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RESEARCH UNIVERSITIES IN MALAYSIA: WHAT BEHOLDS?

Nooraini Mohamad Sheriff
nooraini@salam.uitm.edu.my
Faculty of Business Management,
Arshad Ayub Graduate Business School,
UiTM Shah Alam, Selangor.

Noordini Abdullah
Politeknik Ungku Omar, Ipoh, Perak.

ABSTRACT

The National Higher Education Strategic Plan Beyond 2020 aims at further strengthening Malaysian research universities and envisions that two Malaysian universities will be among the Top 100 world universities. To date there are 5 research universities in Malaysia, namely University of Malaya (UM), Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM), Universiti Putra Malaysia (UPM) and Universiti Teknologi Malaysia (UTM) being the latest addition. These research universities are required to focus primarily on research and innovation activities, driven by highly competent academics and competitive student admissions. Research universities too are expected to explore their intellectual capacity and become models of Malaysian universities in conducting research activities aimed at knowledge advancement. Apart from this research universities are entrusted to generate their own income and establish holding companies responsible for conducting business ventures through the commercialization of their research products. Quality and quantity of researchers, research and postgraduates are also expected to increase in these research driven institutions. This calls for a visionary university leadership and the application of a new image and organizational principles. Education, training and employment policies too have to be reviewed, to ensure staff have the skills necessary for the development of research activities.

INTRODUCTION

The era of globalization has mandated Malaysia to adjust and adapt to new realities especially in education. This calls for an urgent need for more creative human resources to generate wealth in the country aimed at improving the overall quality of life. In view of this, the National Higher Education Strategic Plan 2007 – 2020 was formulated as a step to develop human capital through the transformation of higher education. It is also the aim of this plan to meet the nation's development needs and raise her stature in the international arena, by emphasizing and reinforcing the Research &Development (R&D) culture as well as teaching and learning at every level of society with the hope of attracting students from around the globe to pursue higher education in Malaysia. In a nutshell, this plan aims to produce quality human capital characterized by knowledge, skills, creativity, innovativeness and competitiveness.

The National Higher Education Strategic Plan 2007 – 2020 (Ministry of Higher Education Malaysia. July 2007, August 2007) was engineered in tandem with the national vision that stresses on the need to develop a knowledge-based economy with research and development (R&D) being the critical agenda. Consistent with this national vision, developing the image of a world class university is of paramount importance. With strong aspirations to be at par with other world class universities, local universities are being closely scrutinized for their capability to mitigate diverse challenges. One prevailing challenge is the universities' ability to attract increasing numbers of postgraduate candidates world-wide.

University Ranking, Research Activities and Achievements: The Realities

Geared at further strengthening and improving Malaysian research universities, the second phase of The National Higher Education Strategic Plan Beyond 2020 was introduced. This plan envisioned that two Malaysian universities will be among the Top 100 world universities (The Star, 2010). Malaysia is also expected to churn six research universities in time to come. However, the Times Higher Education release of their World University Ranking 2016-2017 has placed the University of Oxford, UK in the first place for the first time in the 12-year history, pushing a five-time champion

the California Institute of Technology (Caltech) into second place. This is a landmark achievement for a UK university. History is made as an American institution did not take the top spot for the first time. The rest of the top five was filled by Stanford University in third, the University of Cambridge in fourth, and Massachusetts Institute of Technology (MIT) in fifth.

Highlights on the ranking of other Western universities have witnessed Switzerland's ETH Zurich – Swiss Federal Institute of Technology Zurich, making it to the top 10. Germany too had performed well with 22 institutions making it to the top 200 while another nine to the top 100, all of which were attributed to their highly influential research work. Netherland on the other hand had 13 of her leading research-intensive universities making it to the top 200 for the first time. By way of contrast institutions in France, Italy and Spain and many parts of central and Eastern Europe seemed to have lost ground in their ranking, while Asian universities continue to ascend. The world university ranking system has attested to the real and consistent improvement in Asia's higher education. This is evident as a total of 289 Asian universities from 24 countries have successfully made the ranking. Among these 19 made it to the top 200, up from 15 last year. China's Peking University joins the top 30 in 29th place (up from 42nd last year), while Tsinghua University joins the top 40 in 35th place (up from joint 47th). Five of Hong Kong's six representatives make the top 200 – more than any other Asian region – while South Korea has also made great strides. The National University of Singapore (NUS), at 24th place– its highest ever rank made its way to garner the Asia's top university status.

A point worth mentioning is the Times Higher Education World University Rankings 2016-2017 has successfully enlisted 980 of the world's top universities. Basing its calibration of global university performance across their core missions such as teaching, research, knowledge transfer and international outlook, calculation of rankings were solicited and audited independently by PricewaterhouseCoopers (PwC). As such it has become a credible and trusted reference among key stakeholders in higher education namely students, academics, university leaders, industry and governments.

As research has become the main evaluation criteria determining a university's world ranking, it is imperative that universities research documents be reviewed too. Scopus from 1996-2015 has recorded the

number of research documents published in scientific journals that originated from the Asiatic Region namely universities in China, Japan, Taiwan, South Korea and India (Table 1.2). It is impressive to learn that these universities have made research as their core business. South Korea being the first rank churned a total of 824839 published documents in one year. In contrast, Malaysia recorded a total of 181251 documents that led to the 8th place out of the fifteen countries listed.

Table 1.2: The Results of Research Published in Scientific Journals Indexed by Scopus which originated in Asiatic Region between 1996-2015

Rank	Country	Documents	Citable documents	Citations	Self-citations	Citations per document	H index
1	China	4076414	4017123	24175067	13297607	5.93	563
2	Japan	2212636	2133326	30436114	8352578	13.76	797
3	India	1140717	1072927	8458373	2906102	7.41	426
4	South Korea	824839	801077	8482515	1801111	10.28	476
5	Taiwan	532534	516171	5622744	1208385	10.56	363
6	Hong Kong	219177	206011	3494244	445101	15.94	392
7	Singapore	215553	202089	3135524	389066	14.55	392
8	**Malaysia**	**181251**	**175146**	**888277**	**239643**	**4.9**	**190**
9	Thailand	123410	117565	1182686	190912	9.58	236
10	Pakistan	94285	90034	546210	146901	5.79	166
11	Indonesia	39719	37729	282788	33087	7.12	155
12	Bangladesh	30612	29157	227447	42157	7.43	134
13	Viet Nam	29238	27989	253661	37049	8.68	142
14	Philippines	20326	18658	265737	27209	13.07	163
15	Sri Lanka	12557	11532	121696	11140	9.69	120

Source: http://www.scimagojr.com

Consequently in relation to research publication, the number of times a paper is cited in the work of other researchers denotes the usefulness of the paper. Thus, to attain the status of a world ranked university, it can be summarized that academics and students need to produce good quality research that is globally acknowledged. The above findings indicate the presence of an urgent need for Malaysian universities, especially the research universities, to institute proactive measures to increase their knowledge output. This would significantly assist in building a successful brand and

image capable of attracting and retaining the best brains among local and international students. deChernatony and McDonald (1998) postulated that for a brand to be successful it must be easily identified. Ease of identification is important as it would facilitate customers into detecting uniquely added qualities that are relevant to their needs in the brand**.**

CONCEPT AND DEFINITION

The following statements were selectively culled from the scholarly literature on universities, research university, and other related institutions as a starting point to define a research university.

a. According to OECD (1987), universities are moving towards a plurality of functions, and ten are proposed: 1) to provide post-secondary education; 2) to develop research and new knowledge; 3) to provide society with the necessary skills; 4) to carry out highly specialized training; 5) to strengthen the competitiveness of the economy; 6) to act as a selection filter for highly demanding jobs; 7) to contribute towards social mobility; 8) to provide services to the community; 9) to serve as a paradigm of social equality; and 10) to prepare the leaders of future generations.

b. It can be summarized that education is the principal role of a university, whereas the secondary role is, its research function which aligns with the individual nature of the university as an institution. The third comprises the link between the university and society, which results from its scientific and technological potential and from the specific requirements of society.

c. A university is for Creation, Preservation and Dissemination of Knowledge.

d. A university is an institution of higher education and research which grants academic degrees in a variety   of subjects. A university provides both undergraduate and postgraduate education. According to Baird (1980), a university is many things to the students such as courses, lectures, tests, rules and regulations and these constitute the

environment or atmosphere of the university. John Henry Newman cited in Ali-Choudhury, Bennett, & Savani (2009) claimed that a university is "a place for liberal education and the teaching of universal knowledge" without having to provide students with vocational skills and competences.

Based on the different perspectives presented above, a research university would best be defined as "an institution for knowledge creation, to promote creativity and innovation, preservation and the dissemination of new knowledge. It also promotes leadership expertise in individuals, to work within a professional context and to meet the specific needs of professional groups external to the university".

INCEPTION OF RESEARCH UNIVERSITIES: IT'S EVOLVEMENT

According to Atkinson and Blanpied, (2008), the emergence of research universities is a fairly recent educational evolvement. Over the centuries the roles of universities have been to transmit knowledge from the teachers to students. However in the 19th century a paradigm shift occurred among German universities where research was aggressively performed instead of teaching. A similar trend prevailed among U.S. universities where many evolved into research universities after the Civil War and made an outstanding impact on the nation's industrial development (Rosenberg et al., 1994). These universities too have flourished and continued to compete successfully in the world market for knowledge (Atkinson and Blanpied, 2008). To date, these research universities represent the core of the American science and technology system. The role of faculty members who compete vigorously for research grants explains why American universities are able to ensure quality in most of their research. Moreover, this is obvious from the number of Nobel Prizes awarded to American scientists in research university faculties since 1975 which is greater than all other countries combined for the same period. This meritorious achievement is a testimony that the American research system is among the best in the world.

Notwithstanding this, a problem in American research universities is the scarcity of research grants. This causes faculty research members to often

choose safe proposals and not more risky ones that could lead to innovative findings. As such many research papers appearing in the scientific journals are mediocre in nature. More so, too many research papers published in the scientific literature are moderate, serve little purpose other than increasing the publication lists of their authors. Nonetheless on a more positive note PhD holders with proper qualifications are still sought by industries and related organizations. Conventional manufacturing firms, investment companies, banks, financial institutions, and government agencies both state and nation, have various job openings for people with such qualification.

For the above mentioned reasons, the higher education system must ensure that higher educational institutions (HEIs) build their reputation by demonstrating dynamic capabilities, anticipating future challenges, and the ability to act effectively. The factors that set world-renowned HEIs is their ability to attract and maintain the best academics who contribute significantly towards the advancement of research and produce outstanding graduates (The Star, 2010). Therefore, research universities have been established to focus first and foremost on research and innovation activities so as to improve their world ranking amongst the top 200 universities.

THE MALAYSIAN LANDSCAPE

In line with The National Higher Education Strategic Plan Beyond 2020 and to achieve world class status, the Malaysian government has structured all public universities into three categories, namely, research university, focused university (the technical education, management and defense universities) and comprehensive University. There are presently 20 public Higher Education Institutions (HEIs) of which four are research universities, four comprehensive universities and twelve focused universities. The four research universities are University of Malaya (UM), Universiti Kebangsaan Malaysia (UKM), Universiti Sains Malaysia (USM) and Universiti Putra Malaysia (UPM). These universities and categories were announced under the 9th Malaysia Plan. Universiti Teknologi Malaysia (UTM) was the latest addition making it the country's fifth research university during the unveiling of the 10th Malaysia Plan on June 10th, 2010 (The Star, 2010).

Presently universities placed under the research university category are required to focus primarily on research and innovation activities, driven by highly competent academics and competitive student admissions aimed at achieving a 50-50 ratio of undergraduate to postgraduate students (The National Higher Education, Strategic Plan Beyond 2020). Research universities too are expected to further explore their intellectual capacity aimed at knowledge advancement. In short, research universities are expected to be models of Malaysian universities in conducting research activities as well as to excel in knowledge advancement through research and publications (Majzub, 2008).

In the latest QS University Rankings: Asia 2016, all the five abovementioned public universities in Malaysia that have been designated as research universities did the country proud where they all ranked among the top 100 in 2015. In the lead was Universiti Malaya which holds the highest ranking among all Malaysian universities moving from the 29th spot last year to 27th (StudyMalaysia, 2016).

OBJECTIVES OF A RESEARCH UNIVERSITY ESTABLISHMENT

With the unrelenting influence of globalization on HEIs, the concept of a prestigious and exclusive HEI which only admits the selected few into its educational programs is becoming less relevant. Nowadays, universities need to market themselves in a climate of international competition in order to attract foreign students. Fundamentally, to compete in the current global marketplace requires them to establish a new and revised scope of a university's functions. Global competition too entails attracting international students, an initiative adopted by both regional and national governments. Tysome (2007) postulated that in many western countries, governments require universities to offer more diverse courses compared to the past in order to appeal to a greater pool of students. In addition, management too has to find effective approaches to attract students including adopting and practicing the culture of quality across all aspects of their activities (Ivy, 2001; Soutar & Turner, 2002). In this light, the following objectives are necessarily consistent with the establishment of a research university:

1. Increasing research and development activities and commercialization (R & D & C)
2. Increasing the intake of Postgraduate and Post-Doctoral students
3. Increasing the number of lecturers with doctoral qualifications
4. Establishing and strengthening a Centre of Excellence
5. Enhancing the recruitment of foreign students and advancing the university's ranking at international level.

From the objectives outlined, it is apparent that the establishment of a research university focuses on developing a distinctive image whilst maintaining the institution's competitive advantage (Ivy, 2001; Va¨limaa, 2004; Chapleo, 2015).

Implicit in the objectives mentioned above is that research universities are formed with the primary aim of advancing the socio-economic progress of a nation, particularly through its human resource development. It is hoped that research universities would become competitive and resilient enough to be among the best universities in the world. According to Gibbons (1997) even though throughout the 20th century, universities have added the function of generating new knowledge to their traditional role of preserving and transmitting knowledge, to date their contribution to our knowledge and innovation based economy is marginal. Therefore, by upgrading existing universities to the research university status will encourage generation of new knowledge and enable universities to generate their own income and establish their own holding companies for conducting business ventures through the commercialization of their research products.

## SELECTION CRITERIA FOR A RESEARCH UNIVERSITY

Seven criteria are used by the Assessment of Research universities Committee to evaluate if a university qualifies to be a research university. These criteria primarily focused on quality of research, researchers and innovation among others. Details of the scoring criteria are depicted below (Table 1.3):

Table 1.3: The Scoring Criteria for the Selection of a Research University (MyRA)

NO	CRITERIA	Weightage
1.	General Information	-
2.	Quantity and Quality of Researchers	15
3.	Quantity and Quality of Research	35
4.	Quantity and Quality of Postgraduates	10
5.	Innovation	15
6.	Professional Services and Gifts	10
7.	Networking and Linkages	12
8.	Support Facilities	3
	TOTAL	**100 %**

Source: https://www.kpims.usm.my/v2/?p=myra-criteria

As displayed in Table 1.3 the quantity and quality of research entails the highest weightage (35) in the selection of a research university. Basically, the weight score mentioned above is indirectly influenced by the weight score of the quantity and quality of postgraduate studies (10). Reason being, as the number of postgraduate's increase the probability of getting good quantity as well as quality research is higher. These quality postgraduates could serve in the laboratories or research centers to produce quality research products for commercialization.
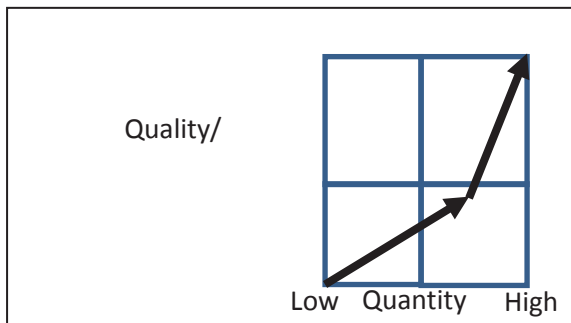
(Source: ICPE4, 2010)

Figure 1.1: Postgraduates strategy on quantity and quality

Zaini Ujang a prominent postgraduate's strategy on quantity and quality personality in the Malaysian public HEI (ICPE, 2010) strongly advocated the implementation of postgraduate strategies which emphasizes on quantity of postgraduates among universities (Figure 1.1). Improvements on the quality of postgraduate studies would prevail through consistent efforts of providing quality programs and initiatives to drive student's persistence and completion rates.

Quality postgraduates usually go hand in hand with quality of research. Ceteris paribus, the greater the number of quality postgraduates within a university, there is likelihood of a greater number of quality research available for commercialization as well as publications. However in a research context, the quality of postgraduates is dependent on the supervisors or academic advisors as they are instrumental in nurturing the relationship between research students themselves. On a similar note the quality of academic advisors especially in the physical and natural sciences, technology as well as in business and social sciences would impact the quality of postgraduate programs. A deficiency in the quality of academic advisors would retard the production of top quality postgraduate students needed to realize the government's policy of developing human capital through research & development and innovation. Furthermore, the quality of supervision may have either a positive or negative influence on a potential postgraduate student to enrol in an educational institution.

Consequently, it has also been identified that a positive institutional image would have a strong effect on student's decision to attend an educational institution (Mazzarol, 1998; Bourke, 2000; Gutman & Miaoulis, 2003). Numerous authors namely Dowling (1986), Fombrun and Shanley (1990) have collectively agreed that a positive brand image would definitely enable a university to attract more applicants especially those with better qualifications.Stemming from this many educational institutions across the world have created their image via the branding process to attract students. Globalization has resulted in the need for higher educational institutions such as universities to compete through their services at the international level (Melewar & Akel, 2005). As rivalry in higher education heightens at the national and international level, higher educational institutions recognize the presence of a greater need for them to profile themselves. In reference to this, branding has become an imperative strategy critically needed for the

survival of educational institutions (Dill & Soo 2003; 2004). It is through branding an institution is able to make a clear distinction of themselves from others (Etzel, Walker & Stanton, 2006). Branding is part of the promotional aspect of marketing and is extremely important to the image, reputation, and success of an organization (Rosenthal, 2003). Therefore, successful branding would help to attract and retain students at the institution. With the challenges posed by globalization, technological advances, an explosive growth of international students and significant changes in the functions of higher educational providers around the world (Burbules & Torres, 2000; Mok & Welch, 2003), there is now a critical need for a strong brand image to ensure the survival of higher educational institutions.

CONCLUSION

These challenges are even more significant for Malaysia as it strives to become a regional hub in higher education. Higher education institutions are now faced with an urgent need to be locally and internationally established so as to successfully compete for funding, talent, influence and secure a niche in the market place or customers' minds. Hence the implementation of research universities can be seen as a major paradigm shift not only for Malaysian institutions but also in the research area as a move to educate future leaders in the process of discovery and creation of new knowledge. This calls for a visionary university leadership and the adoption and application of a new image and organizational principles. The former command and control management system that many Malaysian institutions are familiar with, may not work in a new competitive environment (Mustapha & Abdullah, 2003). Education, training and employment policies too have to be reviewed, particularly to recruit staffs that have the skills necessary for the development of research activities.

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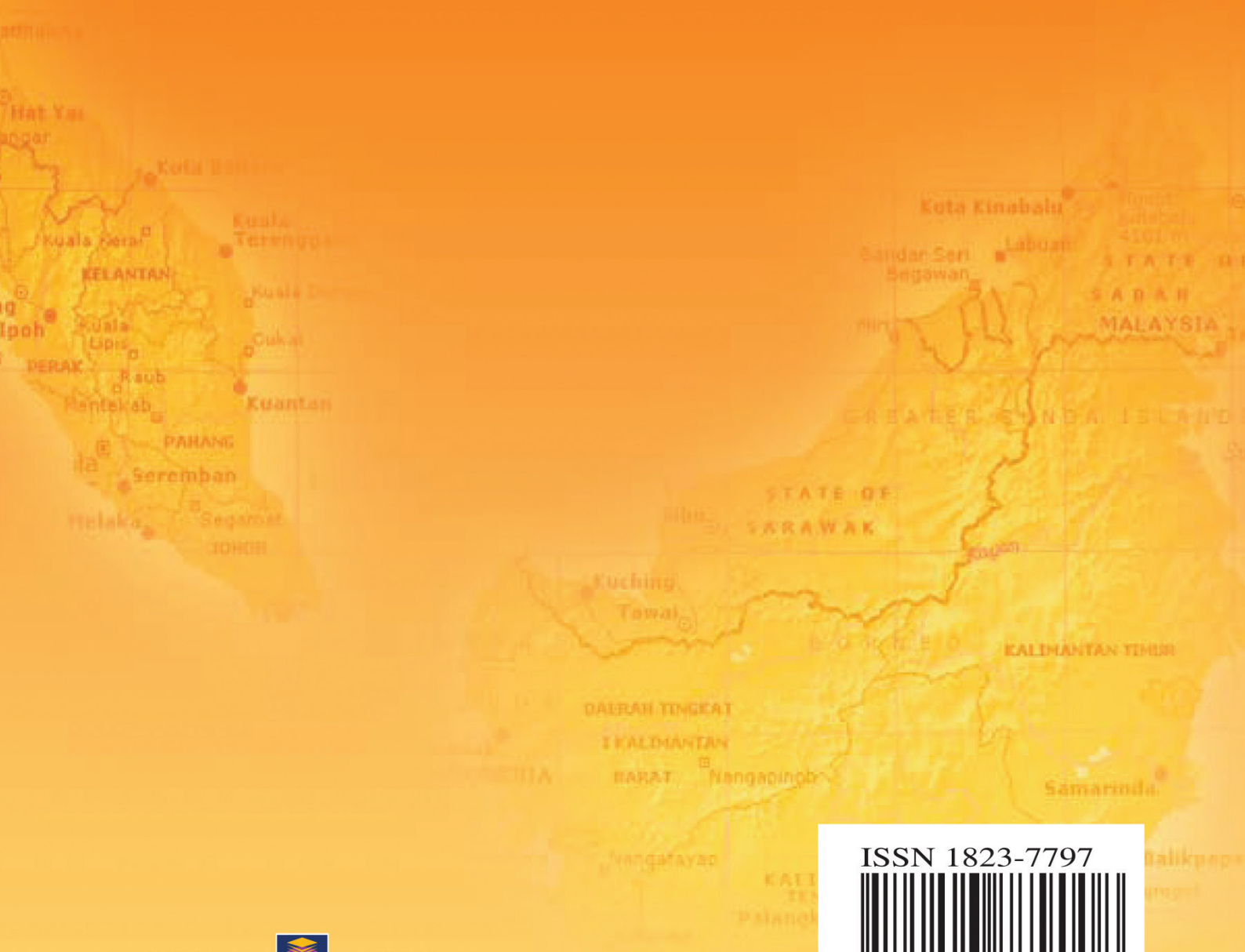
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