

# TRANSFORMATION OF HIGHER EDUCATION INSTITUTIONS IN MALAYSIA: A REVIEW

Sara Asmawati Shariffuddin<sup>1</sup>  
Jamal Rizal Razali<sup>2</sup>  
Mislaiha A. Ghani<sup>3</sup>  
Wan Raihan Wan Shaaidi<sup>4</sup>  
Ismi Safia Adilah Ibrahim<sup>5</sup>

## Abstract

*Transformation of higher education has affected tertiary institutions in every part of the globe. Even though, the key factors are generally common around the world, the types of higher education institutions transformation and issues emerge in the change process may vary from one country to another. This paper reviews and discusses about recent studies on the transformation involving different types of higher education institutions that have significantly occurred in Malaysia. Pertinent studies between 2010 until 2015 were researched and selected using multiple online database and direct search engine. The results indicated that four types of Malaysian higher education institution transformation were identified in these studies. Apart from that, the key elements prevalent in the transformation process were also identified and categorized. These findings are significant as they show that more researches on the transformation of other types of higher education institutions in Malaysian context should be conducted. This is due to the fact that, the transformation of the higher education institution impinges on the stakeholders, such as the policymakers, administrators, academics, students, parents, study loan/scholarship providers to mention a few in many different aspects.*

**Keywords:** higher education institutions, transformation, institutional change

2017 GBSE Journal

## Introduction

Transformation of higher education institutions (HEIs) in Malaysia reflects the actions, policies or strategies instigated by the government in reforming higher education with the aims of improving social and economy of the country (Mitter, 2003). This is to ensure that the HEIs are relevant and aligned with current situations and current needs. For the past 20

---

<sup>1</sup> Lecturer, Centre of Preparatory and General Studies, TATI University College, Teluk Kalong, 24100 Kemaman, Terengganu, Tel: +6098601000 E-mail: [sara@tatiuc.edu.my](mailto:sara@tatiuc.edu.my)

<sup>2</sup> Senior Lecturer, Department of Human Science, Centre for Modern Languages and Human Sciences, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Tel: +6094246917 E-mail: [jamalrizal@ump.edu.my](mailto:jamalrizal@ump.edu.my)

<sup>3</sup> Lecturer, Centre of Preparatory and General Studies, TATI University College, Teluk Kalong, 24100 Kemaman, Terengganu, Tel: +6098601000 E-mail: [mislaiha@tatiuc.edu.my](mailto:mislaiha@tatiuc.edu.my)

<sup>4</sup> Lecturer, Centre of Preparatory and General Studies, TATI University College, Teluk Kalong, 24100 Kemaman, Terengganu, Tel: +6098601000 E-mail: [wan\\_raihan@tatiuc.edu.my](mailto:wan_raihan@tatiuc.edu.my)

<sup>5</sup> Lecturer, Centre of Preparatory and General Studies, TATI University College, Teluk Kalong, 24100 Kemaman, Terengganu, Tel: +6098601000 E-mail: [ismisafia@tatiuc.edu.my](mailto:ismisafia@tatiuc.edu.my)

years, Malaysian higher education has experienced vital transformation with the introduction several legitimate regulations that were endorsed through Parliament of Malaysia. There are four Acts introduced by the government in the efforts of improving the quality of national higher education. First Act, *National Council on Higher Education Act* (MOE, 1996a) was introduced to establish a state’s council to oversee the growth of higher education in Malaysia. Then, second Act *Private Higher National Institution Act* (MOE, 1996b) was regulated as guidelines for the state’s governance over private HEIs. Followed by the third Act, *National Accreditation Board Act* (MOE, 1996c) was passed to create a governing body, namely Lembaga Akreditasi Negara (LAN) or currently known as Malaysian Accreditation Agency (MQA) to manage and control the quality of education provided by private HEIs. Finally, *University and University College Act 1971* (MOE, 1995) was emended in 1995 to provide a framework for the corporatization of public HEIs. In short, these four Acts become the backbones to the expansion of Malaysian higher education.

Transformation of HEIs is defined as the process of improving academic institutions of higher education via academic programs, which focuses on refining the skills and capabilities of the graduates in preparing the nations’ human capital for economic and social expansion while preserving the hereditary disciplines and bodies of knowledge (Maassen et al., 2012). Transforming Malaysian HEIs involves fulfilling rules and guidelines regulated by (MOHE) via national quality assurance body. In Malaysian case, this refers to Malaysian Qualifications Agency (MQA), which is responsible for regulating the quality and standard of public and private HEIs.

The most current measure adopted by Ministry of Higher Education (MOHE) is the implementation of National Higher Education Strategic Plan (NHESP) launched on 27<sup>th</sup> August 2007. This strategic plan comprises four distinct phases of transforming HEIs carried out at different years towards the year 2020 and beyond as summarized in Table 1.

Table 1: Summary of National Higher Education Strategic Plan (NHESP)

Strategic Plan	Key Process
<i>Phase 1</i> Laying the Foundation: 2007-2010	MOHE assist HEIs with 20 critical agenda projects
<i>Phase 2</i> Strengthening & Enhancement: 2011-2015	Improve initial initiatives
<i>Phase 3</i> Excellence: 2016-2020	Refine key initiative and outcomes of previous phases
<i>Phase 4</i> Glory & Sustainability	Sustain the qualities achieved

Phase 1 (Laying the Foundation: 2007-2010) involves the initial process, which MOHE assist HEIs via 20 critical agenda projects in equipping local work force with first-class mind-set, in gearing up towards advanced-income country. Some of the critical agenda projects includes the establishment of APEX university, transformation of polytechnics and transformation of

community colleges. Phase 2 (Strengthening and Enhancement: 2011-2015) represents the improvements of the initial initiatives with 23 critical agenda projects to be employed and accomplished. Phase 3 (Excellence:2016-2020) focuses on refining the key initiatives and outcomes of previous phases fulfilling the aspiration as a developed country. Phase 4 (Glory and Sustainability: Beyond 2020) emphasizes on sustaining the qualities achieved as a developed country and withstand the challenges of preserving the status.

Many studies have been conducted on the transformation of HEIs. Most of these studies have focused on the impacts of HEIs transformation on the governance of the tertiary institutions (Blackman and Kennedy, 2009), the roles of the academics (Niehaus and Williams, 2016), the professional development of the academics (Borko, 2012), research in higher education (Brennan and Teichler, 2008) and the quality of higher education (Jordens and Zepke, 2015) in their respective countries. Hence, there is a lack of studies on various impacts of transformation of Malaysian HEIs particularly on the different types of HEIs that have undergone the changes. Therefore, this study proposes a review on the transformation of HEIs in Malaysia looking specifically at the different types of HEIs and their experiences. In addition, this effort is significant as to justify other elements in Malaysia HEIs transformation which are yet to be examined.

Henceforth, based on review on the studies on transformation of HEIs in Malaysia, this paper focuses on answering the following research questions:

- i) What are the prominent types of HEIs transformation that have emerged from recent studies?
- ii) What are the issues prevalent in transformation of Malaysian HEIs?
- iii) What are types of HEIs transformation should be further investigated?

In order to answer the aforementioned research questions, a review of the past studies on the transformation of Malaysian HEIs was performed based on certain criteria discussed in the methodology section.

### **Major Factors Influencing the Transformation of Higher Education in Malaysia**

Many factors are attributed to the transformation of HEIs in Malaysia. Whilst, some are externally driven including globalization, internationalization and world-class rankings; others are internally propelled such as government policy, corporatization and privatization. These factors are the catalyst for the major changes in HEIs in Malaysia.

Malaysian HEIs are affected by the global influence on the expansion of knowledge economy to compete in global market for ensuring the continuous growth of Malaysian economy (Lee, 2004). HEIs has vital role in preparing the workforce that can measure up to international standard and stand the challenges that entail the development of technology, economy, community and information to name a few (Knight, 2006). In fact, a study by Othman et al. (2011) has proved that globalization has affected Malaysian HEIs in catering for more demands of higher education, lifelong learning, ICT skills, Generic skills and internationalization. Hence, transforming and improving the HEIs is mandatory in fulfilling these necessities.

Meanwhile, internationalization process swamps Malaysian HEIs particularly the private sector towards providing outstanding, relevant and marketable higher education by offering

pre-university, twinning and franchise programs from foreign universities (Arokiasamy, 2011, p.12). Apart from that, collaboration in credit transfer, external degrees, distance learning, joint programmes and e-learning programmes were also made with the selected foreign universities (Ismail et al., 2014) in realizing government's desire of making Malaysia as a renowned regional education hub. Similarly, public HEIs have undergone internationalization process in forms of research collaboration, staff exchange programmes and various global networking partnerships as few of many approaches on being listed among world-class rankings HEIs (Tham and Kam, 2008).

The competition among HEIs worldwide to be listed in world-class ranking universities has evolved Malaysian HEIs by expanding research and innovation; while elevating the country's knowledge-based economy (Ramli et al., 2013). In fact, the establishment of Accelerated Programme for Excellence (APEX) university enhances local innovation process (Nasruddin et al., 2012). Apart from that, NHESP has laid out the strategic plan of transforming five public HEIs into research universities in the effort of conceptualizing world-class status universities (Sirat, 2013). These have shown government's commitment in making Malaysian HEIs among the top world universities. However, not many HEIs are enthusiastic on being in world-class rankings as many vice chancellors and presidents are critical of the approach used to rank their HEIs (Sirat and Ahmad, 2010, p.126). Despite all that, the race of obtaining world class recognition changes the HEIs in the country.

As mentioned previously, Malaysian HEIs are internally steered by government recent policy on higher education, corporatization and privatization. NHESP has become the blueprint for recent government policy on higher education until the year 2020 and beyond. Every type of HEIs in Malaysia plays a vital role in supporting the reform for fulfilling the aspiration of providing equal chance, access and treatment to higher education (Arokiasamy, 2011, p.10). This is evident in the shift and establishment of technical HEIs and polytechnics to less developed areas, which supports the economic development in these areas while balances the regional economic disparities (Azman et al., 2014). Other government policies also prevalent in other major factors.

The next major factor is corporatization. Public HEIs undergo corporatization process whereby the universities receive less government funding but are permitted to generate additional income. Moreover, public HEIs now can participate in commercial undertakings, set-up businesses or consultancy companies, procure and hold investment shares (Mok, 2007, p.274). Nevertheless, corporatization of public universities is not without issues as university governance also changes of which public universities gain more autonomy in managing its financial and daily operation (Mok, 2010). The previous tug of war between the government and the university's management over the institutional governance system has been changed via University and University College Act (Amended 1995). This indicates that the public HEIs are in control over the university's operation yet are still being controlled the government in its overall decision-making.

On the other hand, privatization of HEIs in Malaysia mainly involves private HEIs which are privately funded, operated in business-like customary where students are clients and meeting clients' expectation is mandatory (Jamshidi et al., 2012). Private Higher Educational Act 1996 was enacted to allow the establishment of private HEIs in Malaysia (MOE, 2012). This is another government policy employed on transforming HEIs in Malaysia. With

privatization, the number of private HEIs are expanding and upgraded to a higher institutional status for the purpose of offering diverse programs to correspond with the needs for higher education in the country (Mok, 2007, p.277).

In short, the above discussion has reviewed major factors affecting the transformation of HEIs in Malaysia. It clearly indicates that affective government function in the transformation is vital to ensure the success of the process. Nonetheless, both the government and the HEIs have to work hand-in-hand in realizing the aspiration of improving higher education to the people in surviving today's challenges.

## **Methodology**

Various online database including SpringerLink, Emerald, ScienceDirect, MyTO and MyJurnal were utilized to search for studies on Malaysian HEIs transformation. Apart from that, direct search through search engine Google Scholar and Mendeley reference manager were also included in the process of seeking out relevant studies on the aforementioned topic. Malaysian focused studies from the year 2010 to 2015 were purposely selected and reviewed to answer the research questions of this study. They were chosen because these studies are considered recent and latest in reviewing the transformation of HEIs in Malaysia.

The search characteristics were developed utilizing specific word or combination of several words of particular terms including “transformation of HEIs in Malaysia”, “transformation from university colleges to full-pledged university status in Malaysia”, “institutional change in Malaysian higher education”, “organizational change in Malaysian higher education”, “APEX university”, “research university”, “categories of HEIs in Malaysia” and “community colleges in Malaysia”.

## **Result and Discussion**

This current study discusses the results on the review of previous studies pertaining to HEIs transformation in Malaysia from year 2010 until 2015. The analysis of these studies was arranged and compared based on the categories of the HEIs, which prevalent from the review. From table 2, it was found that recent studies on the transformation of HEIs involve these four main categories: APEX universities, 3 main groups of HEIs, polytechnics and community colleges. Therefore, the findings revealed that the literature on the types of HEIs transformation is not yet comprehensive since it indicates the lack of recent studies conducted on other types of the HEIs transformation. Thus, we are suggesting that more researches on other types of HEIs should be conducted. Among possible types of HEIs transformation that can be further investigated are the transformation of university colleges to university status as proposed by Shariffuddin and Razali (2016) and transformation of teacher training college to university to name a few. This is due to the fact that each type of HEI possesses unique criteria and experience different challenges during transformation.

Table 2: Summary of key findings on the review of available literature on transformation of HEIs in Malaysia between 2010 to 2015

<b>Types of tertiary institutions</b>	<b>Source of Study</b>	<b>Key Findings</b>
<i>APEX university</i>	Sirat and Ahmad (2010)	APEX university shares institutional autonomy with the government on a tight rope to ensure strategic implementation of the national higher education policy and the attainment of its objectives.  Proposed a governance model specifically for APEX university which almost free of government's control as part of empowering the university autonomy in adopting global and international trends while instigating relevant national's policy.
	Nasruddin et al., (2012)	Progress of APEX university in realizing the vision as a world renown university – current state is between resisting the transformation process and finding balance in accepting the change as positive development.
<i>Research, Comprehensive, focused universities</i>	Aziz et al., (2011)	UTM experiences rigorous development in research commercialization as part of the transformation being a research university,
	Ibrahim et al., (2012)	Categorizing universities to 3 main groups affects the academics' comprehension and practice on their professionalism.  The transformation affects the academics in finding balance between fulfilling personal goals and accomplishing the institutional aims.
	Ramli et al. (2013)	Highlighted the key elements affecting the transformation procedures in fulfilling the criteria as research universities.
	Sirat (2013)	The interpretation of being world class universities vary for Malaysian universities and these are reflected in their vision, mission, responses and practices.

	Ahmad et al., (2012)	<p>Fund allocation for the universities based on 3 different university functions has changed the priorities of these universities.</p> <p>Whilst, research universities concentrate more on leading the area of research and research development; focused and comprehensive universities focus on teaching and learning</p>
	Ahmad et al., (2014)	<p>The categorization of HEIs leads to better management of monetary provision allocated by the government to the 3 categories of Malaysian universities based on their area of specialization.</p> <p>This subsequently improves the university performance in teaching and learning as well as research and development.</p>
	Janudin and Maelah (2015)	<p>Performance measurement system is utilized as the HEIs are transformed to achieve world-class status. The result shows that the system has positive impact on the academics' work performance.</p>
<i>Polytechnics to College Universities</i>	Wahab et al., (2010)	<p>Highlighted 7 implications of transformation of polytechnics to college universities to the stakeholders, funding, curriculum and the academics' performance.</p>
	Wahab and Zakaria (2011)	<p>Examined the role of polytechnics as university colleges in equipping the nation's human capital with competitive knowledge and skills via technical and vocational education and training.</p>
<i>Community Colleges</i>	Leong (2011)	<p>Identified several key elements to ensure successful community colleges transformation as renown technical and vocational education and training provider.</p>
	Don et al., (2014)	<p>Transformation of community colleges has shown positive outcomes on equipping human capital with diverse skills and abilities required for national development.</p>

Based on the key findings on the review, it was also discovered that several themes on the elements critical in the transformation have emerged (see Table 2). These include the

governance, academics career and academic activities involving various types of HEIs. According to Lee (2004), even though Malaysian HEIs have been corporatized and privatized, state's control over the HEIs governance is sustained in order to ensure national's policies and aspirations are well-implemented. Meanwhile, Musselin (2007) claimed that the direction of the academics' career is shaped by the diversification and specialization of academic work. Nyhagen and Baschung (2013) discovered that academic activities today are determined by the types of HEIs, whereby, university based research are inclined towards research and non-research based university are inclined towards teaching and learning. Thus, it can be summarized that these three elements contribute in hindering or elevating the progression of the HEIs. In addition, other aspects, such as, academics' identity leadership, supports and strategies to name a few, involving Malaysian HEIs transformation should be further explored as they are the keys to successful transformation.

Table 3: Emerging themes in the review

Source of Studies	Emerging Themes
Sirat and Ahmad (2010), Ramli et al. (2013), Sirat (2013), Ahmad et al., (2014), Wahab et al., (2010), Wahab and Zakaria (2011), Pang (2011)	<i>Governance</i> e.g. institutional and financial autonomy, implications of transformation, role of HEI, key elements of HEI transformation
Nasruddin et al., (2012), Ibrahim et al., (2012), Janudin and Maelah (2015)	<i>Academics Career</i> e.g. professionalism, work performance
Aziz et al., (2011), Ahmad et al., (2012), Don et al., (2014)	<i>Academic Activities</i> e.g. research, research development, research commercialization, teaching and learning, curriculum

## Conclusion

This study specifically adds to body of knowledge about recent studies on transformation of HEIs in Malaysia from year 2010 until 2015. Based on the reviews, three major findings were revealed. First, four main types of HEIs transformation have been studied in the literature: APEX universities, 3 main groups of HEIs, polytechnics and community colleges. Second, several main issues have been examined in these studies, such as, governance, academic career and academic activities. Eventually, based on the first finding, it is suggested that more categories of HEIs transformation should be further explored, for instance, the transformation of college universities to full-pledge universities and teaching colleges to name a few.

Nevertheless, in general, this study provides basic scope in identifying the issues and challenges in transforming Malaysian HEIs. The research outcomes contribute to better knowledge and understanding of the Malaysian HEIs development particularly the expansion of HEIs involving all types of the academic institutions. Hence, it is hope that the findings of the study will assist the stakeholders in planning, implementing and managing strategies which address possible issues and challenges experienced.

## Acknowledgements



The authors would like to extend their gratitude to TATIUC and UMP for funding this research via Postgraduate Study Scheme for Staff and Postgraduate Research Scheme (PGRS).

## References

- Ahmad, A. R., Farley, A., & Naidoo, M. (2012). The study of government-university relationship in Malaysian Higher Education System. *International Education Studies*, 5(5), 25–34. <http://doi.org/10.5539/ies.v5n5p25>
- Ahmad, A. R., Farley, A., & Soon, N. K. (2014). Categorisation of public universities funding. *Asian Social Science*, 10(10), 57–67. <http://doi.org/10.5539/ass.v10n10p57>
- Arokiasamy, A. R. a. (2011). An analysis of globalization and higher education in Malaysia". *Australian Journal of Business & Management Research*, 1(9), 73.
- Aziz, K. A., Harris, H., & Norhashim, M. (2011). University research, development & commercialisation management: a Malaysian best practice case study. *World Review of Business Research*, 1(2), 179–192.
- Azman, N., Sirat, M., & Ahmad, A. R. (2014). Higher education, learning regions and the Malaysian transformation policies. *Higher Education Policy*, 27(3), 301–321. <http://doi.org/10.1057/hep.2013.26>
- Blackman, D., & Kennedy, M. (2009). Knowledge management and effective university governance. *Journal of Knowledge Management*, 13(6), 547–563. <http://doi.org/10.1108/13673270910997187>
- Borko, H. (2012). Professional development and teacher learning: mapping the terrain. *Educational Researcher*, 33(8), 3–15. <http://doi.org/10.3102/0013189X033008003>
- Brennan, J., & Teichler, U. (2008). The future of higher education and of higher education research: higher education looking forward (an introduction). *Higher Education*, 56(2), 259–264.
- Don, Y., Daud, Y., Kasim, A. L., Sakdan, M. F., & Fauzee, M. S. O. (2014). Outcomes and impact assessment on skill courses program in community college Malaysia. *European Scientific Journal*, 2(February), 1857–7881.
- Ibrahim, R., Mansor, A. Z., & Amin, L. (2012). The meaning and practices of academic professionalism: views from academics in a research university. *Procedia - Social and Behavioral Sciences*, 59, 520–527. <http://doi.org/10.1016/j.sbspro.2012.09.309>
- Ismail, M., Aziz, A., & Abdullah, D. (2014). *Finding the next “ wave ” in internationalisation of higher education : focus on Malaysia*, 493–502. <http://doi.org/10.1007/s12564-014-9336-7>
- Jamshidi, L., Arasteh, H., Navehebrahim, A., Zeinabadi, H., & Rasmussen, P. D. (2012). Developmental patterns of privatization in higher education : a comparative study. *Higher Education*, 64, 789–803. <http://doi.org/10.1007/s10734-012-9529-0>
- Janudin, S. E., & Maelah, R. (2015). Performance measurement system and lecturers ' performance : testing the mediation role of competency in Malaysian research university. *Journal of Contemporary Issues and Thought*, 5, 168–183.
- Jordens, J. Z., & Zepke, N. (2015). Towards rethinking research on quality in higher education. In *Research and Development in Higher Education: Higher Education in A Globalized World* (Vol. 37).

- Knight, J. (2006). Internationalization: concepts, complexities and challenges. *International Handbook of Higher Education*, 18, 207–227.
- Lee, M. N. N. (2004). Global trends, national policies and institutional responses: restructuring higher education in Malaysia. *Educational Research for Policy and Practice*, 3(2004), 31–46. <http://doi.org/10.1007/s10671-004-6034-y>
- Leong, P.C., 2011. Key Reforms in Revitalising Technical and Vocational Education and Training (TVET) in Malaysia. In Regional Conference on Human Resource Development Through TVET as a Development Strategy in Asia (pp. 4-5).
- Maassen, P., Nerland, M., Pinheiro, R., Stensaker, B., Vabo, A., & Vukasovic, M. (2012). Change dynamics and higher education reforms: effects on education, research, governance and academic profession. *Higher Education Research in the 21st Century Series*, 4. <http://doi.org/10.1017/CBO9781107415324.004>
- Ministry of Education, M. (1995). Universities and university colleges (amendment) act 1995. D.R. 42/95
- Ministry of Education, M. (1996a). National council on higher education bill 1996. D.R.1/96.
- Ministry of Education, M. (1996b). Private higher educational institutions Bill. D.R. 2/96
- Ministry of Education, M. (1996c). National Accreditation Board. D.R. 12/96
- Ministry of Education, M. (2007). National higher education strategic plan: laying foundation beyond 2020.
- Mitter, W. (2003). A decade of transformation: educational policies in Central and Eastern Europe. *International Review of Education*, 49(1-2), 75–96.
- Mok, K. H. (2007). The search for new governance: corporatisation and privatisation of public universities in Malaysia and Thailand. *Asia Pacific Journal of Education*, 27(3), 271–290. <http://doi.org/10.1080/02188790701591535>
- Mok, K. H. (2010). When state centralism meets neo-liberalism: managing university governance change in Singapore and Malaysia. *Higher Education*, 60(4), 419–440. <http://doi.org/10.1007/s10734-009-9307-9>
- Nasruddin, E., Bustami, R., & Inayatullah, S. (2012). Transformative foresight: Universiti Sains Malaysia leads the way. *Futures*, 44(1), 36–45. <http://doi.org/10.1016/j.futures.2011.08.005>
- Niehaus, E., & Williams, L. (2016). Faculty transformation in curriculum transformation: the role of faculty development in campus internationalization. *Innovative Higher Education*, 41, 59–74. <http://doi.org/10.1007/s10755-015-9334-7>
- Nyhagen, G. M., & Baschung, L. (2013). New organisational structures and the transformation of academic work. *Higher Education*, 66(4), 409–423. <http://doi.org/10.1007/s10734-013-9612-1>
- Othman, N., M. Hamzah, M. I., T. Singh, H. K., Abdul Wahab, J. L., & Ismail, R. (2011). Globalization of Higher Education Institutions in Malaysia : A Pilot Study. *International Conference on Social Science and Humanity*, 5, 376–380.
- Ramli, N., Zainol, Z. A., Abdul Aziz, J., Mohd. Ali, H., Hassim, J., Wan Hussein, W. M. H. & Yaakob, N. I. (2013). The concept of research university: the implementation in the context of Malaysian university system. *Asian Social Science*, 9(5), 307–317. <http://doi.org/10.5539/ass.v9n5p307>
- Shariffuddin, S. A., & Razali, J. R. (2016). Transformation of university colleges to full-pledged university: a proposed conceptual framework for Malaysian higher learning institutions. In *2nd International Conference on Information Technology (ICIT 2016)* (pp. 69–73).

- Sirat, M., & Ahmad, A. R. (2010). University governance structure in challenging times: the case of Malaysia's first APEX university (Universiti Sains Malaysia). In *The search for new governance of higher education in Asia* (pp. 124–137). <http://doi.org/10.1017/CBO9781107415324.004>
- Sirat, M. (2013). Malaysia's world-class university ambition: an assessment. In *Institutionalization of World-Class University in Global Competition* (pp. 205–223). <http://doi.org/10.1017/CBO9781107415324.004>
- Tham, S. Y., & Kam, A. J. Y. (2008). Internationalising higher education: comparing the challenges of different higher education institutions in Malaysia. *Asia Pacific Journal of Education*, 28(4), 353–367. <http://doi.org/10.1080/02188790802468880>
- Wahab, S., Zakaria, M. A., & Jasmi, M. A. (2010). Transformational of Malaysian 's polytechnic into university college in 2015 : issues and challenges for Malaysian technical and vocational education. In *1st UPI International Conference on technical and Vocational Education and Training* (pp. 570–578).
- Wahab, S., & Zakaria, M. A. (2011). Malaysian polytechnics to meet global recognition in technical and vocational education. In *Edulearn11: 3rd International Conference on Education and New Learning Technologies* (pp. 3962–3968).
- Yaakob, N. I. (2013). The concept of research university: The implementation in the context of Malaysian university system. *Asian Social Science*, 9(5), 307–317. <http://doi.org/10.5539/ass.v9n5p307>