



A View from Academic Administrators on the Characteristics of Future University

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ABSTRACT

Present study is an attempt to investigate a view from academic administrators on the characteristics of future university. A stratified sampling technique is applied according to the structure of the university, i.e faculty and registrar office/university administration. The heads of departments are targeted to collect the responses in five Malaysian public universities, which attained “research university” status, i.e., Universiti Teknologi Malaysia, Universiti Kebangsaan Malaysia, Universiti Putra Malaysia, Universiti Malaya and Universiti Sains Malaysia. Factor analysis is used and nine components (dynamic environment, democratization of knowledge, sustainable infrastructure, global mobility, technology advancement, institutional autonomy, teaching-research balance, smart partnership, and abundant resources) were extracted statistically significant. Current study highlights an important research agenda for future studies and will contribute in existing body of knowledge by fortifying the current debate on the subject of education and future university.

Keywords: Future university, Malaysian Public Universities, Factor Analysis

JEL Classifications: M00

1. INTRODUCTION

Nowadays, higher education has already progressed beyond the traditional settings where the university was an institution for spreading the knowledge, but today, universities are playing tremendous role in country’s innovation (Yusoff and Khan, 2013). Ramli et al. (2013) mentioned that higher education now has become a place for disseminating the knowledge as well as commercializing university’s research output which majorly contributing to the economic development of the country.

According to Selvaratnam (1985), there are several stages of historical growth of the Malaysian higher education system before and after Malaysia’s independence, until the growth of research universities in this country. The first stage is the development of a higher education institution in Malaysia and Singapore before Malaysia’s independence in 1957. The second stage is the

establishment of University Malaya in Kuala Lumpur in 1961, which was the first university established in Malaysia. The next stage is the establishment and development of three national universities after 1969, and the upgrading of the Agricultural and Technical Colleges in 1971 and 1972 to full university status (Selvaratnam, 1985).

In recent years, Malaysia has taken a big step in increasing the innovation activity and knowledge-based economy of the country by recognizing some universities that focused more on research activities and education based on research and development (MOHE, 2014). There are five public universities in Malaysia that have received research university (RU) status by the Malaysian government until 2014. This evolution of education might increase the expectation of public value in the university. Therefore, the characteristics that the university should have in the future should be anticipated. This is because the development of these

universities has to move forward in establishing a world-class university system in Malaysia.

2. LITERATURE REVIEW

The university has become one of the great institutions in this world. According to Florida (1999) and Yusoff et al. (2013), this institution is generally viewed as a driving force of innovation and new ideas that leads to regional growth and commercial innovations. The author also believed that universities play a far more important role as the country's primary source of talent growth and knowledge formation. In this modern era, universities all around the world are beginning to realize their rapidly changing roles. From the report done by Brennan et al. (2004), universities have always been perceived as key institutions in social changes and development processes. One of the universities' explicit roles is producing high-skilled employers and research output that meet the economic needs of the country. During this modern era, roles of universities have been added such as developing new institutions of civil society, encouraging new cultural values, and training members of new social elites.

Higher education in Malaysia is the upper education level, which is educated after Sijil Pelajaran Malaysia and Sijil Tinggi Pelajaran Malaysia examinations in schools. According to Selvaratnam (1985) and Qureshi et al. (2014), higher education system in Malaysia is adopted from the British higher education system. The basis of the Malaysian higher education system occurred during the British colonial rule in Malaysia. The higher education sector is under the jurisdiction of the Ministry of Higher Education (MOHE). The establishment of MOHE is in line with the vision of the government in making Malaysia a center of educational excellenc internationalizinglising Malaysian education. MOHE has its focus on five core thrusts, which are: (a) To create a strategic and systematic plan for higher education, (b) to reinforce the management system of higher education, (c) to increase the level of capacity, accessibility and participation in higher education, (d) to enhance the quality of higher education at par with international standards, (e) to internationalize Malaysian higher education (Qureshi et al., 2014).

Hussin (1993) concluded that in Malaysia, there are two types of higher education, which are private and public higher education. Private universities are not operated by the government in Malaysia that include Taylor's University, University Industri Selangor (UNISEL), Limkokwing University of Creative Technology, SEGI University and many more. While public higher education mainly consists of educational and technical maktab, polytechnic, language institution, public universities such as Universiti Teknologi Malaysia (UTM), Universiti Teknologi MARA, Universiti Islam Antarabangsa Malaysia, and Universiti Malaya (UM). Both public and private higher education plays equally important roles in the provision of Malaysian higher education.

According to Che Omar and Mohamed (2008), higher education in Malaysia is now facing great competition from other countries. Therefore, the Malaysian government has taken some initiatives and new approaches through the MOHE in recognizing the role of

higher education. It includes the aspect of the governance system, formation of new models, corporation, and generating financial sources. In addition, Sohail and Daud (2009) mentioned that in recent years, one of the strategies of Malaysian government for a higher education system in Malaysia is to place a high priority on increasing access to higher education in order to create a critical mass of trained, skilled and knowledgeable workforce. This is to ensure that it would sustain the country's economic growth, increase competitiveness, and maintain a knowledge-based economy of the country. This is coherent with the latest report of The National Higher Education Strategic Plan, which was first published in 2007 and currently in the second phase (2011-2015). This plan is a major shift in higher education thinking within the Malaysian government, where it was comprehensively designed for the purpose of enriching national higher education as the international hub for higher education excellence. It is also consistent with the policy objective, that is to establish a world-class university system in Malaysia.

3. UNIVERSITY OF THE FUTURE

Ernst and Young (2012) viewed the current higher education sector is experiencing a fundamental transformation, especially in terms of its role in society, mode of operation, economic structure and value to the society. Therefore, there is a strong need to explore themes and directions for the future.

While according to Shuib et al. (2008) and Khan et al., (2014), the future university, especially in Malaysia needs to consider the aspect of research and development, teaching and learning, economic system, environment and lifestyle. In designing university of the future, some of the factors of current activities must be re-evaluated in the future. It is likely that the balance between research and teaching will change, while more tasks that relate to service to society may be added. Decisions made about balancing these activities will have a critical impact on the distribution of spaces within the university (Hashimshony and Haina, 2006).

From the study conducted by The Council of Higher Education Management Associations (Goldstein, 2006), it aims to identify the forces for change that are building and to understand their potential implications for higher education and adding the voice of higher education's administrative leadership in generating and shaping the future of higher education.

4. METHODOLOGY

4.1. Questionnaire Design

The research instrument will use the five-point Likert scale. The respondents have to tick the degree of agreement with each of the statements using a scale of 1 (strongly disagree) to 5 (strongly agree). A pilot study was conducted in order to test the validity of the questionnaire before finalizing and distributing the actual survey. The pilot study was done by using purposive sampling technique and carried out at one university, i.e. UTM. After carrying out the pilot survey, several amendments will be made

to the questions that might not be clear or not relevant. This is necessary in order to raise the validity of the questionnaires before distributing for the full scale survey. In this research, pilot survey questionnaires were distributed to 10 lecturers in UTM. After that, an actual survey will be implemented in the second phase for model validation purpose. For this study, a set of questionnaire was sent to the respondents via email, since most of the respondents are using emails as their method of communication. Other than that, the process of answering and returning the questionnaires to the researcher will be made smoothly.

4.2. Sampling Design

A stratified sampling technique will be used according to the structure of the university, i.e. faculty and registrar office/ university administration. The population and sample of study are the heads of departments in five Malaysian public universities which attained “RU” status, i.e., UTM, Universiti Kebangsaan Malaysia, Universiti Putra Malaysia, UM and Universiti Sains Malaysia. These research universities are selected because they are believed to be deeply engaged in intellectual and technological progress, thus the idea of future university characteristics can be obtained. The heads of departments of these universities are chosen because they are the ones who manage the faculty programs or activities and are responsible to keep interests of the stakeholders. Therefore, they are in a better position to anticipate the values concerning stakeholders. The sample of the population is derived from the lists of heads of departments of each faculty in the universities’ websites. The information of the heads of departments will be listed in one database in order to make it easier for the researcher to refer. The heads of departments will be contacted beforehand to inform about the survey.

5. ANALYSIS AND FINDINGS

Ensuring the unidirectionality and factor loading of all the constructs, factor analysis was conducted in this research. In order to interpret results from factor analysis, several key statistics were examined such as Kaiser–Meyer–Olkin (KMO) measure, Barlett’s Sphericity test, eigenvalues, percentage of variance explained, loading factor and number of factor extracted.

5.1. Factor Analysis

Based on the result of factor analysis, the KMO measure of sampling adequacy value was 0.528. These results indicate that the data were suitable for factor analysis application. According to Chua (2009), a value >0.50 is considered adequate. In addition, Barlett’s test of sphericity was found to be significant ($P < 0.001$). Therefore, this shows that the variables are appropriate for factor analysis. The analysis was extracted using eigenvalue and loading factor of 0.45. According to Hair et al. (2006), in a sample of 150 respondents, factor loading of 0.45 and above are significant. Hair et al. also stated that factors that have low loading value (<0.4) or cross-loading will become a candidate for deletion.

Considering all the criteria of factor analysis, the principle component analysis recommended for future university characteristics are 24 items should be used from 31 items of future university characteristics. These 24 items are loaded into 9 factors.

The percentage of variance explained by these 9 factors is 62.15%. Table 1 shows the total variance explained for factor analysis on future university characteristics.

The result of factor loadings for each item was presented in Table 2. The nine factors were compared with the original seven dimensions as being constructed in literature review. The first factor consists of items from system governance (SG) construct. Since the items extracted focused more on providing good environment, it was renamed as dynamic environment (DE) with an eigenvalue of 3.564 that accounted for 11.50% of the variance. The second one was classified as democratization of knowledge (DK) with an eigenvalue of 3.189 that accounted for 10.29% of the variance. Next, the third factor consists of items from cost effective (CE) and sustainable infrastructure (SI). Since the items extracted are mainly about sustainable, it was renamed as SI with an eigenvalue of 2.947 which accounted for 9.51% of the variance. The fourth factor was classified as global mobility (GM) with an eigenvalue of 2.408 which accounted for 7.77% of the variance.

The fifth factor consists of items from excellence academic (EA) experience construct. Since the items extracted are focusing on new and advanced technology, it was renamed as technology advancement (TA) with an eigenvalue of 1.992 that accounted for 6.43% of the variance. The sixth factor was classified as SG with an eigenvalue of 1.586 which accounted for 5.12% of the variance. The seventh factor consists of items from EA experience constructs. Since the items are mainly on improving substance of teaching and research (TR) facilities, thus it was being renamed as TR balance with an eigenvalue of 1.334 that accounted for 4.30% of the variance. The eighth factor was classified as smart partnership with an eigenvalue of 1.176 that accounted for 3.79% of the variance. Finally, the ninth factor was classified as abundant resources (AR) with an eigenvalue of 1.070 that accounted for 3.45% of the variance. From this finding, most of the factors are following its original construct, while some of the factors can be redefined in detail. Therefore, it can be seen that some of the assumption are being supported by the respondents.

6. DISCUSSION AND CONCLUSION

Based on the results of the findings, all of the mean scores of future university are high. Therefore, it can be concluded that

Table 1: Total variance explained for future university

Component/ factor	Initial Eigenvalues		
	Total	Percentage of variance	Cumulative %
1	3.564	11.497	11.497
2	3.189	10.287	21.784
3	2.947	9.506	31.290
4	2.408	7.768	39.058
5	1.992	6.426	45.484
6	1.586	5.116	50.600
7	1.334	4.303	54.903
8	1.176	3.794	58.697
9	1.070	3.452	62.149
↓	↓	↓	↓
31	0.251	0.811	100.000

the respondents agree with most of the characteristics that the university should have in the future. The findings proved that most of the underlying assumptions before conducting the survey are fully supported by the respondents, while some of the characteristics can be redefined further in details Table 3.

6.1. New Future University Characteristics

From the factor analysis that has been done, there are four characteristics that need to be renamed, which are DE, TA, TR balance, and SI.

6.2. DE

The first renamed characteristic, DE was redefined as it is more to providing a good environment around the university. DE is more on creating or providing rich campus environment that promotes competitiveness, innovation, critical thinking as well as creativity to the students and staff. Therefore, it is important to monitor and understand the size and shape of higher education DE as it continually evolves. This characteristic is coherent with research done by Universities UK (2013), where the report shows how

the higher education sector has been changing and adapting in a dynamic external environment.

6.3. TA

The second one was refocused as TA because the items in this group are more focused on providing new and advanced technology. TA is more to adapting new and advanced technology in teaching and learning as well as research purposes in the university. In addition, it is consistent with the research done by Carnevale (2004) and Ernst and Young (2012), where new digital technologies have contributed to the diversification of many higher education systems.

6.4. TR Balance

In addition, TR balance is suited to be redefined as the items in this characteristic are focusing on improving substance of TR facilities. The concept of TR balance is more to the importance of having a dynamic balance between TR activities.

This is coherent with some researches such as Leisyte et al. (2009) and Arimoto (2013), where it is necessary to have an integration

Table 2: Result of factor loadings for each item for future university

Item	Rotated component matrix								
	1	2	3	4	5	6	7	8	9
University provides environment that fosters competitiveness, critical thinking, innovation and creativity	0.761								
University offers rich learning environment and conducts advance research	0.656								
University has to be more engaged with the wider society		0.745							
University has DK to the society		0.696							
University needs to expand public opportunity to attend lectures, special courses and activities		0.555							
University has to emphasize sustainability concept in teaching and learning programmes			0.833						
University needs a strong framework in generating interests among students and staff towards sustainability development			0.534						
University needs to provide convenient environment and infrastructure within the campus			0.456						
University needs a strong framework in planning the amount of reduction of energy, waste and operational			0.727						
University will be able to attract most qualified professors and researches				0.728					
University emphasizes on good collaboration between students and staff				0.775					
University has high concentration on top notch local and international students				0.818					
University has advancement and rapid integration of new technology					0.810				
University has to adopt blended learning using advance digital technology					0.575				
University needs to acquire more degree of academic and managerial autonomy						0.733			
University needs to promote the concept of work independency						0.630			
University has better modes of governance that stresses on performance, quality and accountability						0.506			
University has to improve the substance of teaching and learning							0.643		
University has up-to-date research facilities							0.569		
University needs to develop a framework to facilitate system-wide collaboration between diverse institutions								0.689	
University has to create more project partnership with businesses to increase innovation and employability									0.510
University will receive sufficient government budget funding for operational expenditures and research									0.777
University will face more competition in getting new source of funds									0.620
University will receive more pressure on cost control and prudence financing									0.818

Note: Only more than 0.45 standard loadings are shown

Table 3: The appropriate dimensions, mean and level after conducting factor analysis

Future University	Future University	Mean score	Level
SG: 5 items	Component 1: Renamed the construct: DE, have 2 items	4.49	High
DK: 4 items	Component 2: Construct remained as in original (DK), reduced to 3 items	4.80	High
CE and SI: 4 items	Component 3: Renamed the construct: SI SI, have 4 items	4.67	High
GM: 5 items	Component 4: Construct remained as in original (GM), reduced to 3 items	4.37	High
EA experience: 4 items	Component 5: Renamed the construct: TA, have 2 items	4.78	High
SG: 5 items	Component 6: Construct remained as in original (SG), reduced to 3 items	4.62	High
EA experience: 4 items	Component 7: Renamed the construct: TR balance, have 2 items	4.90	High
SP: 4 items	Component 8: Construct remained as in original (SP), reduced to 2 items	4.59	High
AR: 5 items	Component 9: Construct remained as in original (AR), reduced to 3 items	4.33	High

SG: System governance, DK: Democratization of knowledge, AR: Abundant resources, SP: Smart partnership, GM: Global mobility, DE: Dynamic environment, EA: Excellence academic, CE: Cost effective, TR: Teaching-research

or balance between TR in higher education. According to Gill (2007), the research universities in Malaysia have to ensure that they increase the research productivity and capability and at the same time focus on their teaching.

6.5. SI

Finally, SI needs to be renamed from its original construct, CE and SI because the items are only focusing on the sustainability aspects. This theme is more on the ability of the university in providing sustainability and convenient environment within the campus. According to Heijer (2012), the features that the campus of the future should reflect include ensuring sustainability development, as well as providing infrastructure for residential, retail and leisure activities, internet accessibility and parking spaces. Other than that, the dimension with highest mean score rank is TR balance which is 4.90, while the lowest one is AR with 4.33. This shows that majority of the respondents agree that there should be a balance between TR in the university. Therefore, it is essential that academic administrators to be given assistance and guidance on how to balance the two activities, such as how research gives impacts on teaching methodology and content. In general, the results indicate that the respondents strongly agree with future university components and they have strong realization about preparing the departments as well as the university towards the future.

7. CONCLUSION AND DIRECTION FOR FUTURE RESEARCH

There are nine anticipated characteristics of future university (DE, DK, SI, GM, TA, institutional autonomy, TR balance, smart partnership, and AR). In addition, the characteristics of future university are also highly agreeable by the academic administrators. Therefore, there is a need to enhance each of the characteristics towards shaping a great university in the future.

The study of future university characteristics is a new topic in Malaysia generally. Thus, several recommendations for future research have emerged from the results of ongoing research. Firstly, it is recommended that further research to be conducted with a bigger sample size in order to achieve better insight. Involvement of more heads of departments or academic administrators might provide a more detailed or different views regarding the identified dimensions and anticipated characteristics. Other than that, the research can also be done in a wider scope of stakeholders such as parents, industries, students, staff and policy makers. Future studies on the current topic are also recommended to compare the results of the findings between five research universities. This is because there might be different views or opinions between older and newer university employees. Besides, the research can also be conducted in non-research universities and private universities. The results obtained may differ from the results of this research.

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