let them climb aboard. It means, the private higher education sector still has wide potentials, which will be discussed in the final chapter.

**Table 4.1:**

**Franchised Programs of Foreign Universities by  
19 Approved Malaysian Private Colleges**

- ASIA PACIFIC INSTITUTE OF INFORMATION TECHNOLOGY STAFFORDSHIRE UNIVERSITY, UK
- BINARY BUSINESS SCHOOL UNIVERSITY OF NORTHUMBRIA, NEWCASTLE, UK
- DISTED COLLEGE, PENANG DEAKIN UNIVERSITY, AUSTRALIA
- HELP INSTITUTE CHARLES STURT UNIVERSITY, AUSTRALIA; UNIVERSITY OF EAST LONDON, UK
- INTERNATIONAL COLLEGE OF MUSIC UNIVERSITY OF WESTMINSTER LONDON, UK
- INTI COLLEGE (SELANGOR) COVENTRY UNIVERSITY, UK; UNIVERSITY OF HERTFORDSHIRE, UK
- INTI COLLEGE (SARAWAK) UNIV OF HERTFORDSHIRE, UK
- KOLEJ BANDAR UTAMA ANGLIA POLYTECHNIC UNIVERSITY, UK; THE NOTTINGHAM TRENT UNIVERSITY, UK
- KOLEJ DAMANSARA UTAMA MURDOCH UNIVERSITY, AUSTRALIA; UNIVERSITY OF LINCOLNSHIRE & HUMBERSIDE, UK
- LIMKOKWING INSTITUTE OF CREATIVE TECHNOLOGY CURTIN UNIVERSITY OF TECHNOLOGY, AUSTRALIA; RMIT, AUSTRALIA
- LINTON COLLEGE THE NOTTINGHAM TRENT UNIVERSITY, UK; UNIVERSITY OF HERTFORDSHIRE, UK
- NILAI COLLEGE LA TROBE UNIVERSITY, AUSTRALIA; OXFORD BROOKES UNIVERSITY, UK
- REGENT SCHOOL OF ECONOMICS UNIVERSITY OF NORTHUMBRIA NEWCASTLE, UK
- RIMA COLLEGE UNIVERSITY OF BRADFORD, UK
- SAL GROUP OF COLLEGES UNIVERSITY OF WOLVERHAMPTON, UK
- SEDAYA COLLEGE UNIVERSITY OF NORTHUMBRIA NEWCASTLE, UK
- STAMFORD COLLEGE UNIVERSITY OF NORTHUMBRIA NEWCASTLE, UK
- SUNWAY COLLEGE VICTORIA UNIVERSITY OF TECHNOLOGY, AUSTRALIA
- TAYLOR'S COLLEGE UNIVERSITY OF SHEFFIELD, UK; UNIVERSITY OF TECHNOLOGY SYDNEY, AUSTRALIA

Source: [http://studymalaysia.lycosasia.com.my/lycosasia/edu\\_sys/natedusys/nat5.html](http://studymalaysia.lycosasia.com.my/lycosasia/edu_sys/natedusys/nat5.html)

**Table 4.2:**  
**Franchised Programs of Local Public Universities by**  
**Malaysian Private Higher Education Institutions (PHEIs)**

<b>FRANCHISER</b>	<b>DEGREES</b>	<b>FRANCHISEES</b>
Universiti Sains Malaysia	B.Com. Sc.	Disted College; Stamford
	B.I.T.	Kolej Teknologi Pulau
	B.Mgt (Acctg., Finance, Marketing, Organization).	Pusat Teknologi & Pengurusan Lanjutan
Universiti Putra Malaysia	BBA, B.Comp.Sc.	Pusat Teknologi & Pengurusan Lanjutan
	B.Comp.Sc.	SAL Group
	B.E. (Civil), B.E. (Comp. Sys), B.E. (Mech.)	Kolej IKRAM
	B.Ed. (Couns.), B.Ed. (Mal.Stud.)	Kolej Yayasan MARA
Universiti Utara Malaysia	BBA	Kolej IKRAM; Kolej Pujangga; Yayasan Melaka
Universiti Malaya	B. degrees in(acctg., bus. adm., econ., IT, Malay Studies)	Kolej Yayasan MARA
	B.Juris.	Kemayan Advanced Tertiary College; SAL Group
Universiti Teknologi Malaysia	B.Chem.Eng., B.Comp.Eng., B.Elec.Eng., (electronics/Mechatronics)	Terengganu Advanced Technical Institute
Universiti Kebangsaan Malaysia	B.Elec.Eng., B.Biomedic.Sc.	Pusat Teknologi & Pengurusan Lanjutan

*Source: Ahmad Mahdzan Ayob and Noran Fauziah Yaakob, "The New Millennium: Business and Higher Education in the Asia-Pacific", Paper presented at the ASAIHL Conference, Auckland Institute of Technology, New Zealand, 6-8 December 1999.*