International Journal of Engineering & Technology, 7 (3.30) (2018) 19-23

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

The "Ideal" TH Model Framework to Promote Knowledge Talent : a Malaysian Case

Masrina Nadia Mohd Salleh[1]*, Rahayu Tasnim[2]

[1]*Postgraduate Studies, International Business School, Azman Hashim International Business School, Universiti Teknologi Malaysia, UTM KL, Malaysia*

[2]*Senior Lecturer, International Business School, Azman Hashim International Business School, Universiti Teknologi Malaysia, UTM KL, Malaysia*

**Corresponding author E-mail: nadiasalleh@yahoo.com*

Abstract

The Talent is viewed as a competitive issue. Meanwhile, Knowledge Talent is indeed required for shaping an innovative ecosystem sphere. Malaysia is still fighting the "Knowledge Talent" war due to the rising talent and skill gap between available graduates and industries' demands. Profound collaboration between the Government, University and Industry known as Triple Helix (TH) model has been highlighted as the main driver to fill this gap. Providing an exploration of the fundamental conditions and contextual sensitivity that hinder university-industry linkages, this paper suggest the ideal TH model framework to fill the gap and provide a solid basis by considering institutionalism perspective in the Malaysia context. The evolutionary perspective stipulates better understanding of overlay in communication and gap between the Government, University and Industry to reshape the Knowledge Talent pool systems to fill the gap in contributing to the transition of a hybrid TH culture-taking root.

Keywords: *Knowledge Talent; Innovation, Talent & Innovation; University-Industry Linkages; Triple Helix in Malaysia ; Scientific and Technical publications*

1. Introduction

Knowledge-based activities intensely influenced innovation advancement of countries. Unfortunately, Malaysia has not done well in this area by noting the gap from GII scores for knowledge workers, University-Industry linkages and knowledge/ technology outputs for Malaysia that fell from 2013 to 2017. Even the University-Industrial linkages have shown an increasing value from 66.4, 67, 72.1, 72.1 and 70. Somehow, the values for knowledge workers and knowledge/technology output are not favorable. Therefore, this study is required to fill the gap by noting a significant drop of Malaysia's ranking on knowledge workers shown in Figure 1.

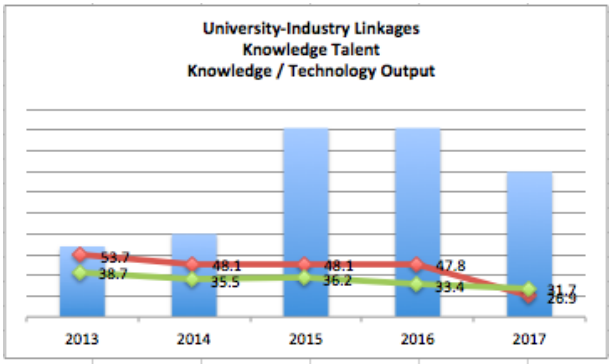


Fig. 1: University-Industry Linkages, Knowledge Talent, Knowledge/ Technology Output value

Despite being an innovation outperformer (ranked at 37th) in (1) and even with several initiatives created by the government of Malaysia for the institutional setting in solving collective problems (2), there are much that remain to be done. Weakness on Knowledge Talent still needs to be addressed due to relatively weak institutions, structures and systems. In shaping a commercialized and innovative sphere of ecosystem in Malaysia, Knowledge Talent is always a top concern. What can the literatures tell us for a nation to be able to formulate conjectures on the knowledgeable talent pool barrier to firm's innovation and commercialization performance? The Malaysian government has long been working on strengthening the linkages between University-Industry by providing strong government funding, accompanied by favorable innovation output such as scientific publication from 2013 to 2016 (23.6, 24.6, 20.7 and 43.4) but dramatically fell by 62% in 2017 (16.7) shown in Figure 2.

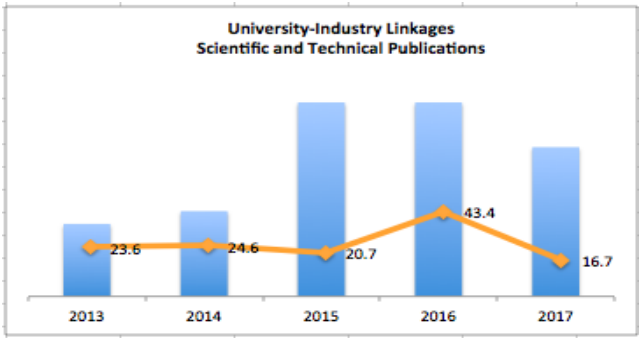


Fig. 2: University-Industry Linkages and Scientific and Technical Publications

Copyright © 2018 Authors. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Indeed, even with strong University-Industry linkages on industrial training of undergraduates, the placement of academics in firms and R&D is not noticeable. Innovation, entrepreneurship and talent are seen as key analytical intersections in the further elaboration of innovation systems typologies (3). Based on IMD (4), Malaysia's effort in attracting talent ranked 19 over 61 countries. Malaysia has come to realization that migration, aging talent pool and the outflow of talent to other countries (5) are critical issues to be resolved. Meanwhile, skills mismatched and effective feedback mechanism between educational institutions and the industry (6) need further improvement to enhance employability rate among youth. Many studies have examined the barrier factors that influence innovation activities. In line with the most recent contribution, we believe that particular attention should be given to inadequate skills and uncertain demand of talent (7). Effect of the Triple Helix approach induced by a dynamic intersection between Government, University and Industry linkages will be expected to reduce the intensity of "war of Knowledge Talent" within firms in Malaysia, wherein the intensity may deter the firms and prevent them from getting their innovation efforts off the ground. In such a way the novel contribution of this paper is by noting that the TH concept is an application of inductive theorizing by adapting context from Western countries, thus we are looking on why Malaysia is not as successful as Western countries in the application of the TH model. In some evolving researches, TH model has been directly employed by differentiating on developing or developed economies without taking considerations on the contextual differences of particular countries. The remainder of this paper is organized as follows. We will discuss and review literatures from emerging scholarships to provide a fruitful understanding on the Triple Helix approach in Malaysia. This study will oversee the contextual perspective to exert a hindrance effect on the Knowledge Talent crisis in Malaysia and propose what is an 'ideal' TH approach pertaining to Malaysia's institutional setting.

2. Literature Review

Dynamic and knowledgeable talent is renewable and a core resource in organizations which can constantly enhance the innovative capability of a firm.(8). The importance of talent has been enlightened in the attainment of nation innovation. a, the goal of developing, harnessing and utilizing a committed talent pool must be accorded a priority to build a vibrant innovation ecosystem as been realized in STI as a central to boost the socio-economic landscape of Malaysia. Having insufficient talent pool, Malaysia will find it difficult to attract global R,D&C centres, while firms' ability to innovate is likely to be challenged due to insufficient talent source (5) while firms' ability to innovate is likely to be demoralized due to insufficient talent pool.

2.1. Knowledge Talent and Innovation in Malaysia

Emerging studies found that the national innovation systems appear to have evolved into weak entities, low human capital (talent pool) and underserved role of universities(9). As "Knowledgeable Talent War" remains a key challenge in Malaysia and has always become one of the top business challenges cited by firms, suitable mechanism and driver are needed to overcome this challenges. The worrying outflow of talent have windswept the country's skill and disrupt the country's aspiration to be an innovative and developed nation (5). In addition to that, the outflow of talent abroad (6) is the reason of decreasing domestic and local talent pool. Other than the outflow issue, a survey conducted by global consultancy (10) has shown 62% of Malaysian firms having difficulty in finding talent with the right skills, while 48% has identified the constraint of future growth due to insufficient talent (11) as shown in Figure 3.

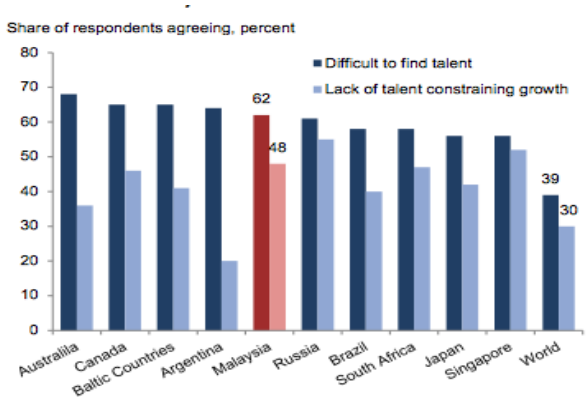


Fig. 3: Share of respondents agreeing on difficult to find talent and lack of talent constraining growth

Insufficient information in selecting higher education courses could be the root of mismatch labor in market (12). Deficiencies in the post-secondary education system and no evolvement in tandem with the industry needs are linked with mismatch (6). The industry is still struggling and fighting for talent and it appears that even at the recruitment phase, industry and universities do not always cooperate in matching graduating students with entry-level opportunities Graduates are found to have limited access to potential employers and are unaware of opportunities available to exploit. 34% of firms have never approached universities before the recruitment process nor have universities before the curriculum design and vice versa approached them. By looking at those issues pertaining to the talent crisis in Malaysia, the TH model is found to be the best mechanism to induce University-Industry. The World Bank (6) emphasized that optimal University-industry's involvement between is crucial to solve insufficient skills and talent in Malaysia

2.2. Criticisms of Triple Helix Model

Numerous studies on the dynamic University-Government-Industry partnership to integrate innovation economy (13). However, the TH model has been criticized for lacking on taking consideration of the different nation setting and contextual sensitivity. In addressing research gap described above, the exact nature of the affiliation between Malaysia University, Industry and Government must be clearly defined. The driving research question of how do Malaysia's setting be well facilitated with the Triple Helix approach in developing, nurturing and retaining committed talent pool to drive the STI agenda must be well answered to identify if the TH model is the best mechanism or not. It is evident that Triple Helix (TH) is an analytical approach which adds to the description of the mixture of institutional arrangements (14) which adapted from the Western context and when the "ideal" model is initiated to the non-Western context such as Malaysia, some contradictory institutional factors may cause barriers to TH implementation (15) in shaping a committed talent pool by bridging the role of the government in between an academic institution with the industry. In spite of its reputation, the TH model has not been without issues. Theoretical grounds at micro level found to be scarce and lead to tensions and contradictions in the process of TH integration. TH has paid scant attention to national, regional and other social context, which are not seen as attractive in the Malaysia context. Based on these arguments, a theory should not be easily seen as a relationship between X and Y, e.g.: explanatory factors associated with higher levels of contextual analysis must be included even relationship between the TH model and talent crisis is significant. Whetten (16) suggested that contextual sensitivity is really matter whether a theory is applicable or not. Does it work in a developing country such as Malaysia, even though the TH arrangements have been found to be the key to improve conditions of innovation in knowledge-based society? (17). In fact, a

result of hybrid organization from overlapping role of the Industry, Government and University in the Triple Helix model may result to fragile bond without the presence of a bridging agent. According to Etzkowitz (18), a connection between these three linkages is rarely equal, resulting in two different regimes, which are laissz-faire and statist. These inconsistencies of innovation leaders due to difference in expectations lead to ineffective knowledge distribution, knowledge transfers and lead to failure in shaping the talent pool in Malaysia by noting that the formation of the TH model based on successful innovation theories in the contexts of Western countries is the result of inductive theorizing (15). This literature review emphasized that a study of TH model must recognize the dissimilarities of non-Western and Western countries, developed and developing countries and most importantly is concerned with the various institutionalism perspectives of particular nations. Looking at the interaction between the three actors in this model, it is imperative to assess and examine the functioning of the TH model in the Malaysian context by overseeing the links between various contextual factors such as system, structure, social, and policy which have the potential to hinder partnership to shape a talent pool towards developing an innovative country.

2.3. Role of Government, Industry and University in Malaysia

Theoretically, it is obvious that the TH model intersects relatively independent institutional spheres to generate hybrid organizations (18) which is seen as undeniably important to the creation of a sufficient talent pool by assisting society, students, researchers, industries and policymakers in addressing questions such as: how do we enhance the role of universities in the talent crisis?; how can governments at all levels encourage graduates to take an active role in filling the insufficient talent pool?; how can the industries collaborate with each other to match the demand with available skills; and most importantly, what are the key elements and challenges to reaching these goals? Malaysia's talent crisis requires a relook at the overall landscape of education, national policies and industry involvement. World Talent's report in 2016 has made it evident that Malaysia is weak in terms of talent competitiveness supply, wherein the ability of institutions to meet talent requirement has declined in 2015 from 6.86 to 6.70 (19). The declination has emphasized the importance of clearly defined institutional spheres of University, Industry and Government to further develop the TH model into a benchmark for understanding the implementation of TH in the Malaysia context. The notion of an institutional sphere has long been used in the definition of the TH model in the context of Western study (14; Etzkowitz, 2002 ; Etzkowitz, 2008), but it is not clearly explained from the institutional perspective and lacking in contextual sensitivity, especially for a developing country such as Malaysia.

Noting the importance of University as a source of knowledge (20; Feldman and Kelly 2002) and highly skilled workforce (21) in developing an innovation nation, Malaysian Institutes of Higher Learning (IHLs) system has to be responsive to the growing demand for more employable graduates to continue propelling the industries with innovations and creativity (22). However, one of the biggest challenges of University is the nature of systems and structures themselves, which deter University's effort to be responsive, and does not allow them to change overnight. The University system itself is too fragmented in many areas and Malaysia has the "follow the leader" syndrome where Universities are duplicating the same thing and not producing enough in terms of quality and Industry's demand. For instance, degrees in biochemical technology might not respond to the current industrial demand in Malaysia and then what will happen to those graduates? Or what will happen to those who have yet to complete their studies? The biggest challenges of Universities are trying to adapt changes in global context and this is why the role of University is seen as insignificant in the context of TH. In a study from Etzkowitz and Leydesdorff (14), the role of the government is significant in university-industrial relations. For instance, Mexico primarily interacts through their links to the government while in the US, its government has played a significant role in setting the stage for University-Industry collaborations through changes in system, structure, procedures and incentives; even the Government's role is often suppressed. Thus, in the Malaysia context, it is important to relook the system and structure of Malaysian education and start focusing in prioritized areas instead of adding to the number of higher learning graduates. The Government should relook, revise and restructure its governance such as the Private Higher Educational Institutional Act (PHEIA), wherein its enforcement since 1996 has resulted in 600 private higher establishments and with this tremendous number, where does it lead us? The private institutions have started to mushroom since the establishment of PHEIA and they are encouraged to offer more science and technology courses (21) since the 1990's but still, Malaysia is struggling in the talent crisis ever since. Apart from that, education in Malaysia is overseen by the Ministry of Education and governed by the Education Act 1996 which is centralized, but each state and federal territory has their own department to co-ordinate educational matters in its territory which makes the education system fragmented and hard to be responsive in the matter of University's role in the TH model. There are needs to be increased in flexibility and accessibility for University to ensure the growth of a critical workforce. The demand for skilled talents is evident where the shortage is not due to an insufficient number of graduates but the ones with the required skills are low. The employability survey done by (6) has found that the main driver of "war for talent" in Malaysia is due to deficiencies in the post-secondary education system which has not evolved in tandem with the industry's needs nd this is primarily linked to skills mismatches between recent graduates and employers' demand a. In fact, the availability of information in choosing the right courses in universities is limited and this requires a dynamic collaborative interactive between University and Industry. At the end of the day, University needs appropriate group of people to generate knowledge and another (industry) that knows how to apply it. In addition to that, there are arguments pertaining to "unnecessary transaction cost" during a rushed partnership between University and Industry, which has caused uncomfortable symptoms to arise. This has become a debatable issue and both parties at some point are reluctant to meet both of their demands, causing a high rate of mismatch in talent skills. The changes of norms in both University and Industry are fundamental for the TH model as suggested by Etzkowitz (23). Norms and cultures of University and Industry need be changed to favor a reciprocal relationship between University, Industry and Government and realization of shared beliefs between University and Industry. Without shared belief between University and Industry, the realization of needs which is a stage 1 of TH model development as suggested by Etzkowitz and Leydesdorff (14) is failed to achieve. At this first stage, University and Industry in Malaysia must have a broad consensus that sufficient talent pool will lead to a creation of more innovative products and technologies as the supporting logics of TH development. Under this circumstance, even when many Universities in Malaysia, both private and public, have suffered the Government's budget cuts, especially during the economic downturn, the funding spent on higher education must not decline, and taking the role of other leads to stage II of TH development. Despite of the primary roles of University in teaching and research while the Industry produces goods and services, University should devote its effort to capitalize knowledge, patents, and start-up companies while the Industry engages in research and training for future graduates. As a part of the Government of Malaysia's efforts towards ensuring a sustainable supply of talent, which has been highlighted in the Malaysia Education Blueprint 2015-2025 (24) to address the mismatch of graduates and employer demands, the Malaysian Ministry of Higher Education (MOHE) and Malaysia Digital Economic Corporation (MDEC) have launched calls for greater Industry-Academic Collaboration (IAC). This is an evidence of the Government role for

resolving market failures by adjusting public policies and setting up market rules. These activities have supported institutional logics in the cultures of market orientation and process management (15). In addition, posited that misdirected policies inhibit universities' ability to produce the uppermost talent to the industry and become a threat to the nation's economy. Stage III of TH development emphasized on trilateral interactions between three actors, characterized by increasing interdependency between the three actors where one actor has a significant influence on the other's action. For instance, University cannot provide sufficient talent without Industry partnership to assist the education structure to match with the demand and at the same time, the Government role to direct policies and provide financial aids are significant to carry out the roles of University and Industry. Emerging studies from Jerome (17), Ankrah and Omar (25), and Chandran, Sundram (26) posited that the strength of TH is increasingly perceived as a vehicle to be responsive to the growing demand for more employable graduates to continue propelling the industries with innovations and creativity by facilitating technological advancement and efficient knowledge exchange which are important to fill the gap of insufficient skills among talent and increase collective knowledge, skills and professional trust (17:Snyder and Briggs, 2003).To further examine the effectiveness of Industry and University roles as actors in the TH model, notions of the "Industries have failed to attract local talent" and "Universities have failed to provide better education" have become subjects of debate in the issue of outflows talent abroad. Are Industry and University in Malaysia not attractive enough? From the Malaysian culture's context, believing that a foreign nation offers better education than Malaysia needs to be changed. The outflows of talent are not only due to the appeal factor where Malaysia's Industry is not attracting enough skillful people, but talents are attracted to developed countries which they believe to offer better education, wages and career opportunities compared to Malaysia. For the sake of argument, this kind of sentiment should be managed, wherein in the TH model, the role of Government must come first to provide encouragement and support through modifications of the regulatory system (18) . Early awareness is important to reshape the social effect towards Malaysia's ability in providing good infrastructures; technology and knowledge transfer to avoid University and Industry from feeling underserved. Malaysia in fact has realized and awareness has been highlighted among the focus areas in IAC-GBS agenda (27) to connect students to industry-relevant content and up-to-date information on internship and career opportunities within Malaysia's key industries.

Apart from the perception and awareness issues, based on an interview done by *The New York Times (28)*, racial tensions and country's affirmative action policy are cited as one of the concerns of talent outflows in Malaysia. The concept of institution suggested *Alford and Friedland (29)* posited that contradictory practices and beliefs among societies have the potential to shape individuals' actions. Therefore, for the TH model to be appreciated by participants, the funding and evaluation systems must be shrewdly designed or else, the system will be dysfunctional due to low interaction between three players *(30)*. Based on the institutionalism theory, the impact of the system implementation is crucial which has the potential to cause resistance to change or inertia while a positive feedback shakes the stability of catalyses' change.

3. Conceptual Framework

To further justify the 'ideal' TH model in Malaysia, the success of an 'ideal' TH implementation in Malaysia depends on the institutional settings such political, social and system conditions. This study, therefore, proposes a conceptual framework of an ideal Triple Helix model explaining the relationship between the construct of TH model and Knowledge Talent Competitiveness. Indeed, the significant functions of Institutionalism setting in Malaysia in delivering the ideal TH model in achieving Knowledge Talent competitiveness in Malaysia have been highlighted shown in Figure 4



Fig. 4: Conceptual Framework

Whenever TH cultures have become a set of routines between Government, Industry and University, it means that TH development in that particular country is successful and institutionalized and "ideal" practices are reproduced over time. The possibility of further developments and extensions of TH model such as Quadruple Helix (QH) which has been mentioned in (5) intend to facilitate and initiate all four players (Government, Industry, University and People) would not be relevant if the institutional settings of Malaysia are not well understood. Sound structures and systems (nation setting) play important roles in institutional environment to steer the role of the three players for a development of an 'ideal' TH in Malaysia.

4. Conclusion

According to Etzkowitz and Leydesdorff (31), the development of TH model is a process of institutionalization. Therefore, it is important for a nation to identify the ideal institutionalization mechanism to align with the TH model, taking into consideration on factors such system, structure, social, culture and political situations. The institutionalization of the TH model in Malaysia may take many rounds of revisions and amendments. The reviews in this article suggests that TH model in Malaysia is not only about leverage issues in the relations between University, Government and Industry to harness the Knowledge Talent pool, but it is also a matter of adjusting the institutional environment to achieve the 'ideal' TH. Noting the importance of TH model development through the four stages discussed above, institutionalization of TH is not a simple relationship or collaboration of the three TH's actors but most of all, the importance of feedback loops in the evolution of TH's institutionalization must be observed with much attention to develop the best policies and regulations. It must be noted that to what extent will TH be developed which depends on main players participating in the development process and policies. To be emphasized, when using a TH model for cross-context analysis, the main issues to ascertained are the boundaries or contexts of TH, especially when it is related to innovation policies which, according to Sotarauta and Kosonen (32), are context sensitive.

References

[1] GII. Effective innovation policies for development. Cornell University, INSEAD and WIPO Fontainebleau Ithaca and Geneva. 2017.
[2] Rasiah R, Yap X-S. Innovation Performance of the Malaysia Economy. 2014.
[3] Cooke P. Regional innovation, entrepreneurship and talent systems. International Journal of Entrepreneurship and Innovation Management. 2007;7(2-5):117-39.
[4] IMD. IMD World Talent Report IMD World Competitveness Center. 2016.

[5] NPSTI. NATIONAL POLICY ON SCIENCE, TECHNOLOGY & INNOVATION (NPSTI)
2013 - 2020 Harnessing STI for Socio- Economic Transformation and Inclusive Growth. 2013.
[6] Bank TW. Malaysia Economic Monitor. Boosting Trade Competitiveness. 2014.
[7] Coad A, Pellegrino G, Savona M. Barriers to innovation and firm productivity. Economics of Innovation and New Technology. 2016;25(3):321-34.
[8] Muhammad Zeeshan Ahmad K, Ayub A, Qadar Baksh B. Importance of Talent Management in Business Strategy: A Critical Literature Review. Abasyn University Journal of Social Sciences. 2013;6(1):28-40.
[9] Theodorakopoulos N, Bennett D, Sánchez Preciado DJ. Intermediation for technology diffusion and user innovation in a developing rural economy: A social learning perspective. Entrepreneurship & Regional Development. 2014;26(7-8):645-62.
[10] Thornton G. Global Economy in 2013 : uncertainty weighing on growth. 2013.
[11] Chow E. Filling the talent pipeline for the E&E sector. 2015.
[12] Education MoH. Graduate Employability Blueprint 2012-2017. 2012.
[13] Ranga M, Etzkowitz H. Triple Helix systems: an analytical framework for innovation policy and practice in the Knowledge Society. Industry and Higher Education. 2013;27(4):237-62.
[14] Etzkowitz H, Leydesdorff L. The dynamics of innovation: from national systems and "mode 2" to a triple helix of university-industry-government relations. Res Policy. 2000;29.
[15] Cai Y. What contextual factors shape 'innovation in innovation'? Integration of insights from the Triple Helix and the institutional logics perspective. Social Science Information. 2015;54(3):299-326.
[16] Whetten DA. An examination of the interface between context and theory applied to the study of Chinese organizations. Management and Organization Review. 2009;5(1):29-55.
[17] Jerome LW. 1 Triple Helix Knowledge Clusters. Theory and Practice of the Triple Helix System in Developing Countries. 2011:9.
[18] Etzkowitz H. The triple helix: university-industry-government innovation in action: Routledge; 2008.
[19] Kamal EM, Flanagan R. Measuring The Impact Of Innovation On Sme Companies In Malaysian Construction Sector. 2009.
[20] Malairaja C, Zawdie G. Science parks and university–industry collaboration in Malaysia. Technology Analysis & Strategic Management. 2008;20(6):727-39.
[21] Arokiasamy ARA. An analysis of globalization and higher education in Malaysia. Australian Journal of Business and Management Research. 2011;1(9):73.
[22] Bukhari M, Othman F, Adik N, Makhdzar W, Ibrahim W, Abdullah A. Best Practices In Industry-Academia Partnership from ICoE Healthcare's perspective. 2015.
[23] Etzkowitz H. Normative change in science and the birth of the Triple Helix. Social Science Information. 2011;50(3-4):549-68.
[24] Ahmad BB. Malaysia Education Blueprint 2015-2025. Ministry of Higher Education. 2016.
[25] Ankrah S, Omar A-T. Universities–industry collaboration: A systematic review. Scandinavian Journal of Management. 2015;31(3):387-408.
[26] Chandran V, Sundram VPK, Santhidran S. Innovation systems in Malaysia: a perspective of university—industry R&D collaboration. AI & society. 2014;29(3):435-44.
[27] TalentCorp. Industry-Academia Collaboration for GBS Sector launched. 2016.
[28] Times TNY. Loss of Young Talent Thwarts Malaysia's Growth. 2010.
[29] Alford RR, Friedland R. Powers of theory: Capitalism, the state, and democracy: Cambridge University Press; 1985.
[30] Saad M, Zawdie G. Theory and Practice of Triple Helix Model in Developing Countries: Issues and Challenges: Taylor & Francis; 2011.
[31] Etzkowitz H, Leydesdorff L. The dynamics of innovation: from National Systems and "Mode 2" to a Triple Helix of university–industry–government relations. Research policy. 2000;29(2):109-23.
[32] Sotarauta M, Kosonen K-J. Customized innovation policies and the regions: digital content services and intelligent machinery in Finland. European Urban and Regional Studies. 2013;20(2):258-74.