Available Online at www.e-iph.co.uk
Indexed in Clarivate Analytics WoS, and ScienceOPEN

E-B Environment - Behaviour Proceedings Journal

AicQoL2023Bangkok

https://www.amerabra.org

e-IPH e-International Publishing House Ltd., United Kingdom

11th AMER International Conference on Quality of Life
Al Meroz Hotel, Bangkok, Thailand 28-30 Apr 2023

Malaysia's Human Capital Index and Education: A new beginning

Noorziah Mohd Salleh[1], Alan Nankervis[2]
** Corresponding Author*

[1] Business and Management Faculty, Universiti Teknologi MARA, Sabah, Malaysia, [2] Faculty of Business and Law, Curtin University, Perth, Australia

noorziah@uitm.edu.my; A.nankervis@curtin.edu.au
Tel: +60128851774

Abstract
Children who take two types of national examinations at 12 and 17 years old are compared using results from the Malaysian national examinations. It is proven future workers will be 100 percent more productive if they complete their education. Malaysia's HCI of 0.62 means a child born today will be 62 percent more productive than if given a complete education and adequate health care. According to the results, national examination scores of children aged 12 and 17 are correlated. This study's limitation is that it did not cover the health aspects thoroughly. Therefore, future study should be directed at this area.

Keywords: Human Capital Index in Malaysia, Early Education, Economic growth, Future Productivity

DOI: https://doi.org/10.21834/ebpj.v8i24.4627

1.0 Introduction

Objective and subjective indicators measure the quality of life (QoL) across various domains and values. Norms should not ignore individual differences because they allow objective comparisons between groups. It includes five dimensions: physical well-being, material well-being, social well-being, emotional well-being, and development and activity (Felce & Perry, 1995). In Malaysia, the QoL is aimed at being achieved through the Malaysian plans for 1966 onwards. These plans include cohesion strategies designed to increase economic growth and self-reliance, reduce unemployment, reduce income inequality, eradicate poverty, and modernize the economy. The most significant prerequisite to success is identifying an internal factor contributing to these areas. Human capital is widely recognized and identified as one of the determinants of better QoL success; the World Bank recently introduced in 2018, called Human Capita Index (HCI). The World Bank introduced the human capital index (HCI) as a novel method for predicting future productivity.

The HCI is measured in productivity units relative to a benchmark of complete education and total health and ranges from 0 to 1. A value of x on the HCI indicates that a child born today can expect to be only x× 100 percent as productive in future work as she would be if she got complete education and total health (Kraay, Aart. 2019). This is an innovative method to assess a country's human capital productivity and future QoL by focusing primarily on children's educational development. It also measures how well they are expected to perform when they are 18 years old and contributes to a Country's QoL. In 2020, Malaysia's HCI index was 0.62, Singapore's was 0.88, Hong Kong scored 0.82 percent, Japan scored 0.84 percent, and South Korea scored 0.84 percent (Data World Bank, 2021). After the World Bank publicized the human capital index in 2018, some light has been shed on taking care of that human capital since they are yet to be born. They are the source of national competitive advantage, and failing to value them over other factors would be a

eISSN: 2398-4287 © 2023. The Authors. Published for AMER & cE-Bs by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/). Peer–review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers), and cE-Bs (Centre for Environment-Behaviour Studies), College of Built Environment, Universiti Teknologi MARA, Malaysia.
DOI: https://doi.org/10.21834/ebpj.v8i24.4627

mistake. Specifically, it analyses the relationship between children who take two different types of national examinations when they are 12 and 17 by analyzing the results of a 12-year-old test score for the Malaysian national examination conducted in year six, known as the Primary School Achievement Test (UPSR) with those of 17-year-olds taking the Malaysia Certificate of Education (SPM). The study focuses on HCI items, schooling years, test scores, health, and child survival.

1.1 Malaysian socioeconomics

In Malaysia, the rapid advancement of the country requires high investments in human capital. This will strengthen the industry's growth, serving as the backbone of the country's development plans. In terms of managing human capital, the country faces significant challenges. Monash University (2018) reports that Malaysia will not face a lack of jobs but rather a lack of skills. Therefore, the country should increase its labor force output and calibrate people skills development following labor market demands (ICEF Monitor, 2017). Despite the more substantial labor market, the local economy concentrated on mid-skilled jobs rather than highly innovative plans, resulting in a shortage of high-skilled and industry-ready graduates. According to the OECD Economics Survey (2019) - which measures the inclusiveness of growth by measuring living standards within a specific country, Malaysia placed well in the economy but poorly in some indicators, especially long-term employment rates. Among other things, it has shown relative weaknesses in education attainment, skills, and personal earnings.

Furthermore, graduates lack critical thinking skills, communication skills, language proficiency, and positive personality traits and, consequently, a mismatch between employers' requirements and product offerings of higher education institutions (Mohd Salleh, 2018). These situations contribute to the high rate of youth unemployment and, consequently, the moderate performance of the national economy. Malaysia's national per capita income in 2021 was only US10,710, below a developed country's average of $12,236. As the economy grew in 2022, the number of unemployed graduates decreased by 2.5 percent (-5 thousand) to 197.4 thousand persons as compared to 202.4 thousand unemployed graduates in 2020 (total graduates 5.61 million graduates' labor force participation rate (GLFPR) remained at 85%) (Department of Statistics Malaysia, 2022). In 2021, the government's decision to raise the retirement age of civil servants from 56 to 60 in 2013 resulted in serious problems; a growing population of older workers, contributing to 160,200 (3.2%) youth unemployed. Therefore, Malaysia should pursue some plans to develop its human capital, especially in increasing qualified workers and more highly innovative economic plans.

Malaysia can become a developed country, but youth unemployment needs to be addressed immediately. Currently, government programs encourage graduates to become self-employed. Consequently, in the 12th Malaysian Plan (2021-2025), the government and industries focus on developing future talent, accelerating innovation, improving connectivity, and strengthening public services. Despite Malaysia's lower HCI than its neighboring countries, its socioeconomic development is exemplary. Despite the pandemic, according to the Department of Statistics Malaysia (2022), Malaysia's economy grew by 8.7 percent. United States (RM15.7 billion), Singapore (RM 9 billion), and the United Kingdom (RM5.7 billion) are the primary foreign direct investment sources. With a population of more than 32.7 million people, a high labor participation rate (69.8%), and a low unemployment rate (3.9%), it recently achieved higher economic growth, enabling the country to generate a GDP of US373 billion in 2021 compared to USD337 in 2020. The country must improve its greatest asset and produce 40 percent more skilled workers to become a developed country. The workforce comprises 13.9 million people with tertiary or secondary education, and 64.5% have left school by 17 (Table 1). This resulted in 58.4 percent of the labor force having a middle and low level of education and 30.1% having a professional level.

Table 1: Employed Person By Educational Attainment, Malaysia 2019 and 2020

	2019	2020
Tertiary	4.43 mill (29%)	5.05 mill (33.3%)
Secondary	8.37 mill (55.5%)	8.9 mill (54.1%)
Primary	1.89 mill (12.5%)	1.58 mill (10.4%)
No formal education	0.45 mill (3%)	0.34 mill (2.2%)

Source: Department of Statistics Malaysia Official Portal, 2022

2.0 Literature Review

Human capital is essential to economic growth (EG) (Smith, 2000; Son, 2010), and the economic growth of a nation depends on its population accumulating skills, knowledge, and innovative capabilities (Ugal & Betiang, 2009). People with skills and knowledge will contribute more and become valuable human capital (Schultz, 1961). Technological innovation and adaptation should facilitate human capital productivity (Banerjee & Roy, 2014) and eliminate all forms of inequality (Barro, 1991). The education aspect of the HCI: Many empirical studies have proved that education is the primary determinant of positive impact on EG in many countries; for instance, Self and Grabowski (2004) in India, primary and secondary education had a strong causal impact on economic growth, Bratti et al. (2004) involve a cross-country study reported the primary and secondary education to contribute to productivity, Villa (2005) found higher and secondary education had a positive effect on economic growth while primary education had no effect. Haouas and Yagoubi (2005) studied involve MENA countries and found that average human capital significantly influences growth but does not affect productivity growth. Park's (2004) study involved 94 developed and developing countries' educational attainment levels- human capital positively

influences productivity growth. Sianesi and Van Reenen (2000) concluded that an overall 1 % increase in school enrolment rates leads to a GDP per capita growth of 1 and 3%. Sylwester (2000) has suggested that current educational expenditure leads to future economic growth. Finally, in Malaysia, Shaihani et al. (2011) reported that in Malaysia, secondary education had significant positive effects in the short run, unlike primary and tertiary education in the long run, which had a significant positive effect on EG. The fact that there are more stunted children in Malaysia than in Africa is alarming ("Malaysian Kids More Stunted Than Those In Africa," 2022). Inadequate knowledge of a child's diet results in stunted children due to insufficient feeding. According to the World Health Organisation (WHO), women, infants, children, and adolescents are at particular risk of malnutrition. Optimizing nutrition early in life—including the 1000 days from conception to a child's second birthday—ensures the healthiest possible start, with long-term benefits. Globally in 2020, 149 million children under five were estimated to be stunted (too short for age), 45 million were estimated to be wasted (too thin for height), and 38.9 million were overweight or obese (Fact sheets - Malnutrition, 2021). The government should increase its awareness of mother and child well-being and provide a higher budget to enable its people to succeed. Children's health in Malaysia should be based on height and weight. Malaysia's birth rates have been declining since the 1990s, which is also concerning ("Birth Rate, Crude (Per 1,000 People) - Malaysia | Data" 2022). It may be due to the rising cost of living, which causes women to work to support their families. Compared to the 1960s and 1980s, when most families had six to ten children, most families today have fewer than five children.

3.0 Methodology

A combination of child survival, stunting, adjusted school years, health, and test scores results in productive human capital. Test scores are the focus of the study, while the other items are defined in Table 2. The study investigates the test scores specifically, determining whether the test scores of 12-year-olds correlate with those of 17-year-olds. According to the national examination criteria, the selected subjects represent reading, number, and problem-solving abilities. In this study, the objectives were to: (1) evaluate the association of examinations taken at 12 and 17 years old, (2) evaluate overall student performance as to whether they are healthy, survived, and completed the academic years (primary and secondary). H0: There is no relationship between the test scores of 12-year-olds and the score of 17-year-olds; H1: There is a relationship between the test scores. A purposive sampling technique was used, which included individuals who had taken the national exam. The data collection technique used consisted of respondents' backgrounds and examination results. The data analysis employed was Paired Sample T-Test. Their scores in selected subjects, Malay language, mathematics, and science, and their backgrounds. A total of 118 students filled out the online questionnaire for this study. The data were sorted, and removed 16 respondents if a value was missing. The selected students will be tracked through primary school and beyond until they complete Form 5. The selected participants in this study were those who had taken PMR and then SPM. Table 2 shows the measurement of each HCI component used in this study:

Table 2: The Definitions of HCI Items

HCI Items	Definitions by Kraay (2018)	Study's definition
Child survival	It shows that not all children born today will accumulate human capital through formal education.	All participants were healthy when the study was conducted
Years of School.	In order to estimate age-specific enrollment rates, four and five-year-olds are enrolled in preprimary; six to eleven-year-olds are enrolled in the primary; 12 to 14-year-olds are enrolled in lower secondary; and 15 to 17-year-olds in upper secondary.	Based on 8-11 years of schooling and test scores. In line with Malaysian education levels, the primary level is 12 years old, and the secondary level is 17 years old.
Test result	Test scores from major international student achievement testing programs reflect the quality of education. International student achievement test scores harmonized. A TIMMS-Test score of 300 is considered minimal attainment, while a score of 625 is considered advanced.	Reading, problem-solving, and numerical elements influenced the selection of the Malay language, Mathematics, and Science.
Health	An analogy to years in school as a standard metric of education attainment is the number of years spent in school. In the absence of such a measure, two proxies for the overall health environment are used: Adult survival rates, defined as the fraction of 15-year-olds that survive until age 60, and the rate of stunting for children under age 5.	Defined by a participant's health is considered healthy after completing their studies and taking national examinations.

4.0 Results

One hundred two students took the national examinations (PMR and SPM) when they were 12 and 17. Table 3 presents the respondents' background, and Table 4 presents the respondents' test score results. Most respondents were born in 1998, were all in good health, and had completed schooling between 6 and 11 years. All of them were healthy when they took the survey. The respondents mainly were Bumiputera Sabah at 73.5%, followed by Malay (21.6%). There were 74.5 percent of them female, and 24.5 percent male. Notably, most of the respondent's parents were moderately skilled workers, followed by those with low skills (21.6%). Bumiputera Sabah represents the highest percentage because participants share the survey with their relatives, siblings, or friends.

Table 3 Background of respondent

Year born	N	%	Parent job	N	%
1995	1	1	Highly skilled	1	1

1996	1	1	Moderate skilled	55	53.9
1997	4	3.9	Low skilled	22	21.6
1998	42	41.2	Pensioner	11	10.8
1999	14	13.7	Unemployed	13	12.7
2000	11	10.8			
2001	17	16.7	Gender		
2002	11	10.8	Male	25	24.5
2004	1	1	Female	77	75.5

Race			Health		
Malay	22	21.6	Healthy	102	100
Bumiputera	75	73.5	Not healthy	0	0
Chinese	4	3.9			
Indian	1	1.0			

A large percentage of grade A (59.8%) in the respondents' UPSR test scores for the BM subject. The mathematics subject indicates that the highest score obtained is grade B, with 55.9%. The mathematics subject also shows that grade B was the highest score (36.3%). For respondents' SPM test scores, the highest was grade A with 40.2%, followed by science, in which grade B was the top score (36.3%). For the math subject, respondents' score shows that grade C was the most significant (31.4%).

Table 4: Respondent Test Score

Exam Score	UPSR						SPM					
	BM		SC		MATH		BM		SC		MATH	
	N	%	N	%	N	%	N	%	N	%	N	%
A	61	59.8	19	18.6	25	24.5	41	40.2	26	25.5	21	20.6
B	30	29.4	57	55.9	37	36.3	39	38.2	37	36.3	27	26.5
C	10	9.8	23	22.5	33	32.4	16	15.7	32	31.4	32	31.4
D	1	1.0	3	2.9	7	6.9	6	5.9	7	6.9	22	21.6

These results are obtained from statistical tests using a paired sample t-test with the compare means method. BM (Malay language) subjects showed a significant relationship with a 2-tailed sig value of 0.000 and an alpha of 5%. The BM subject value increased by 23%. For Math subject, a significant level (0.004< 0.05) and thus, it can be concluded that the Math score taken for UPSR is related to the Math value taken for SPM. It can also be seen in the 15% increase in Math value. Compared to alpha 5% (95% confidence level) with 0.236>0.05, the two-tailed significant value in science is as high as 0.236, so there is no significant correlation between UPSR and SPM examinations. The result of a 6% decrease in science mean value in SPM is supported by the lower mean value. Based on Table 5, this study concludes that the null hypothesis is rejected at the 5% significance level. The H1 is supported and explains that there was a relationship between a child's test scores when they were 12 years old and their test score when they were 17 years old for BM and Math subjects. However, science shows no correlation between the two examinations, only a slight difference of 6%. Thus, the H0 failed to be rejected, but the H1 was accepted.

Table 5: Paired Sample Test

Paired Differences								t	df	Sig. (2-tailed)
		Mean	% Correlation	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
						Lower	Upper			
Pair 1	BM BM1	.228	.599	.586	.032	.160	.295	6.638	333	.000
2	Math-Math1	.150	.566	.932	.051	.050	.251	2.939	332	.004
3	Science-Science1	-.063	.329	.967	.053	-.167	.041	-1.188	333	.236

5.0 Discussion and Conclusions

There is a correlation between a child's performance at a very young age and their performance as they grow. Thus, it is essential that policies are designed to help children develop and prepare for the future through effective Human Capital Index (HCI) plans. Additionally, improving the HCI improves a child's performance, health, and well-being. Education programs that improve children's cognitive and physical development deserve increased funding. The government should also allocate more resources to provide teachers and students with a supportive learning environment. When a mother conceives, a child's development should begin. A decent living standard, a healthy and long life, and a good education will enhance cognitive abilities. There is a shortfall in productivity due to the lack of healthy and well-nourished children who cannot attend school and learn while in school and who do not enter adulthood in good health. Humans need to have a smooth process of human development. The country should also take note of a few countries that have successfully nurtured their human capital development. Human capital development should become the country's economic strategy. This study allows the government, policymakers, and practitioners to see that investing in people will reap long-term benefits.

Acknowledgements

This study is funded by University Teknologi MARA, MALAYSIA (600-RMC/SDG-BORNEO 5/3 (007/2020)

Paper Contribution to Related Field of Study

Ensure that children's education is vital and should be prioritized when making national budgets. Investing in children is the key to economic growth and quality of life. Practitioners can see the long-term benefits of investing in people, especially in eradicating poverty.

References

Banerjee, R., & Roy, S. S. (2014). Human capital, technological progress, and trade: What explains India's long-run growth? *Journal of Asian Economics*, *pp. 30*, 15–31. https://doi.org/10.1016/j.asieco.2013.12.003

Barro, R. J. (1991). Economic growth in a cross-section of countries. *The Quarterly Journal of Economics*, *106*(2), 407–443.

Birth rate, crude (per 1,000 people) - Malaysia | data. (n.d.). Retrieved from https://data.worldbank.org/indicator/SP.DYN.CBRT.IN?locations=MY

Bratti, M., Bucci, A., & Moretti, E. (2004). *Demographic trends, human capital and economic growth in developing countries: theory and evidence*. The University of Ancona, Department of Economics, Italy.

Chultz, T. W. (1961). Investment in human capital. *American Economic Review*, *51*(1), 1-17.

Data.worldbank.org. (2021). *Human capital index (HCI) (scale 0-1) - Chad*. World Bank Open Data | Data. Retrieved April 1, 2023, from https://data.worldbank.org/indicator/HD.HCI.OVRL?locations=TD

Department of Statistics Malaysia. (2022). *Unemployment 1982-2020 and Jan 2020-May 2021*. https://www.dosm.gov.my/v1. Retrieved September 9, 2021, from https://www.dosm.gov.my/v1

Felce, D., & Perry, J. (1995). Quality of life: Its definition and measurement. *Research in Developmental Disabilities*, *16*(1), 51-74. https://doi.org/10.1016/0891-4222(94)00028-8

GDP per capita (current US$). (2021). World Bank Open Data | Data. Retrieved September 3, 2021, from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MY>

GNI per capita, Atlas method (current US$) - Malaysia. (n.d.). World Bank Open Data | Data. Retrieved March 29, 2023, from https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=MY

Haouas, I., & Yagoubi, M. (2005). *Openness and human capital as sources of productivity growth: An empirical investigation from the MENA countries* (No. 1461). IZA Discussion Papers.

Haouas, I., & Yagoubi, M. (2005). *Openness and human capital as sources of productivity growth: An empirical investigation from the MENA countries*. Discussion Paper No. 1461: Bonn, Germany.

Human Capital Index. (2018). *International Bank for Reconstruction and Development*. The World Bank. Retrieved September 26, 2021, from https://thedocs.worldbank.org/en/doc/webdocs

ICEF Monitor. (2017, December 4). *Intense job competition spurs demand for graduate degrees in Malaysia*. ICEF Monitor - Market intelligence for international student recruitment. Retrieved February 21, 2018, from https://monitor.icef.com/2017/10/intense-job-competition-spurring-demand-graduate-degrees

Kraay, A. (2018). *Methodology for a World Bank Human Capital Index*. Public Documents | The World Bank. Retrieved September 14, 2021, from https://thedocs.worldbank.org/en/doc/webdocs

Mohammed Shaihani, A. L., Haris, A., Ismail, N. W., & Said, R. (2011). Long run and short run effects on education levels: Case in Malaysia. *International Journal of Economics and Research*, *2*(6), 77–87.

Mohd Salleh, N., Ab Rahman, B. (2020). *Malaysia.* In Nankervis, A.R., Connell, J., & Burgess, J. (Eds.). (2020). The Future of Work in Asia and Beyond: A Technological Revolution or Evolution? (1st ed.). Routledge. Retrieved September 26, 2021, from https://doi.org/10.4324/9780429423567

Monash Malaysia. (2018). *How universities should prepare for Industry 4.0*. https://www.monash.edu.my/pages/latest/articles/2018/how-universities-should-prepare-for industry-4.0. Retrieved April 4, 2019, from https://www.monash.edu.my/

OECD iLibrary. (n.d.). *OECD economic surveys*. Retrieved April 4, 2019, from https://www.oecd-ilibrary.org/economics/oecd-economic surveys_16097513?page=3

Park, N. (2004). The role of subjective well-being in positive youth development. *The Annals of the American Academy of Political and social science*, *591*(1), 25–39.

Schultz, T. W. (1961). Investment in human capital. *The American economic review*, *51*(1), 1-17.

Self, S., & Grabowski, R. (2004). Does education at all levels cause growth? India, a case study. *Economics of Education Review*, *23*(1), 47-55.

Shaihani, M., Harisb, A., Ismaila, N., & Saida, R. (2011). Long run and short run effects on education levels: Case in Malaysia. *International Journal of Economic Research*, *2*(6), 77-87.

Sianesi, B., & Van Reenen, J. (2000). The returns to education: a review of the macro-economic literature.

Sylwester, K. (2000). Income inequality, education expenditures, and growth. *Journal of development economics*, *63*(2), 379–398.

Ugal, D. B., & Betiang, P. A. (2009). Challenges for developing human capital in Nigeria: Global-local connection. *Available at SSRN 1513945*.

Villa (2005) found that higher and secondary education positively affected economic growth, while primary education had no effect.

World Health Organization. (2014). *Global nutrition targets 2025: Stunting policy brief* (No. WHO/NMH/NHD/14.3). World Health Organization.