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Human Capital Development Practices in Malaysian Public Universities

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Abstract: The aim of this study was to identify the differences of human capital development aspects that have been emphasized in academic programmes offered by Malaysian Public Universities in order to produce high quality human capital. The data was obtained using questionnaires from 16 Malaysian public universities (namely, 3 Research Universities, 3 Comprehensive Universities, and 10 Focused Universities) in 2009. A set of questionnaire consisting of 110 items using the five likert scales were answered by 1176 respondents (deans, deputy deans, heads of department/ coordinators/ programme coordinators/ project managers and lecturers). The MANOVA analysis revealed that there were significant differences among the universities and programmes of study while carrying out the aspects of the human capital development. In fact, the findings also shows pattern of priority that had been emphasized by the Malaysian Public Universities in implementing the aspects of human capital development through their academic programmes. As a conclusion, the different roles and emphasis in producing human capitals with various skills and knowledge has created diversity in the human capital development profile among the public universities in Malaysia and in the programmes of study that they offered. This variety proved that every university and programme plays a distinct role in the process of human capital development to fulfill the needs of a nation's development.

Key words: Academic programmes, human capital development objectives, Malaysian Public Universities

INTRODUCTION

The development of higher education has a close attachment besides a mutual character with the nation's development requirements. From another perspective, universities play a crucial role in contributing towards fulfilling the needs in the development process in a holistic manner which includes the economical, political, social and technological development (Altbach, 1991; Fagerlind and Saha, 1989; Hussien, 1993; Saha, 1991). In fact, in realizing the nation's development goals, universities have to act as organizations that create a society that is analytic, informative and skillful, enhances dexterities and professionalism through trainings provided, revise teaching methods, increases the opportunities to access into higher education, promotes the nation as a center of academic excellence, while taking the lead in creating new fields of knowledge through research activities (Altbach, 1991; Azis, 2001; Yorke, 1999).

The development of higher education in Malaysia and its roles in human capital development: The human capital development is a holistic process that includes knowledge and skills attainment or intellectual properties that concentrates on entrepreneurship abilities, science and technology knowledge besides possessing positive character, values, and ethics as well as being competitive and progressive. Education is one of the main medium in the effort of developing human capital that has a strong identity, amiable personalities, prominent knowledgeable and highly skilled in meeting the needs of Malaysia to be a developed country by 2020. Besides, the desired human capital should also be capable of engaging in critical and creative thinking, competent in problem solving, capable in creating new opportunities and possess perseverance as well as capable in facing the ever changing global environment.

Rahmah (1996) suggested that human capital development through education is a process to increase a nation's human capital stock. Moreover, human resource development is crucial as humans are often referred to as the ultimate capital that propels economic growth. In fact, it was affirmed by many parties that the main obstruction to the administration of the development projects and dynamic economic progression activities is the lack of manpower, besides under-utilized technology.

The ultimate role of a university is to be an organization that supplies human capital for the nation's economic development (Altbach, 1991; Chew and Lee, 1995; Murad, 1971), especially in the economical transitions from product-based to knowledge-based economy (Anuar-Zaini, 2000). The economists view universities as a long-term investment which is very profitable especially in supplying trained manpower in various areas (Chew and Lee, 1995; Eddy, 1972).

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Trained manpower is a prominent and crucial asset in the efforts of propelling a nation's development (Altbach, 1991; Johari, 2000; Sufean, 2002). This is because a nation's progression and abundance is not measured by the quantity of natural resources but the quality of creative human resources that smoothing the society development efforts in various areas of life (Sufean, 2002). The contribution of universities in training and equipping human resources is not only limited to produce the experts to generate the economic field development but is also inclusive of instilling values as required by the nation (Fagerlind and Saha, 1989).

Robiah (1980) in a research examining the roles of universities in nation development revealed that government officers, university administrators and lecturers agreed that activities conducted in Malaysian public universities support the national development goals. Moreover Thong (1995) has identified the public universities' model in Malaysia as a utilitarian model which was established on the "ivory tower" concept, and serves to bring a balance in the efforts of fulfilling a nation's needs besides preparing vocational training, yet prioritizing intellectual excellence in every task they carried out. Therefore, all public universities in Malaysia strive in various ways to achieve this aim.

Since higher education is highly required as an important mechanism in realizing a nation's development, the government has taken the necessary actions by legislating various general public policies especially higher education policies (Hussien, 2001; Kirby-Harris, 2003). The top-down approach administered by the government is aimed to ensure an existence of parallelisms between the development of higher education and its contributions towards nation development (Kirby-Harris, 2003).

In Malaysia, the Ministry of Higher Education is given the mandate as the coordinator of higher education activities including offering new academic programmes. Apart from that, the new courses in professional fields proposed by the universities also require acknowledgment and recognition from external professional bodies. These measures are taken to ensure the quality of academic programmes offered by the universities besides to attain the standardized level required in the current situations (Yorke, 1999). This is in line with the world's universal scenario that changes the pattern and method of pursuing a country's wealth and riches. In other words, the new global economic power is now based on creativity, authenticity and imagination from scholars and technopreneurs. Therefore, optimizing innovation and ideas, creativity, eminence and knowledge exploration by the community are the main factors in determining the nation's success and well-being (Ministry of Higher Education, 2007).

In order to develop human capital with these characteristics, the comprehensive improvisation of delivery methods, training and life-long learning are implemented in Malaysian higher learning institutions (Ministry of Higher Education, 2006). On top of that, the development of higher employment skills are also emphasized to ensure that the human capital produced will be competent in the ever-changing economy and the globalization era. This goal could be achieved through the implementation of core human capital development policies which also aims to ensure the education and training in the tertiary level fulfills the employers' requirements (Ministry of Higher Education, 2006). Hence, the higher education system in Malaysia needs to ensure that the higher learning institutions (HEIs) develop their reputation with the ability to attract and retain the best academics to contribute significantly to the advancement of research, producing graduates who are able to master and practice the knowledge they have learned for the betterment of our community, nation and the universe as a whole.

In the effort of developing the higher education system that can fulfill the current society needs, the Malaysian Ministry of Higher Education (MoHE) had categorized the Malaysian public universities into 3 groups as listed below:

(a) Research University
- Fields of studies are focused on researches
- Competitive Intake
- High quality lecturers
- A ratio of 50:50 between graduates and post-graduates

b) Comprehensive University
- Various fields of studies
- Competitive Intake
- High quality lecturers
- A ratio of 70:30 between graduates and post-graduates

c) Focused University
- Focused fields of studies
- Competitive Intake
- High quality lecturers
- A ratio of 70:30 between graduates and post-graduates

(Ministry of Higher Education, 2007)

These steps were taken in order to increase the excellence in HEIs in specific fields according to the capability of institutions in producing high quality human capital, respectively.

THEORETICAL FRAMEWORK

Community is a system composed by a few interconnecting parts and work in harmony to maintain

the social equilibrium as a whole (Parsons, 1951). Every part exerts mutual influences towards another part. Therefore, every social institution, including the higher education institutions play specific roles in shaping a community, for example, chanelling skills, knowledge and culture of a community to the younger generation in their own community and also to others. The delivering of knowledge and skills has therefore encouraged the progression of roles in the education institution in various levels with the efforts of fulfilling the global community development.

Related to this, Structural-Functionalists view education as contributing to the smooth functioning of society. Educational systems train the most qualified individuals for the most socially important positions. Moreover, education teaches people not only the soft skills and thinking skills that maximizes their potential, but also teaches them to be good citizens who get along well with others. They would not see education as contributing to inequality (along class, race, gender, etc. lines) but rather as serving the positive function of the overall society (Kingsbury and Scanzoni, 1993).

In fact, the community system consists of many other systems. One of them is the education system, formed from various parts, that supports and exerts mutual influence on each other. Every part has their respective roles in forming the education system in a community. This role is as desired by the community in order to develop the economy, politic and social aspects. Hitherto, the education system is commonly perceived as a crucial contrivance to produce human capital in developing the economy. The roles of education institutions, therefore, as explained by the allocation theory, does not only function as a socialization agent but also as the selector, the sorter, and the allocator as well (Meyer, 1978) to human capitals that are produced for the nation's development. According to this theory, education functions as a set of institutional rules that classify and allocate individuals into certain hierarchical levels in a community. This allocation is done according to a few aspects, for example, course duration and types of studies (i.e., field of study; certificate levels: diploma, degree etc).

This is also in tandem with the legitimate theory that views education as a mean established by community that set an individual's qualifications as a criteria for certain jobs or career. The qualifications required in fields of career will predetermine the area of knowledge one must acquire. For example, an engineer needs at least a degree in the engineering field besides registering with the Malaysia Board of Engineers. According to Roemer (1980), the basic claim of the legitimation theory is that the schools alter the social structure itself. Education is thought to expand the sources of cultural authority and in so doing creates new sets of specialized social position. Nevertheless, academic qualifications obtained are determined by the aspect of programme structure and focus of each education institutions especially the HEIs. This is because there are differences in these aspects in every academic programme offered in each HEI.

For Malaysia, the development needs of various fields in an effort of preparing the nation into the status of developed country, has encouraged and propelled public universities to offer various fields of study to facilitate the needs. Yet, another effort of the Malaysian MoHE is seen in the clustering of the universities into 3 main clusters with different emphasis, specifically, research universities, and comprehensive universities and focused universities. According to the Ministry of Higher Education (2007), the research universities will give more attention in the research field, while the focused universities will be focused on specific fields with regards to its establishment. While, comprehensive universities offer a variant of courses and fields of study. The clustering was implemented with the aim of increasing and elevating the efficiency and effectiveness of the roles of public universities in Malaysia with the aim to produce well versed human capitals with diverse capabilities for the nation's development. This is because according to the Legitimate Theory, the power of efficiency in different specializations stimulates more functions to be integrated into the social control, for example, when a social problem occurs; more counselors and psychiatrists are required in dealing with human relations. Meanwhile, for environmental problem, professionals in that area such as environmental engineers are needed by the society. Thus, from these phenomena, we could understand that the trained groups (elites) in particular areas of knowledge are responsible in performing distinguished undertakings.

Research objectives: The public universities in Malaysia are categorized into three groups, namely the research university, comprehensive university and focused university, where they differ in structure and function in the process of producing and developing the human capital. On top of that, public universities, regardless of their respective cluster, offer different courses with the purpose of developing human capitals for various areas of expertise. Every component and diverse fields of study in university have specific focus that contributes to the human capital development process via the universities academic programmes. Therefore, this research aims to investigate the different aspects of human capital development that is emphasized in academic programmes offered by different fields of study in all three categories of universities aforesaid, in order to produce high quality human capital for the development of Malaysia specifically, and globally.

METHODOLOGY

This study was conducted in 2009 and had used the retrospective policy analysis in obtaining data from 16

Table 1: Summary of factor loading analysis results with the factors of varimax rotation method.

Factor loading	1	2	3	4	5	6	7	8	9
Human capital objectives and aims									
Possess continual interest	0.71								
Possess a wide area of general knowledge	0.50								
Sensitive towards current issues	0.51								
Appreciate art, culture and sport	0.51								
Skillful in problem solving	0.55								
Creative and innovative	0.52								
Clinical thinking skills	0.59								
Adaptable	0.62								
Highly morale	0.59								
Show concern and care	0.82								
Skillful in communication	0.69								
Efficient in relaying information	0.74								
Easily amenable	0.73								
Socialise well	0.83								
Exude professionalism	0.82								
Endeavour self improvement	0.83								
Possess personal strength	0.82								
Aspiring to be leader	0.80								
Able to work in a team	0.84								
Academic programme's Curriculum									
Provide knowledge in specific fields							0.72		
Instill humanitarian skills							0.52		
Relate to needs in the work place							0.59		
Integrate research skills							0.59		
Competitive in the market place							0.55		
Preparing students into careers							0.63		
Include curriculum of other fields							0.59		
Teaching and learning activities									
Enrich knowledge				0.55					
Identify materials				0.57					
Interaction with friends				0.56					
Working in a group				0.62					
Effectivey relaying messages				0.63					
Collaborating with external societies				0.57					
Proficient in communicating with malay Language				0.55					
Appraisal mechanisms									
Public speaking skills					0.66				
Teamwork					0.59				
Skills in conducting research					0.52				
Critical thinking skills					0.51				
Learning materials									
Prepare further reading lists			0.61						
Emphasis on problem solving aspects			0.67						
Emphasis on critical thinking			0.68						
Assignment based			0.60						
Emphasis on discovery learning			0.57						
Encourage study levels			0.52						
Incorporating real life situation			0.67						
Teachers resources									
Act as mentor						0.52			
Improve skills continually						0.53			
Skilled in connecting and integrating techniques						0.63			
Apply research results						0.65			
Act as facilitator						0.57			
Supporting system									
Library facilities		0.70							
Internet access facilities		0.75							
Caunselling services		0.72							
Online resources		0.84							
Transport facilities		0.54							
Photocopy facilities		0.56							
Lecture halls		0.51							
Up-to-date reference items		0.76							

Table 1: Continued

Factor loading	1	2	3	4	5	6	7	8	9
Programme development									
Education laws and policies								0.57	
Country development needs								0.65	
Local marketplace needs								0.57	
Global marketplace needs								0.53	
Intellectual development needs								0.50	
Human development needs								0.59	
Society development needs								0.52	
Quality of programme									
Revise curriculum									0.66
Administer tracers study									0.61
Conduct market research									0.59
Revise every programme									0.65
Appraisals conducted by external evaluators									0.69
Obtain recognition									0.72
Professionals invited as evaluators									0.57
Eigen values	15.2	10.5	9.4	8.9	8.7	5.5	5.4	5.2	4.4
% Variance explained	13.9	9.6	8.5	8.1	7.9	4.9	4.9	4.7	3.9
Cumulative %	13.9	23.5	32.0	40.1	48.05	2.9	57.8	62.5	66.4

Table 2: Intecorrelation matrix between scale factors

Factor	a	Mean	S.P	MB	K	PP	MP	BP	TP	SS	PG	KP
Human Capital Objectives (MB)	0.85	4.11	0.52	1.00	0.31*	0.49**	0.41**	0.47**	0.49**	0.44**	0.36**	0.29*
Curriculum (K)	0.83	4.07	0.50		1.00	0.39**	0.38	0.51**	0.43**	0.42**	0.42**	0.35**
Teaching & Learning (PP)	0.84	4.07	0.56			1.00	0.46	0.46**	0.42**	0.48**	0.38**	0.38**
Appraisal Mechanism (MP)	0.83	4.13	0.58				1.00	0.51**	0.50**	0.43**	0.32*	0.33**
Learning Materials (BP)	0.81	3.95	0.57					1.00	0.51**	0.48**	0.38**	0.50**
Teachers Resources (TP)	0.90	4.15	0.57						1.00	0.50**	0.51**	0.29*
Supporting System (SS)	0.89	4.07	0.61							1.00	0.43**	0.39**
Development Programme (PG)	0.8	14.2	40.53								1.00	0.35**
Quality Of Programme (KP)	0.82	4.21	0.64									1.00

*: sig. at p<0.05; **: sig. at p<0.01

Table 3: Samples

Types of universities	Selected public universities
Research	Universiti Malaya, Universiti Sains Malaysia, Universiti Kebangsaan Malaysia
Comprehensive	Universiti Teknologi MARA Malaysia, International Islamic University of Malaysia dan Universiti Malaysia Sabah
Focused	Universiti Technologi Malaysia, Universiti Utara Malaysia, Universiti Pendidikan Sultan Idris, UTHM, UTMM, Universiti Malaysia Perlis, Universiti Malaysia Terengganu, Universiti Malaysia Pahang, Universiti Sains Islam Malaysia,dan Universiti Malaysia Kelantan

The respondents for this survey consist of deans, deputy deans, heads of department/ coordinators/ programme coordinators/ project managers and lecturers (Table 4)

Table 4: Respondents distribution

Respondents	Frequency	Percentage
Deans	44	3.7
Deputy deans	36	3.1
Project managers	13	611.5
Course coordinators	60	5.1
Lecturers	900	81.7
Tota	1176	100.0

Malaysian public universities (namely, 3 Research Universities, 3 Comprehensive Universities, and 10 Focused Universities) through survey research method using questionnaires. For such reasons, a set of questionnaire consisting of 110 items using the Likert scale of five, comprising of two main domains i.e., the Human Capital Development Objectives and the Implementation of Human Capital Development Via Academic Programmes, was developed.

To identify the construct validility, the factor analysis procedure was used to confirm item loadings. As such, the data obtained from the respondents (n = 1176) was analyzed using the factor analysis to confirm the item loadings into variable (dimensional) factors.

The factor analysis findings shows that *Kaiser-Meyer-Olkin* (KMO) value is 0.625 while *Bartlett's* Test of Chi-Square value is 269256.6 (df = 5995; p = 0.001) and this results supports Coakes and Steed (2003) suggestion that if the KMO value is ≥0.60, then factor analysis method is suitable in a reasonable sample. Next, the factor analysis by using a factor weight of 0.50 revealed that 9 factors with Eigen value more than 1 appeared. All these 9 factors have contributed as much as 66.4% of the overall variance (Table 1).

To identify the inter-correlation between the 9 factors of the human capital development scale, the Pearson correlation analysis was carried out and its findings are tabulated in Table 2. The main objective is to conduct inter-correlation among these factors. Besides that, the

Table 5: MANOVA analysis findings regarding types of IPT and the human capital development aspect

Aspect	RU (n = 428) Mean (SP)	COMPU (n = 240) Mean (SP)	FOCUSU (n = 504) Mean (SP)	F-value
Human Capital Objective (MB)	3.90 (0.56)	4.13 (0.41)	4.28 (0.47)	66.98*
Curriculum (K)	3.85 (0.58)	3.95 (0.46)	4.34 (0.45)	117.75*
Teaching & Learning (PP)	3.87 (0.61)	4.09 (0.51)	4.25 (0.45)	62.14*
Appraisal Mechanisms (MP)	3.80 (0.58)	4.15 (0.45)	4.41 (0.49)	159.10*
Learning Material (BP)	3.68 (0.54)	4.00 (0.54)	4.17 (0.51)	97.48*
Teachers Resource (TP)	3.86 (0.63)	4.08 (0.46)	4.43 (0.41)	145.77*
Supporting System (SS)	3.94 (0.51)	3.65 (0.63)	4.39 (0.50)	172.56*
Programme Development (PG)	4.07 (0.53)	4.24 (0.44)	4.40 (0.51)	48.88*
Quality of Programme (KP)	4.02 (0.67)	3.91 (0.69)	4.52 (0.41)	126.31*

*: significant at $p<0.05$

reliability Cronbach Alpha (a) value for each research factors is also tabulated as follows:

The findings in Table 2 shows that the *Cronbach Alpha* (a) values obtained for each factor exceeds 0.80. While the Pearson coefficient correlation that exists within all 9 factors is between 0.32 to 0.51. This finding confirms that the multi-collinearty effect is almost non-existent among these factors.

This research uses the stratified random sampling method based on the categories and the location of the universities in the process of selecting research respondents. In the selection process, researchers used a list of all the IPTA (public universities) as a sample structure in Malaysia according to categories (Research University, Comprehensive University and Focused University) and the location (North, Center, East and South-Peninsular Malaysia and Sabah/Sarawak representing East Malaysia). As a conclusion, there are 3 Research Universities, 3 Comprehensive Universities and 10 Focused Universities that have been chosen as samples in this research (Table 3).

FINDINGS

The human capital development profile in this research is conducted based on two criteria, which are the types of universities and the fields of specifications. The universities in this research are divided into 3 types, namely the research university, the comprehensive university and the focused university. Meanwhile, the programme specifications are divided into 5 groups; pure and applied arts, pure and applied science, and professional programmes. According to the categorization, this research should apply the univariate ANOVA conventional analysis to examine the differences or to indentify the effects of size on each group. Nevertheless, if this approach is applied in every item, it will bring to the increase in Type I errors. At the level of 0.05, the tendency of the Type I errors occurrence to the 110 items is very high. Therefore, the analysis for this research has been performed through factor analysis. This approach is more parsimonious as it is able to decrease the overwhelming number of items to a few coherent factors besides having theoretical meaning. Meanwhile, multivariate variance analysis (MANOVA) is conducted to show the differences in groups besides performing univariate advanced analysis to determine the variables that caused such differences. Moreover, the Post Hoc analysis is also conducted to identify the differences between groups in further detail.

All the 9 factors of human capital development embedded in the academic programmes obtained through factor analysis are being used as dependent variables. The correlation between factors are tested with Bartlett sphericity test, and obtained a statistic value of 1322,135 with 109 df, $p<0.01$. This finding allows the MANOVA analysis method to be appropriate for application. Meanwhile, there are a few criteria that can be used to evaluate the multivariate differences across the different groups through grouping. For this research, both the Pillai trace dan Roy's ger (greatest characteristic root) criteria were used, while the Scheffe post hoc test is used to identify the differences between the groups.

Types of universities and the human capital development aspects: Three types of universities are used in the MANOVA analysis; the research university, the comprehensive university and the focused university while all the 9 factors in the human capital development through academic programmes are dependent variables. The findings of the MANOVA analysis are tabulated in Table 5.

The research findings showed that there is an existence of a pattern among the three groups of universities when observing the mean score distribution. For example, the mean score distribution for human capital development aspects through academic programmes revealed that research universities prioritize the least even in moderate levels for all aspects except the programme quality aspect, if compared to the comprehensive and focused universities. In the aspect of programme quality, it is discovered that research and focused universities give high priority compared to comprehensive universities. Unlike focused university, research findings revealed that this type of university prioritizes much in all aspects of human capital development except the learning material aspect (relatively moderate level). Meanwhile, for

Table 6: MANOVA analysis findings regarding types of studies and the human capital development aspect

	Science		Arts			
Aspect	Pure Mean (SP)	Applied Mean(SP)	Pure Mean (SP)	Applied Mean (SP)	Professional Mean (SP)	F-value
Human Capital Objective (MB)	4.19 (0.44)	4.20 (0.54)	3.99 (0.56)	4.00 (0.56)	4.21 (0.43)	9.80*
Curriculum (K)	4.14 (0.39)	4.02 (0.58)	3.82 (0.62)	4.13 (0.51)	4.36 (0.47)	31.24*
Teaching & Learning (PP)	4.07 (0.53)	4.06 (0.67)	3.93 (0.63)	4.14 (0.44)	4.23 (0.40)	9.77*
Appraisal Mechanisms (MP)	4.08 (0.40)	4.27 (0.58)	3.81 (0.58)	4.15 (0.59)	4.44 (0.51)	42.36*
Learning Material (BP)	3.97 (0.50)	3.96 (0.46)	3.69 (0.53)	4.03 (0.69)	4.16 (0.46)	23.46*
Teacher Resources (TP)	4.22 (0.44)	4.20 (0.66)	3.85 (0.67)	4.23 (0.32)	4.28 (0.61)	24.43*
Supporting System (SS)	4.18 (0.60)	4.01 (0.76)	3.84 (0.39)	4.26 (0.61)	4.06 (0.57)	19.69*
Programme Development (PG)	4.20 (0.50)	4.34 (0.43)	3.95 (0.51)	4.46 (0.53)	4.26 (0.51)	37.26*
Quality of Programme (KP)	4.26 (0.56)	4.26 (0.80)	3.92 (0.65)	4.28(0.50)	4.41(0.54)	21.58*

*: significant at $p<0.05$

comprehensive universities, although all aspects of human capital development are given priority at a moderate level, but a few selected aspects are also given preeminence, for example, programme development, appraisal mechanism and human capital development objectives. Similar patterns can be observed in research universities as priority in a moderate level is given to development policy and programme quality. In conclusion, research universities are found to have less preference towards the development of human capital through academic programmes compared to comprehensive and focused universities, although only at a moderate level. In this matter, focused universities are found to have high priority towards human capital development through academic programmes.

Meanwhile, MANOVA analysis based on the three groups of universities produced Pillai trace value (0.587, F-value = 53.65, $p<0.00$) and Roy ger value (0.586, F-value = 75.81, $p<0.00$). These findings confirmed that there are significant differences between the three universities in certain aspects. Next, univariate analysis revealed that there are significant statistical differences in all aspects of human capital development through academic programmes, including human capital objectives, curriculum, teaching and learning, appraisal mechanisms, learning materials, teacher resources, supporting system, programme development and quality of programme.

Post hoc Scheffe analysis findings also discovered that most aspects of human capital development through academic programmes for comprehensive and focused universities showed significant differences with research universities except in the aspect of programme quality.

Types of courses and human capital development aspect: Five different fields of studies/specifications are used in the MANOVA analysis; pure arts, applied arts, pure science, applied and professional science. Meanwhile, all 9 aspects of human capital development aspects through academic programmes are used as dependent variables in this analysis. The findings are shown in Table 6.

The research findings shows that professional courses programmes are found to give high priority to most aspects of human capital development through academic programmes compared to science programmes (pure or applied) and arts programmes (pure or applied). Meanwhile, programmes that offer pure arts courses are found to give less priority to to human capital development through academic programmes although it can still be categorised as a relatively moderate level. Besides that, research findings also revealed that applied science and arts programmes are found to give higher priority to aspects of human capital development compared to pure science and arts programmes offered. Another obvious pattern from the table above showed that all types of programmes, either arts, science or professional each gives high priority to the quality and programme development policy compared to other aspects in the human capital development policy.

Specifically for professional programmes, the human capital development aspects that are given top priorities are the curriculum, appraisal mechanism, teacher resources, programme development policy and quality of programme. Meanwhile, other aspects such as human capital objectives, teaching and learning and supporting system are given moderate levels of priority.

The research findings also shows that applied science programmes give higher priority in human capital development compared to pure science programmes. For example, pure science programmes prioritize programme quality only if compared to other aspects in the human capital development that only gives moderate level of priorities. This differs with applied science programmes as there are three aspects of human capital development that are given preeminence, namely, the appraisal mechanism, programme development policy and quality of programme. Nevertheless, both programmes, be it pure science or applied science give less emphasis towards the teaching and learning materials, although this is categorized in a moderate level.

As a conclusion, the findings from the table above revealed that applied arts programme give high priorities compared to pure arts programmes especially in the

Table 7: MANOVA analysis findings in types of IPT, fields of studies and human capital development aspect

	F-value		
Aspect	University	Programme	University* Programme
Human Capital Objective (MB)	61.42*	9.88*	34.04*
Curriculum (K)	109.75*	24.32*	34.28*
Teaching & Learning (PP)	50.12*	8.98*	45.53*
Appraisal Mechanisms (MP)	172.64*	33.36*	49.13*
Learning Material (BP)	91.49*	8.44*	35.30*
Teacher Resources (TP)	127.88*	5.83*	36.79*
Supporting System (SS)	164.46*	16.96*	24.26*
Programme Development (PG)	26.29*	10.39*	57.97*
Quality of Programme (KP)1	29.75*	11.43*	50.08*

*: significant at p<0.05

aspect of human capital development. This is apparent when applied arts gives preeminence in aspects such as supporting system, programme development policy and programme quality compared to pure arts programmes that only prioritize these aspects at a moderate level.

The MANOVA analysis based on the five types of programmes offered also produced the Pillai trace value (0.494, F-value = 18.21, p<0.00) and Roy ger value (0.232, F-value=29.93, p<0.00). These findings confirmed that there are significant differences between the five universities in all aspects of human capital development. Next, the *univariate* analysis showed that there are significant statistical differences in all the aspects of human capital development through academic programmes, namely, human capital objective, curriculum, teaching and learning, appraisal mechanism, learning materials, teachers' resource, supporting system, programme development and programme quality.

The post hoc Scheffe analysis results revealed that most aspects of the human capital development through academic programmes for the professional programmes, pure and applied science and applied arts showed a significant difference with Pure Arts programme.

Types of university, programmes and aspects of human capital development: Three types of universities and five types of programmes have been used in the MANOVA analysis. The description analysis findings involving the mean score and the MANOVA analysis is shown in Table 7

The findings from Table 7 showed that all three universities with professional programmes as a whole gave the highest priority in human capital development. This is then followed by programmes as Pure Science, Applied Science and Applied Arts. Conversely, the three universities with pure Arts programme are found to prioritize less in human capital development although it is still categorized in a moderate level. Meanwhile, these universities and the programmes they offered are found to give high priority towards the apects of human capital development, programme development and quality of programme. Next, the MANOVA analysis based on these three universities produced *Pillai trace* value (0.661, F-value= 63.05, p<0.00) and *Roy ger* value (0.803, F-value =102.60, p<0.00). This finding suggested that there are significant differences among these universities in all aspects of human capital development.

Meanwhile, the MANOVA analysis based on the five types of programmes offered also produce *Pillai trace* value (0.636, F-value = 24.22, p<0.00) and *Roy ger* value (0.307, F-value = 39.35, p<0.00). This finding suggested that there are significant differences between the five programmes in all aspects of human capital development. Finally, the MANOVA analysis based on the interaction between universities and the programmes offered produced a Pillai trace value (1.48, F-value= 29.19, p<0.00) and Roy ger value (0.923, F-value=118.58, p<0.00). This finding suggested that there are significant differences between these five universities in all aspects of human capital development.

DISCUSSION AND CONCLUSION

The economic situation that experiences changes from product-based economy to knowledge-based economy has deemed universities as the ultimate organization that supplies human capital for the economic development (Altbach, 1991; Chew and Lee, 1995; Murad, 1971). The findings in this study showed that public universities in Malaysia are responsive in fulfilling the market demands specifically in preparing high quality human capitals through their academic programmes and trainings. This can also be seen when all of nine aspects-objective, curriculum, teaching and learning, appraisal mechanism, learning materials, programme quality, supporting system and lecturers are given priority although only at the moderate level. Therefore, this findings ascertain that although public universities are clustered into a few categories, yet the desire and goal of the Ministry of Higher Education that the human capital development will be given appropriate attention in the tertiary level to fulfill the demands of employers (Ministry of Higher Education, 2006) has been included in the human capital development in respective institutions. This is in tandem with the Kirby-Harris statement (2003) that

the top-down approach taken by the government is to ensure the existence of parallelism between the development of higher education and its contribution to the nation development. The findings also strengthen Najib's (2004) and Thong's (1995) findings that public universities in Malaysia still uses the utilitarian model based on the ivory tower concept. Nevertheless, various methods have been used to determine and identify the best reaction to opportunities and challenges in the environment.

Nevertheless, the research findings also provide a strong evidence in support of the Malaysian Ministry of Education's human capital development policy through academic programmes when there was a pattern of priority was given by public universities:-

- Research universities are giving less priority towards human capital development through their academic programmes compared to comprehensive and focused universities although the priorities are only at the moderate level.
- Focused universities are giving high priorities towards human capital development through their academic programmes.
- Professional academic programmes are giving high priority to most aspects of human capital development compared to Science programme (Pure or Applied) and Arts programme (Pure or Applied) courses.
- Pure Arts programme are prioritized less in the human capital development although only at a moderate level.
- Applied Science and Applied Arts programmes give higher priority in the aspects of human capital development compared to Pure Science and Pure Arts programmes.
- All academic programmes whether Arts, Science or professional give priority in the aspects of quality and programme development policy compared to other aspects in the human capital development.
- Overall, professional programmes offered by all universities regardless categories, are given the highest priority in all aspects of the human capital development., followed by Pure Science, Applied Science and Applied Arts programmes.
- On the other hand, all universities regardless categories with Pure Arts programmes are given less priority in the human capital development although it rated as moderate level.
- All universities and the academic programmes are giving high priority on the aspects of human capital development, programme development policy and programme quality in their academic programmes offered.

The diversity that exists within the patterns from this research findings disclosed that public universities' categorization in Malaysia affects the process of human capital development for the nation's progression. The different categories of universities play their respective roles besides providing different focus in their effort of developing human capitals with various talents and knowledge. This condition is, as explained by the Structural-functionalist Theory, shows the mutual influences between each part in order to form a community for example, the roles of deliver skills, knowledge and the culture of a community to the younger generation of their own culture or others as well.

In addition, this diversity also showed that public universities in Malaysia attempts to build a reputation by creating disposition and resources to attract and renowned scholars who are able to contribute significantly to the advancement in research, to produce graduates who are capable of manage and practice their knowledge for the sake of development in the local community, country and international level (Ministry of Higher Education, 2006). Nevertheless, in the aspects of priority and emphasis, they differ according to the clusters by the Ministry of Higher Education (2007) to ensure a production of human capitals with diverse skills for the sake of the nation's development in various fields as explained by the Confirmation Theory (Roemer, 1980). This statement is also supported by research by Aziah (2007) that Malaysia public universities autonomy in developing their respective organizations still exist when performing their development plan. In fact, optimizing innovation and ideas, creativity, prominence, and knowledge discovery by the community is a crucial factor in ensuring success and harmony in a nation as desired by the Ministry of Higher Education (2007). Therefore, the public universities strive to transform these characteristics into efforts of fulfilling the new global economic needs that is established on creativity, authenticity and imagination by scholars and technopreneurs.

Based on the findings, it can be concluded that the great efforts shown by the Public HEIs in Malaysia in producing outstanding human capitals through instilling humanitarian skills in all the courses domains (study content, mastery in fields of study, work place sensitivity and work place experience) during the execution of academic programmes. This significant roles and emphasis in producing human capitals with various skills and knowledge has created diversity in the human capital development through academic programs among the public universities in Malaysia.

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