

Competitiveness through Academic, Research and Industry Alliances: University of Malaya’s Experiences as a Research University

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Abstract—Internationalization of academic and research are critical objectives for most Malaysian universities. The objectives include raising quality standards and global relevance, attracting the best students and staff, generating revenue, pushing the frontiers of knowledge through research and promoting internal diversity. Beall in [1] stated that, “the fast-paced growth in global tertiary enrolments and mobile students has followed closely world trade growth and far outpaced world GDP growth over the past 20 years”. This expansion is being seen by the Malaysian government as an advantage in raising the quality of higher education in Malaysia. As the country’s premier university, University of Malaya is always at the forefront supporting the Ministry of Higher Education Malaysia competing in the global arena through academic, research and industry alliances.

Keywords—academic, research, university

I. MALAYSIAN HIGHER EDUCATION

The government of Malaysia is committed in providing the best and the highest quality of higher education. Malaysia’s higher education institutions (i.e. public universities, private higher educational institutions, polytechnics and community colleges) housed more than a million students, of which about 93,000 were international students from more than 100 countries. The history of higher education in Malaysia has evolved through four phases: (i) Education for elites (ii) Education for affirmative action (iii) Education as and for business (iv) Education for global competition [2]. In an effort to re-position the higher education institutions, the ministry has introduced two blueprints, the National Higher Education Strategic Plan beyond 2020 and National Higher Education Action Plan 2007–2010. The strategic plan encompasses four phases: (i) Laying the foundation (2007–2010) (ii) Strengthening and enhancement (2011–2015) (iii) Excellence (2016–2020) (iv) Glory and sustainability (beyond 2020). The first three phases until 2020 are grounded in the “end-state” objectives, thrust and strategies. The fourth phase beyond 2020 is more inspirational in nature and will be based on the accomplishment of the three phases and new challenges circa 2020 [3].

Five (5) of the 20 public universities in Malaysia have been assigned research university statuses in 2012, with additional funding for R&D and commercialization of research. The remaining 15 public universities have been

categorized as either comprehensive or focus universities. The Minister of Higher Education announced that five public universities have been given autonomy in administration, human resources, financial and academic management and student intake. They are University of Malaya, Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, Universiti Putra Malaysia and Universiti Teknologi Malaysia. This move is aimed at encouraging excellence among local institutions of higher learning. The internationalization of the higher education sector is a high priority for Ministry of Higher Education. Efforts have been made to improve the world ranking of Malaysian universities; to have 150,000 international students by 2015; to create more 'Malaysian Chairs' at universities abroad; and to collaborate and cooperate with world-renowned universities on research and academic matters.

The following are facts and figures regarding higher education achievements among public universities in Malaysia (See Table I):

A. Number of public higher educational institutions:

TABLE I. NUMBER OF PUBLIC HIGHER EDUCATIONAL INSTITUTIONS:

20 public universities in Malaysia	
5 Research Universities	618180 students 32079 academicians
4 Malaysian Technical University Network	
11 Comprehensive Universities	
14 Higher Institution Centre of Excellence	
34 polytechnics: 89503 students; 7916 academicians	
94 community colleges: 21468 students; 2836 academicians	

B. QS World University Rankings 2016/2017 and 2017/2018

Based on the current world university rankings, Malaysia’s research universities are among the top 1% best universities in the world out of approximately 26,000 universities worldwide (See Table II).

TABLE II. QS WORLD UNIVERSITY RANKINGS 2016/2017 AND 2017/2018

	2016/17	2017/18
University of Malaya	133	114
Universiti Putra Malaysia	270	229
Universiti Kebangsaan Malaysia	302	230
Universiti Teknologi Malaysia	288	253
Universiti Sains Malaysia	330	264

II. RANKING IN ASEAN

Malaysia represents five out of the eight top universities in ASEAN is present in Table III below.

TABLE III. OF THE EIGHT TOP UNIVERSITIES IN ASEAN

Country	University	Ranking (2017/2018)
Singapore	Nanyang Technological University	1
Singapore	National University of Singapore	2
Malaysia	University of Malaya	3
Malaysia	Universiti Putra Malaysia	4
Malaysia	Universiti Kebangsaan Malaysia	5
Thailand	Chulalongkorn University	6
Malaysia	Universiti Teknologi Malaysia	7
Malaysia	Universiti Sains Malaysia	8

Ministry of Higher Education also aims to have 20 Research Excellent Centres which are of international standard by 2020. The nation has also targeted to achieve 100 researchers, scientists and engineers (RSE) per 100,000 workforces by the year 2020. They set to improve the quality of academic staff by increasing the number of academics with PhDs in public universities, with a target of 75 per cent in research universities and 60 per cent in other public universities.

III. UNIVERSITY OF MALAYA

A. Background

University of Malaya (UM), Malaysia’s oldest university, is situated on a 812 acre campus in the southwest of Kuala Lumpur, the capital of Malaysia. The varsity is proud to claim the title of the country’s premier university and the origins of the university can be traced back to 1905 with the founding of King Edward VII College of Medicine and its subsequent merger in 1949 with Raffles College (founded 1929) in Singapore to form the national university of the Federation of Malaya under the name of University of

Malaya. In 1954, the government put forward a proposal that the University of Malaya should rightly have two branches, one in Singapore and another in Kuala Lumpur. Through an act of parliament in 1961 the University of Malaya as we know it today in Kuala Lumpur, was established on 1 January 1962 as the first university in Malaysia (see Figure 1).

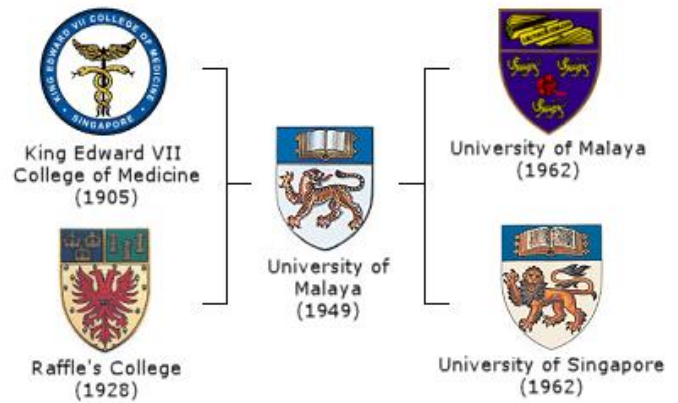


Fig. 1. Background of University of Malaya

On June 16th 1962, University of Malaya celebrated the installation of its first Chancellor, Tunku Abdul Rahman Putra Al-Haj, who was also the country's first prime minister. The first Vice-Chancellor was Professor Oppenheim, a world-renowned Mathematician. Currently, His Royal Highness The Sultan of Perak Darul Ridzuan, Sultan Nazrin Muizzuddin Shah is the Chancellor of the University of Malaya. YBhg. Datuk Ir. (Dr.) Abdul Rahim Hashim was appointed as the twelfth Vice-Chancellor of the University of Malaya on 1 November 2017.

B. Strengths

The University of Malaya is situated right in the heart of Malaysia’s capital city, Kuala Lumpur, close to the city attractions such as the National Museum, Arts Market, Kuala Lumpur Tower and the famous Petronas Twin Towers. The university campus located in the Pantai Valley, set on a spacious natural parkland, hills, valleys, flora and fauna, the home of many species of flowers, birds and insects. The varsity green, a rolling field set by a lake is the students’ favorite area for sport and recreation activities from football to kayaking. The infrastructure and development at the university are constantly on improved for the benefit of all campus communities.

The University of Malaya has grown rapidly since its establishment. The alumni include Malaysian Prime Ministers, members of cabinet, top civil servants and diplomats, and leaders of the industry, the sciences, the arts and culture. University of Malaya continues to actively spearhead a vigorous research agenda after it has been designated as one of five research universities in Malaysia. UM’s plans for the future reflect its vision of becoming “an internationally renowned institution of higher learning in research, innovation, publication and teaching.”

University of Malaya is going global. Out of the 23,000 students enrolled for undergraduate and postgraduate studies at University of Malaya, more than 3,500 are international students from more than 80 countries. University of Malaya

is a world ranking university. This university is placed at number 24 in the Asian University Ranking 2017/18 and was ranked 114 in the 2017/2018 QS World University Ranking, being the only Malaysian University making a mark in the list of the world top 200 universities and it has emerged as the only Malaysian university to break into the top 30 of the 2017 QS Asian University Ranking [4]. The University has been consistently voted by consumers as the University of Choice by the Readers Digest Trusted Brand Award exercise since 2007. In term of quality assurance, the University of Malaya received the MS ISO 9001:2000 in 2002, being the first Malaysian public higher education institution to receive a comprehensive certification for all its processes.

To achieve and maintain the above performances, University of Malaya took various initiatives as following:

- i. Academic Icon Program: Draws globally renowned academics and highly cited researchers (H-Index of 25) in all fields to the university. The role of Icon is to guide and nurture high impact research and publications in top-tier journals.
- ii. Bright Sparks Program: Financial support and incentives offered to bright candidates to work and further their career in UM. Candidates required to publish research papers in ISI ranked journals. Entry requirement will be minimum 3.70 CGPA (Bachelor/Master's Degree) or publications in ISI journals/journals relevant to the field of research.
- iii. Nobel Laureate attachment in UM with research labs / research centres
 - a. Fundamentals in Medical Research
 - b. Cutting-Edge Research in Chemistry
 - c. Frontier Physics Research, and
 - d. New Model in Economic Research

This include "Blue Ocean" research in fundamental areas and directly able in propelling local talents to global prominence.

- iv. Develop a network among universities, libraries, research institutions and centre of excellence. For example, Africa-Asia Development University Network (AADUN). We ran the 1st International Conference of Africa-Asia Development University Network - Africa's Asian Options (AADUN-AFRASO) 2014 and we also established a joint research projects such as Asian and African Water Management and Ocean Research: potential water problems in KL & Cape Town.

C. University of Malaya 's Drive for Internationalisation

The internationalisation activities becoming more rapid when this university declared as research university in 2012. Since the beginning we were made to understand that the evaluation criteria of university at international level are includes: academic peer review (30%), student to faculty ration (20%), recruiter review (10%), papers per faculty (15%), citations per paper (15%), international faculty review (2.5%), international student review (2.5%), inbound student exchange (2.5% and outbound student exchange

(2.5%). Policies and planning of the top management followed this path, and it trickle down to faculty members in the form of action and staff's Key Performance Index (KPI) (See Table IV).

D. Standard Academic Performance Target

TABLE IV. STANDARD ACADEMIC PERFORMANCE TARGET

Academic Staff's KPI	Faculty's KPI
Part I: Staff particulars	1) Academic
Part II: Details of key performance indicators	- Reduction in number of academic staffs without PhD
1) Academic (Student supervision)	- Postgraduate student registered
2) Teaching and learning	- Post graduate student graduate on time
3) Research, publication and innovation	2) Teaching and learning
4) Internationalization and networking	- Execution of program according to Malaysian qualification requirement
5) Recognition and professional services	- Innovative teaching
6) Awards	- Student assessment score
7) Administration	- Quality of graduates
8) Faculties specific duties	- Learning space
Part III: Personal quality	3) Research, publication and innovation
1) Integrity	- Publication - ISI, Scopus, etc.
2) Discipline	- Quantity and quality of researchers
3) Leadership / supervision	- Innovations - patent / book / product
4) Proactive	4) Internalization and networking
5) Creative and innovative	- National and International MoU / MoA
6) Teamwork	- Number of Staff involved in national and international projects
7) Effective in communication	- International academic staff
8) Polite and courteous	- International students
Part IV: Community contribution / activities and achievements	- Student and staff exchange initiatives
Part V: Total score	5) Recognition and professional services
Part VI: Overall appraisal and confirmation by assessor	- Appointment as visiting professors, etc.
	- Appointment as chairmanship /committees
	- Services by staff
	6) Income generation
	- Income generated - clinical services, training and consultation, lab services, special programs, etc.
	7) Awards
	- Students - trophy, sport achievement, community services, expert panel in mass media, etc.
	8) Promotion initiatives
	- Event / promotions organised - seminars
	- Alumni activities
	- Employer's initiatives
	9) Employability
	- Graduates being employed
	- % graduates employed 6 months after graduation based on tracers' study.

More international MoUs have been signed to allow knowledge and skill transfer among academic staffs e.g. visiting fellowships, seminars, sabbatical leave, postdoc

experiences, program assessors etc. Academic staffs are encouraged to experience industry-based sabbatical. The faculties are permitted to appoint prominent academic leaders as visiting professors, academic icons, industry icons and curriculum reviewers. The faculties also urged to bring in the international experiences to campus by hosting international students with cultural exchange and language competencies program.

To put University of Malaya at par with renowned university in the international arena, attention has been given on curriculum strategies and curriculum review. We have acquired international accreditations of Professional Academic Program from relevant professional bodies overseas such as Royal Institute of British Architects (RIBA), United Kingdom, Association of MBAs, Royal Society of Chemistry, Royal College of Surgeons of Edinburg, United Kingdom and Royal College of Surgeons in Ireland, Republic of Ireland.

To raise quality of academic programs, the Academic Section of University of Malaya scheduled rigorous curriculum reviews in every 3-5 years involving [5]:

- Accreditation processes - acquiring national & international accreditations based on Malaysian Qualification Framework (MQF) requirements and professional bodies standards.
- Benchmarking – programs are benchmarked against other local universities and top-ranked universities overseas.
- Market survey –each program conducted market survey involving industry, alumni, experts and panel of international external program assessors.
- Eliminate up to 20% irrelevant academic programs.

Dual degree and/or joint academic programs with top-ranked international Universities was established, for example master program (dual/double degree) in Master of Renewable Energy and Master of Public Health between University of Malaya and Kyoto University, Japan. We also have dual / joint PhD Program with 25 other universities all over the world include the University of Sydney, Australia, Loughborough University, UK and other universities in Taiwan, Japan, France, Belgium, Iran, Cambodia, etc.

E. University of Malaya's Facts and Performances

Table V describes University of Malaya's facts and performances.

TABLE V. UNIVERSITY OF MALAYA'S FACTS AND PERFORMANCES

	Contents	Facts and performances
1.	UM's general facts	<ul style="list-style-type: none"> - Malaysia's first & top university; most accredited Research University. - First university in Malaysia to be awarded QS 5-Stars (2014, 2017) - Situated on a 812-acre campus in the southwest of Kuala Lumpur; Museum of Asian Art; UM Art Gallery; Rimba Ilmu (Forest of Knowledge) - Broad-based, research intensive, government supported - Faculty ~ 2000 (300 international) - Students ~ 20,000 (1UG:1PG), & 3000 international - Malaysia's largest (1,600 beds) & best teaching hospital - More than 50 research centres, 6 research clusters - 2 double bachelors, 8 dual masters and 25 dual PhDs
2.	UM rankings (2018)	<ul style="list-style-type: none"> - QS World University Rankings = 114 - QS Asia University Rankings = 24 - Green Metric World University Ranking = 68
3.	Teaching & Learning	<ul style="list-style-type: none"> - Most of UM's Professional Academic Programmes are accredited by International Professional body - World University Ranking by subject: Ranked in 32 subjects; ranked in 5 subjects' areas; top 100 for 3 subject's areas; top 100 for 19 subjects' areas; top 100 for 19 subjects; top 50 for 5 subjects.
4.	Research, publication & innovation	<ul style="list-style-type: none"> - International Co-Authorship for UM (2011-2016): 50% of UM publication are internationally co-authored - highest in Malaysia: 2,802 collaborating institutions; 14,709 co-authored publications. - UM WoS-Indexed Publications: highest in Malaysia @ 3,499 (in 2016). 65% in Q1 & Q2. 50% with international co-author. - UM Scopus-indexed Publications: highest in Malaysia @ 3,911 (in 2016). 50% with international co-author. - Citation impact - highest in Malaysia @ 1.54 (in 2016). - Citation impact for Malaysia's 5 Research Universities in the top 5 research areas of the world (2011-2016) UM is highest in Malaysia in 5 out of 5 areas. - Field-Weighted Citation Impact of all journal categories for UM is higher than world average is 18 out of 27 categories
5.	Internationalization & networking	<ul style="list-style-type: none"> - International visit to UM: 115 (2016), 125 (2017) - 600 MoU/MoA's from 68 countries. - UM impact of collaboration: publications = 9,284; Citations = 47,789; Citation Per Publication = 5.1 - International academic staff = 328 (2017)

		- International students - undergraduate = 576 (2017); postgraduate = 2372 (2017). - Student exchange - inbound = 2031 (2016) & 1613 (2017); outbound = 2145 (2016) & 851 (2017), from more than 15 countries
6.	Selected Programmes	- Academic Icon Programme - Bright Sparks Programme - Nobel Laureate Attachment - Academia-Industry Partnership

IV. CONCLUSION

A long history and strong background of university, a clear vision, mission and values, a sufficient teaching, learning and research facilities, a committed leadership of top management and a great work of academic staff are among other factors that help University of Malaya improve its position in QS Ranking. There are challenges from within, however, such as lack of financial resources and issues related-quality of publication. This doesn't seem to stop UM from 'competing' rather to remain and maintain its policy participating in university's ranking. Hope that Malaysia's new government led by Tun Dr Mahathir Mohamed, 10th of May 2018 onwards, will continue support to University of Malaya especially in financial aspect.

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