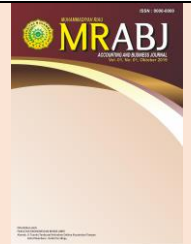




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NATIONAL INTELLECTUAL CAPITAL DISCLOSURE OF EMERGING COUNTRY IN ASIA

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ABSTRACT

Intangible assets in the form of intellectual capital have been proven to be one of the factors that influence a company's success. Previously the concept of intellectual capital was used in the focus of the company's scope, meanwhile theorists argued that the concept of intellectual capital could be incorporated into the state called National Intellectual Capital (NIC). Therefore, the purpose of this paper is to describe the NIC disclosures of each developing country in Asia. The results show that most developing countries in Asia have already disclosed their NICs. Afghanistan is a country that has a low NIC value. This is also in accordance with the financial capital rating as measured by GDP. However, countries with high GDP, including Qatar, United Arab Emirates, and Brunei Darussalam, are countries whose NIC scores are not so high. This is because the country has tangible assets of natural resources in the form of oil.

1. Introduction

Currently, most of the global wealth is based on intangible factors, including intellectual capital (Inkinen, Kianto, Vanhala, & Ritala, 2017). Intellectual Capital (IC) is one of the most important factors of economic growth and development, especially in a global environment where the success of organizations in international markets can only be achieved by continuously increasing their knowledge and innovation (Stevanović, Ivanović-Đukić, Rađenović, & Radović, 2018). Much of the literature that reveals the concept of IC is used to understand the function of knowledge as a critical asset that can create value for an organization (Kianto, Sáenz, & Aramburu, 2017). At this time, fewer people are working physically and more workers are utilizing their knowledge or intelligence (Hashim, Osman, & Alhabshi,

2015). IC becomes an important factor of creative performance and is considered as one of the most critical values in strategy that an organization can have (Gogan, Artene, Sarca, & Draghici, 2016).

This IC topic has received considerable consideration among academics, practitioners and consultants. because in this knowledge era, companies compete more relying on intangible resources such as technology, innovation in processes and organizations, employee capabilities, creativity, relationships with external partners, and also industrial networks (Berezinets, Garanina, & Ilina, 2016; Choong, 2008; Ginesti, Caldarelli, & Zampella, 2018). According to Seleim, Ashour, and Bontis (2004), the increase in organizational performance is not the result of macroeconomic policies or financial balance, but the result of technical progress, innovation

and human quality, structural and relational factors are influenced by capitalization in knowledge which includes education, research and development. Many also support the argument that IC is an essential element in improving the performance of an organization and the performance of the national economy (Petty & Guthrie, 2000; Sydler, Haefliger, & Pruksa, 2014).

In general, economists have measured the development of a country in terms of the increase in per capita income or gross domestic product (Herciu & Ogrea, 2015). Although Gross Domestic Product (GDP) per capita is a general economic measure of national wealth, it also has its detractors (Stiglitz, Sen, & Fitoussi, 2009). Previously the IC concept was developed as a focus of analysis on firms, and subsequently allowed initial conceptualization also to include countries (Bontis, 2002). National Intellectual Capital (NIC) consists of knowledge, abilities, wisdom, and expertise that provide a competitive advantage for a country to compare with other countries and determine the potential for future growth (Lin & Edvinsson, 2010). The importance of NIC for the country's economic growth is widely recognized. Including factors that contribute to economic growth such as level of education, investment in education, investment in research and development, institutional support, and entrepreneurship (Stevanović et al., 2018). According to (Malhotra, 2002), national economist leaders are trying to find a reliable way to measure knowledge assets, the hope is that it can help the government to better manage intangible resources, including IC, because it affects the economic success of a country.

According to Aubert (2012), there is a strong correlation between a country's knowledge economy and economic wealth as measured by GDP per capita. This opinion is reinforced by research conducted by Lin and Edvinsson (2010) related to the comparison of national intellectual capital in 40 countries from 1995 to 2008. The results of this study indicate that although the ranking shown is NIC, the results agrees with general perception that the top ten countries are well-developed countries with a relatively higher economic

and social status, and the bottom ten countries are developing countries to a certain degree afflicted by either economic, social, or political problems in the past decade. In other words, the better a country's NIC, the higher its GDP.

A nation's IC requires the articulation of a comprehensive system of variables in order to help uncover and manage the nation's invisible wealth (Lin & Edvinsson, 2008). The distribution of IC between developed countries and developing countries certainly varies significantly (Seleim & Bontis, 2013). Previous research related to IC is mostly carried out in developed countries (Käpylä, Kujansivu, & Lönnqvist, 2012). Can developed countries provide guidelines for developing countries to imitate? According to (Lazuka, 2012), the study cannot be relied upon to measure IC in developing countries because the country sample is too tight. However, we can see from the facilities alone that developed countries and developing countries are undoubtedly different. For this reason, it is still necessary to conduct research related to NIC in developing countries with indicators that are different from those used in developed countries.

Research on NIC in developing countries was conducted by Seleim and Bontis (2013), which examined the relationship between NIC capital and economic performance. The results showed that national relational capital is an important component for economic performance. The same thing was done by Stevanović et al. (2018) in a Southeast European country, and the results prove that there is a positive and statistically significant correlation between GDP per capita and the measure used for NIC.

Most NIC-related research is conducted in European countries. Therefore, it is still necessary to do research related to NIC in Asian countries, because most countries in Asia are developing countries, out of the 50 countries in Asia, only 6 are developed countries (Nugroho, 2021). So that it is hoped that this research can reveal the hidden values of individuals, institutions, and communities which are the source and potential for creating national wealth. So researchers are interested in measuring the practice of disclosing NIC in

developing countries in Asia. Thus, the purpose of this study is to reveal the NIC so that it can increase the country's economic growth by making better use of competitive resources. This research is expected to provide insight for state governments that can evaluate the drivers of economic development and anticipate steps whose implementation can increase the the country's economic growth by making better use of competitive resources. And is expected to provide readers with an integrated picture of a country's potential for future development.

2. Literature Review

2.1 National Intellectual Capital

National Intellectual Capital (NIC) is a concept that applies the principles of intellectual capital at the macroeconomic level in such a way as to help provide direction for future economic development (Andriessen & Stam, 2005). NIC can be described as knowledge-based assets that underpin the growth and development of a country (Seleim & Bontis, 2013). NIC consists of knowledge, wisdom, abilities, and expertise that give a country a competitive advantage over other countries and determine its potential for future growth (Lin & Edvinsson, 2010). NIC consists of four types of component capital, including human capital, structural capital, relational capital, financial capital.

2.2 Human Capital

Human capital in the Oxford English Dictionary is defined as skills possessed by the workforce and are considered as resources or assets. Human capital includes knowledge, wisdom, expertise, intuition, and individual abilities to realize national tasks and goals. Human capital is the total ability of the population which is reflected in education, knowledge, health, experience, motivation, intuition, entrepreneurship, and expertise. These elements are key success factors in creating a competitive advantage for a nation in the present and the future (Goldin, 2016).

2.3 Structural Capital

Structural capital is routine knowledge, including knowledge stored in a database of procedures, publications, and organizational

culture that can create value for the organization (Hejazi, Ghanbari, & Alipour, 2016). According to Kong (2017), structural capital is often seen as a supporting infrastructure for innovation in the development of organizational strategies. Structural capital includes a storehouse of non-human knowledge in an organization and is also a supporter of human capital.

2.4 Relational Capital

Relational capital is defined as all resources related to external relations (Martini, Corvino, Doni, & Rigolini, 2016). According to Seleim and Bontis (2013), relational capital represents the value or knowledge possessed by each country related to the wider world of the economy, including national business relations, government, and partners.

2.5 Financial Capital

Financial capital is any economic resource that is measured in terms of money and used to meet the needs of the entity. In the NIC, financial capital is measured by one indicator, namely the GDP of each country (Lin & Edvinsson, 2010).

3. Research Method

This study compares disclosures related to NIC in developing Asian countries. The data used in this study were taken from the World Bank, which is the last data reported. The NIC disclosure indicator was adopted from research conducted by Seleim and Bontis (2013) and Lin and Edvinsson (2010). However, there are several indicators added by the authors, because according to the authors these indicators can be used to measure a country's NIC. The indicators related to NIC disclosure used in this study are as follows.

Elements of National Intellectual Capital

Human Capital

HC1	Higher Education School Enrollment (% gross)
HC2	Student-Teacher Ratio in Higher Education
HC3	Literacy Rate of Total Adults (% of people aged 15 years and over)
HC4	Total Workforce
HC5	Individual Internet Users (% of the population)
HC6	Public Expenditure on Health (% of GDP)
HC7	Public Expenditure on Education (% of GDP)

Structural Capital

- SC1 R&D (Research and Development)
Expenditure % of GDP
SC2 R&D Research (per million people)
SC3 Population Patent Application
SC4 Timeframe Required for License

Relational Capital

- RC1 Fixed Telephone Subscribers (per 100 persons)
RC2 Foreign direct investment net inflows (% of GDP)
RC3 Grants and Other Income (% of revenue)
RC4 Exports of Goods and Services (% of GDP)

Financial Capital

- FC GDP per capita

Source: Seleim and Bontis (2013) and Lin and Edvinsson (2010)

From the indicators used to measure NIC above, there are several indicators developed from the indicators proposed by Seleim and Bontis (2013), including indicators of financial capital. The author adds an indicator of financial capital, which is measured by the GDP of each country because GDP is the most common measure that can show the financial wealth of a country.

4. Result and Discussion

In the graph presented, there are several indicators whose values are logarithmic due to balance with other data. College school enrollment (% gross) is the percentage of high school graduates who apply to university regardless of age. The average college enrollment rate (% gross) in developing Asia is 39.45%. Turkey occupies the highest percentage of 115%. Meanwhile, Yemen has

the lowest percentage at 10%, but the disclosure was last reported in 2011.

The student-teacher ratio for high schools is the average number of students per teacher in high schools. Comparison of student-teacher ratios across countries is influenced by the definition of teacher and by differences in class size by class and number of hours taught, as well as by different practices adopted by countries such as part-time teachers, school shifts, and multigrade. The average student-teacher ratio for high schools in developing Asia is 20.86. Syria has the highest score for a high school student-teacher ratio of 64. The country with the lowest score is Turkmenistan, with a score of 5, which was last reported in 2015.

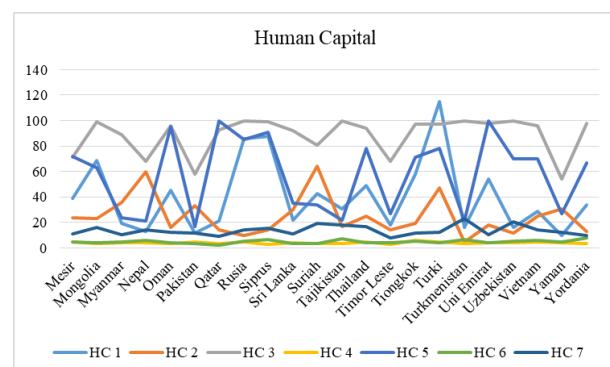
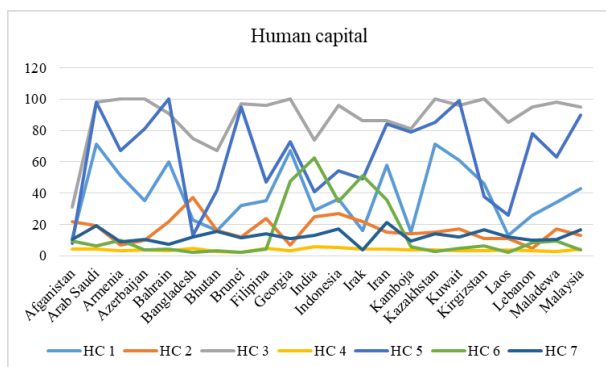
The literacy rate is an outcome indicator for evaluating educational attainment. The data can predict the quality of the workforce in the future. It can also be used as a proxy for the effectiveness of the education system, and a high literacy rate indicates the capacity of the education system to provide a large population with opportunities to acquire skills. The accumulation of educational attainment is the basis for further intellectual growth and social and economic development. Countries with a 100% literacy rate include Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan. Meanwhile, the country with the lowest literacy rate in Afghanistan with a score of 31%.

Table 1. Indicator value of Human Capital

Country	HC1	HC2	HC3	HC4	HC5	HC6	HC7
Afghanistan	11	22	31	10657.9	8	78.38	3.2
Saudi Arabia	71	19	98	14455.6	98	14.37	5.1
Armenia	51	7	100	1175.54	67	84.28	2.7
Azerbaijan	35	10	100	4881.65	81	72.8	2.7
Bahrain	60	22	91	1010.05	100	30	2.3
Bangladesh	23	37	75	67225.7	13	73.87	1.3
Bhutan	16	16	67	378.37	42	13.16	6.9
Brunei	32	12	97	217.21	95	4.86	4.4
Philippines	35	24	96	43719.2	47	4.4	3.2
Georgia	67	7	100	1892.48	73	47.67	3.8
India	29	25	74	471689	41	62.67	3.5
Indonesia	36	27	96	134616	54	34.85	2.8

Country	HC1	HC2	HC3	HC4	HC5	HC6	HC7
Iraq	16	22	86	10357	49	51.35	3.6
Iran	58	15	86	26813.3	84	35.83	3.7
Cambodia	15	14	81	9163.84	79	57.53	2.2
Kazakhstan	71	15	100	8778.46	85	33.47	2.9
Kuwait	61	17	96	2386.04	99	10.82	6.6
Kyrgyzstan	46	11	100	2440.85	38	52, 44	5.4
Laos	13	11	85	3828.78	26	48.55	2.9
Lebanon	26	5	95	2317.84	78	33.22	2.6
Malaysia	43	13	95	15904.2	90	35.12	4.2
Egypt	39	24	71	29077.3	72	4.95	3.9
Mongolia	69	23	99	1422.48	63	3.79	4.9
Myanmar	19	36	89	22951.5	24	76.45	2
Nepal	13	60	68	16017.4	21	50.8	4.4
Oman	45	16	96	2678.19	95	5.99	5.4
Pakistan	12	33	58	72334.8	17	56.24	2.5
Qatar	21	14	93	2146.74	100	9.54	3.2
Russia	86	10	100	71903.6	85	38.31	4.7
Cyprus	88	14	99	639.28	91	6.77	5.8
Sri Lanka	22	30	92	8552.78	35	50.65	2.1
Tajikistan	31	17	100	2329.16	22	68.42	5.7
Thailand	49	25	94	38483.4	78	11.01	3
Timor Leste	18	14	68	560.16	27	7.09	6.8
China	58	19	97	770951	71	5.35	3.5
Turkey	115	47	97	32317	78	17.49	4.3
United Arab Emirates	54	18	98	6820.22	100	4.23	3.1
Uzbekistan	14450.960.34	12	100		70	16	5.1
Vietnam	29	25	96	56542.4	70	44.9	4.1
Yemen	6956.39	31	54	10	27	80.96	5.2
Jordan	34	13	98	2595.85	67	7.79	3

Source: <https://data.worldbank.org/>



The labor force data consists of people aged 15 years and over who become labor for the production of goods and services during a certain period. The data also includes

unemployed people who are looking for work. The average total workforce in developing Asian countries is 45,487.7 million people. China is the country with the largest

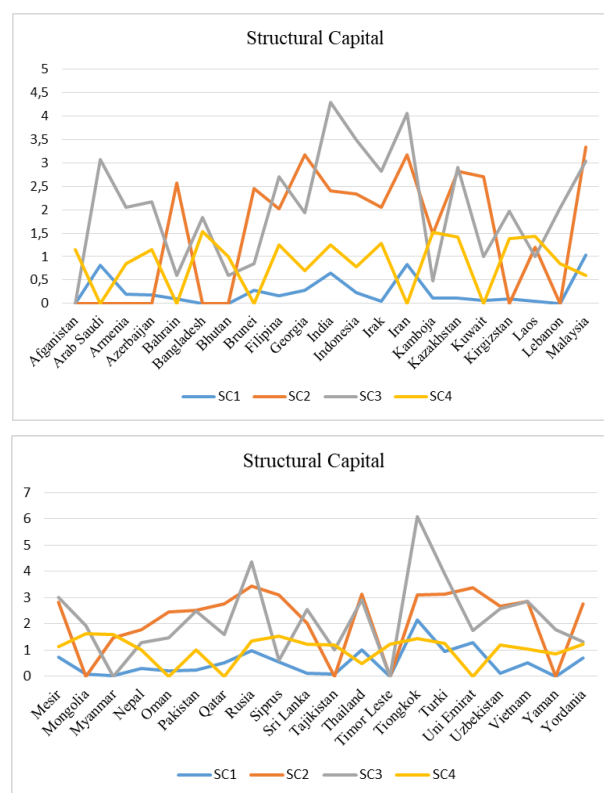
workforce, with 770,951 million people. Nonetheless, the number shows a downward trend in recent years in China. One of the causes of the shrinking labor force is a controversial policy that is intended to improve people's living standards and optimize the distribution of resources through control. However, the policy also had a negative impact on the labor market, pension system, and other social aspects. Today China is an aging society, where the number of old people is increasing and the number of young people is lacking. Meanwhile, the country with the least labor force is Brunei, with a total of 217.21 million people.

Internet users consist of individuals who have used the Internet through computers, cell phones, digital TV, etc. Information and communication technology provides excellent opportunities for progress in all walks of life in all countries, and these opportunities include opportunities for economic growth, improved health, better service delivery, learning through distance education, and socio-cultural advancement. The average Internet user in developing Asian countries is 60.86% of the population. The United Arab Emirates occupies the first position with 100% of the population using the Internet. Meanwhile, China occupies the first position, with 988.99 million Internet users compared to countries around the world. But compared to its total population, China's Internet penetration rate is lower than other Asian countries. The Internet users in Afghanistan are only 8% of the total population.

The level of health spending is expressed as a percentage of GDP. Strengthening health financing is one of the goals of sustainable development 3 (SDG 3.c.), namely building good health and well-being. Health financing is also important to achieve universal health coverage, which is defined as all people getting the quality health services they need without suffering financial hardship. The average public expenditure on health in developing Asia is 9.78% of GDP. The largest health expenditure of GDP in India, which accounts for 62.67% of GDP. India's public health spending continues to increase as its population continues to grow as well. Health spending in Laos is only 2.25% of their GDP.

However, if viewed from a per capita point of view, Bangladesh is the country with the least expenditure on health, which is 41.91 US dollars.

The percentage of government spending on education is useful for comparing education spending between countries in terms of the size of their economies. A high percentage indicates a high priority for education and an income-generating capacity for public expenditure. The average government spending on education in developing Asian countries is 13.15% of GDP. The highest percentage of government spending on education is in Turkmenistan, 23% of GDP. Meanwhile, the lowest percentage of government spending on education is in Iraq, with a value of 3.6% of GDP.



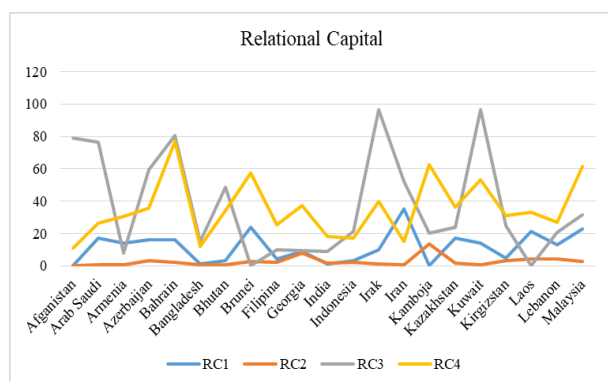
Many kinds of literature show that research and development (R&D) activities have a significant impact on the economy leading to increased productivity, competitiveness, and economic growth (Oglobina, Faria, & Cabral-Cardoso, 2002). From the graph above, it can be seen that the country that spends the most on R&D is China, with 2.14% of their GDP or Rp. 315,008 million. Currently, China is the second-largest performing country after the US in terms of R&D spending and accounts

for 20% of the world's total R&D spending. It is also prominent in industries that intensively use scientific and technological knowledge. On average, developing countries in Asia spend 0.38% of its GDP on R&D. As for some countries that are not known to disclose their R&D spending, including Afghanistan, Bangladesh, Bhutan, Lebanon, Timor Leste, and Yemen.

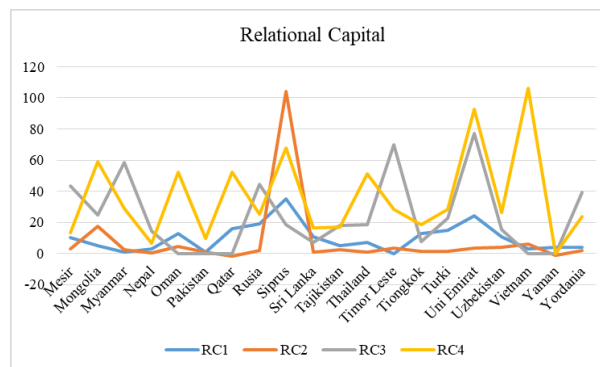
Meanwhile, the country with the highest number of R&D researchers (per million people) is Russia, which is 2,784 million people. The United Emirates occupies the second position with the number of researchers as many as 2,379 million people. The least number of R&D researchers in Laos with 16 million researchers, the last disclosure of which was in 2002. The average R&D in developing Asian countries is 736 (per million people).

Meanwhile, the highest patent application in developing countries in Asia is China, with 1,243,568. In the recently released 2020 annual report of China's National Intellectual Property Administration (CNIPA), the number of invention patent applications filed in China in 2020 was 1.497 million, a year-on-year increase of 6.9%. Some countries whose patent applications are unknown include Afghanistan, Myanmar, and Qatar.

An operating license means any approval, permit, application, or registration necessary for a company's lawful and effective operation of all of its businesses. From developing countries in Asia, the one that takes the longest to get a license is Mongolia, which takes 42 days. The country that only needs a short time of 1 day in Bhutan, which was last disclosed in 2015. The average time it takes developing countries in Asia to get a license is 17 days. Some of the undisclosed countries include Saudi Arabia, Bahrain, Brunei, Iran, Kuwait, Oman, Qatar, and the United Emirates.



Fixed-line subscriptions refer to the number of active analog fixed telephone lines,



voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice lines and fixed public telephones. The quality of economic infrastructure including electricity and communications is an important element in investment decisions for foreign domestic investors. With the rapid development of mobile telephony and the global expansion of the Internet, information and communication technologies are increasingly recognized as development tools that contribute to global integration and increase the public sector's effectiveness, efficiency and transparency. The average fixed telephone subscribers in Asian countries is 10.87 (per 100 people). The highest number of fixed telephone subscribers in developing Asia is Iran, with a value of 35 (per 100 people).

Foreign direct investment is a net inflow of investment to obtain a long-lasting management interest in a company operating in an economy other than the investor's economy. The average foreign direct investment from 49 developing countries in Asia is 5.21% of GDP. The country with the highest foreign investment in Cyprus, which is 103.93%. This value makes Cyprus the country with the highest percentage value of GDP for foreign investment based on 181 countries in 2019. However, if you use the billion-dollar currency, Cyprus ranks 18th out of 186 countries in 2019 with a total of 25,930,000,000 dollars US. Meanwhile, the country with the lowest score was Qatar, with a score of -1.6%.

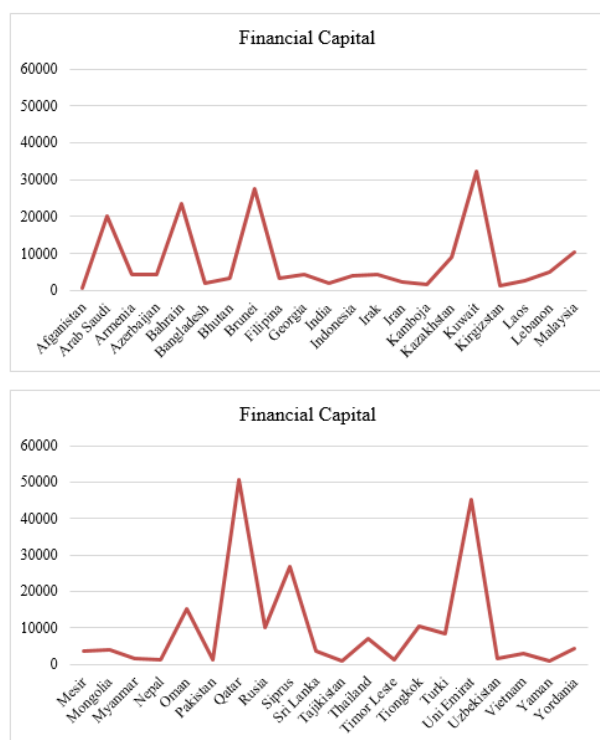
Grants and other income including grants from other foreign governments, international organizations, and other government units; interest; dividend; rent; non-payable receipts

for general purposes (such as fines, administrative fees, and entrepreneurial income from government ownership of property); and voluntary acceptance. The highest grants and other income (% of income) among developing Asian countries is Kuwait at 96.6% of income or equal to 3,342,000,000 (Current LCU). However, when viewed based on the Current LCU value, Indonesia is the country with the highest rank in grants and other income with a value of 416,278,663,334,390 in 2019. The average grant and other income (% of revenue) in developing Asian countries is 37.14%, while the lowest percentage of income is Sri Lanka, which is 7.1%. The countries that are not known to disclose grants and other income include Brunei, Laos, Oman, Pakistan, Qatar, Vietnam, and Yemen.

Exports of goods and services consist of all transactions between residents of a country and the rest of the world that involve changes in ownership from residents to non-residents of general merchandise, net exports of traded goods, non-monetary gold and services. The average export of goods and services (% of GDP) of developing countries in Asia is 36.65%. Meanwhile, the country with the highest export of goods and services (% of GDP) is Vietnam, which is 106.1%, this value makes Vietnam the country with the highest

export of goods and services (% of GDP) number 7 based on 139 countries in 2020. Then the lowest value of exports of goods and services (% of GDP) developing countries in Asia is Nepal with 6.8% of GDP. While China is the top country with exports of goods and services in the world in 2020. Exports of goods and services in China amounted to 2,732,365 million US dollars which accounted for 13.72% of world exports of goods and services. As for developing countries in Asia, where the disclosure of exports of goods and services (% of GDP) is unknown, only Yemen is known.

GDP per capita is gross domestic product divided by the mid-year population. GDP can be used as a benchmark for a country's economic growth so that it can be used as a reference for what needs to be improved. The average GDP per capita in developing Asia is 8,974.71 USD. While the highest GDP per capita in developing Asian countries is Qatar with a value of 50,805.5 USD. This is because Qatar's oil production and income have increased dramatically, making Qatar one of the highest per capita income countries in the world. The United Emirates is ranked second in developing Asia with a GDP per capita of 45,103.3 USD and Brunei Darussalam is in the third position of 27,443 USD. While the lowest GDP per capita in developing Asian countries is Afghanistan.



5. Conclusion

Most countries in Asia have made disclosures regarding their national intellectual capital (NIC). However, there are several countries that do not disclose some of their NICs, including Afghanistan, Bangladesh, Lebanon, Maldives, Syria, Timor-Leste, and Turkmenistan. The countries that did not update their NICs were Afghanistan, Brunei, Iraq, Laos, Lebanon, Syria, Turkmenistan, and Yemen. The countries of Qatar, the United Arab Emirates, and Brunei Darussalam have the highest scores on the indicator of financial capital as measured by GDP per capita. However, on other NIC indicators besides financial capital, the countries of Qatar and the United Arab Emirates and Brunei Darussalam have NIC values that are not too high. This is because the countries of Qatar and the United

Arab Emirates have tangible assets in the form of a lot of natural oil resources. This needs to be further proven regarding whether human capital, structural capital and relational capital are sustainable with financial capital. While Afghanistan is a country that often does not disclose NICs, does not update NIC reports, and has low NIC values. This is in accordance with the order of GDP of the country where Afghanistan is ranked last.

The limitation of this study is that some countries are not known to disclose indicators related to their NICs on the worldbank website. So suggestions for further research are suggested to take data related to NIC not only from the worldbank, but can also use the original site created by each country.

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