



Research Article

Comparison of national intellectual capital of four Asian countries

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ABSTRACT

The purpose of this research is to compare the National Intellectual Capital (IC) of four Asian countries, which are Pakistan, China, India, and Bangladesh. This comparison highlights the importance of intangible assets i.e. IC, in the competitiveness of the countries. The IC framework includes Market Capital (MC), Renewal Capital (RC), Human Capital (HC), and Process Capital (PC). The longitudinal data for 6 years i.e. 2014 to 2019 has been studied for four countries. The IC framework is further studied with the help of 21 indicators. The study showed that the selected countries are highly competitive with each other but a few areas are weak. The result for MC showed that in the fiscal year 2016 trend was at its highest for Pakistan. As for India, it was highest in 2015, but Bangladesh faced a major decline in 2018. China's MC was steady up until 2018 but dropped in 2019. Pakistan's HC dropped drastically since 2017, but for Bangladesh and China, MC showed an improved position. PC for Pakistan, India, and Bangladesh showed a downward trend in the year 2019, only China's PC slightly improved. Looking at RC for all the four countries, they showed an improved position in 2019. It also includes recommendations for policymakers. The results showed that IC and competitiveness are positively co-related, and also highlight the importance of further investment in developing the IC of countries.

Keywords: *National Intellectual Capital; Asian Countries; National Competitiveness; Pakistan*

1. INTRODUCTION

This research aims to compare the Intellectual Capital (IC) of four countries of South Asia. The countries selected for the study are Pakistan (ranked 110), India (ranked 68), China (ranked 12) and Bangladesh (ranked 105) in World Competitiveness Report 2019 (Schwab, 2019). These countries were under foreign influence for more than 100 years, (Harold & Nader, 2012; Sengupta et al., 2019). The undeniable strategic location of these countries enhances the geopolitical importance of the region also. Currently, some of the countries are faced with the issues of poverty, high population density, and lack of infrastructure. Although faced with major challenges, the competitiveness of the countries is commendable and comparison of Intellectual Capital will reveal the potential and strengths of the selected countries. Do these nations possess underlying qualities that have enabled their economies to thrive in spite of their physical surroundings? The most likely response involves aspects of intellectual capital.

Intellectual Capital has been defined as “intellectual material, knowledge, information, intellectual property, experience, that can be put to use to create wealth” (Swanson, 1999). Earlier studies have proved that industries, which invested heavily in IC, could meet international standards and also could gain corporate social advantage (Chen, 2008). The Nordic countries have been providing free education and financing higher education, which have helped to develop highly qualified human capital, and are also well known for excellence regarding intellectual Capital (Yeh-Yun & Edvinsson, 2008)..

Growth and development of Asia has been the largest contributor to the global economy over the last quarter of a century, driven mainly, by cheap labor. Sustaining the growth trend in Asia would be difficult, as the poverty levels in the region remain high, and inadequate resources are available to address the problems. The economies of the region need to look for a different approach not only to sustain but also accelerate their economic progress and the knowledge-based economy (KBE) is the only platform that will enable them to do both (Feldman & Link, 2001). This above statement will lead us toward the research question, stating that whether the economies of the region will take a step forward in developing new approaches?

South Asia's growth has dropped by 3 percent in terms of GDP growth for the year 2020, in line with a global downward trend due to Covid-19 pandemic. A marginal turn around in investment and private consumption could raise the growth of South Asia by up to 4.9% in 2021 (Nakao, 2019). Per Capita income was US\$ 1535 in 2015, which has gone up to US\$ 2018.5 in 2019 (World Bank, 2020). Why did South Asia fail to undergo a successful economic revolution and emerge from the global financial crisis? Do intangible assets aid in promoting economic expansion? Can other growing economies offer South Asia some examples to follow?

Pakistan has made significant progress over the past years to restore macroeconomic stability, although the progress has been slow and has faced some downfalls. The GDP has steadily increased from \$40.01 billion in the 1990 to \$314.57 billion in 2018. Whereas, the GDP annual growth was 4.5% in 1990 which dropped to 1.6% in 2010, but now has improved and reached 5.8% in 2018 (World Bank, 2020). Currently, Pakistan ranks 116 for the macroeconomic stability, and ranks 92 for the inflation rates, globally. However, for the debt dynamics, it ranks 134 (Schwab, 2019).

Bangladesh has made significant progress in poverty reduction, supported by steady economic growth, based on the \$1.90 per person per day international poverty line. Per Capita Income of this country during the FY 2014-2015 was US\$ 1314, which has risen to US\$ 1751 in the FY 2018-2019 (Lewis, 2013). The GDP for Bangladesh has increased from US \$31.30 billion in 1990 to US\$ 274.04 billion in 2018. The GDP annual growth rate also shows the same, as it was 5.6% in 1990, 5.3% in 2000, again reached 5.6% in 2010 and has increased to 7.9% in 2018 (World Bank, 2020).

India has made a significant reduction in poverty levels in recent years, with extreme poverty falling from 46% to an estimated 13.4% over the two decades leading up to 2015. While India continues to be home to 176 million poor people, it seeks better growth, as well as promoting inclusion and sustainability by reshaping policy approaches to human

development, social protection, financial inclusion, rural transformation, and development of infrastructure. During the FY 2014-2019 per capita income of India has risen from US\$ 1605.6 to US\$ 2104 (World Bank, 2019). The GDP for India was US\$ 320.98 billion in 1990, and has shown a remarkable increase and in 2010 was US\$ 1675.62 billion. In 2018, the GDP was US\$ 2713.17 billion. The annual GDP growth rate was 5.5% in 1990, dropped in 2000, improved a lot until 2010 and was 8.5%. However, it came down to 6.1% in 2018 (World Bank, 2020).

China's economy will rise by less than 2% by the year 2020, as Covid-19 combines with a global demand slump (Gosens & Jotzo, 2020). The GDP growth for the year 2020 fell to 1.8% from 3.7% in March. In the first quarter, China's economy experienced a historical slowdown, with the GDP falling 6% to 8% from last year. The budget deficit to GDP ratio was 3.5%, due to the pandemic across the globe. According to the survey, GDP ratio should be between 10% - 15%. GDP per capita was US\$ 8254.30 in 2019 (Galdini, 2022). The GDP for China was US\$ 360.86 billion in 1990 and finally in 2018 it was US\$ 13,894.82 billion. Whereas the annual GDP growth rate was 3.9% in 1990 and steadily increased till 2010 and was 10.6%, but by 2018 it had dropped to 6.8% (World Bank, 2020)

South Asia has continued to show strong economic growth over the past decade. The global GDP share and the purchase power parity (PPP) for Asia has increased from 37% in 2010, to 42.8% in 2018, whereas, the share for Europe and North America declined. The GDP of the regions, Africa, South America, and West Asia, experienced little changes from the last global GDP statistics for the regions. The five largest economies in Asia, in terms of GDP and PPP are led by China and India. The total contribution of the region has a major share by China, of 43%, followed by India with a share of 17.8%, the rest of three countries are Japan, Indonesia and Korea, respectively (Nakao, 2019).

South Asia scores 36.3 for the innovation capability on a 0-100 scale. South Asia also scores low in the group for ICT adoption (35.1), Infrastructure (59.2) and Macroeconomic stability (74.7) (Schwab, 2019).

In the world ranking, China ranks 24th for the innovation capability, followed by India, which ranks 35. Pakistan is far behind on the 79th rank and Bangladesh falls on the 105th rank (Schwab, 2019). Pakistan and Bangladesh demonstrate the region's least technical readiness to integrate all of its population (especially those living in the remote areas) into the modernization processes for major emerging economies.

This study initially developed a measurement model to quantify national IC before comparing the IC of the four competitive Asian countries using the economic world forum's world competitiveness reports.

2. THEORETICAL FRAMEWORK

The IC of the selected countries is calculated based on various variables selected from the Global Competitiveness report. The data has been collected for 6 years i.e. 2014 to 2019. The data has been collected from the respective official websites of the Global

Competitiveness Reports, Asian Development Bank (Nakao, 2019) and World Bank for statistics.

The country specific variables have been adapted from (Tsouli & Elabbadi, 2018). Finally, the composite indices have been developed and the weighted average for 6 years is plotted to compare the IC frame work, namely, market capital, process capital, renewal capital and human capital (Sandhu et al., 2011).

2.1. MEASUREMENT PROPOSED BY ACADEMIC MODELS:

A few models for the measurement of National IC have been developed and the classification is given in Table 1 below (Edvinsson & Malone, 1997b). The models consider the intangible indicators of the knowledge based economy, which lead to the economic growth and prosperity. The variables are regarding the human capital, market capital, process and renewal capital.

Table 1. Academic Model

Model	Author(s)
Intellectual Capital Navigator (ICN)	(Edvinsson & Malone, 1997a)
Intellectual Capital Index (ICI)	(Weziak, 2007)
Intellectual Capital Monitor (ICM)	(Bratianu, 2014)
National Intellectual Capital Index (NICI)	(Bontis, 1998)
Intellectual Capital dynamic value (ICDV)	(Stähle & Bounfour, 2008)
Integral Analysis (IA)	(Navarro, Ruiz, & Peña, 2011)

Source: (Tsouli & Elabbadi, 2018)

2.2. MEASUREMENT PROPOSED BY INTERNATIONAL ORGANIZATIONS:

A few models have also been developed by the international organizations. The results of these models are quite similar to the academic models. These models effectively combine the intangibles of the KBE with the traditional economic growth and measurement approaches. The intangible assets have a high value for academic models as well as the models developed by international organizations.

3. LITERATURE REVIEW

The pioneers who worked with the concept of IC are (Brooking, 2010; Edvinsson & Malone, 1997a). IC has no specific definition. Some scientists have provided their views, which offer a fundamental perception. Proposed definition of IC has been provided by (Swanson, 1999). He described it as a knowledge-filled package. He also said that this includes employee abilities, technology, patent rights, procedures, customer-related data, vendors, and stakeholders in businesses. A board definition on IC has also been explained by (Brooking, 2010). IC is the fundamental word provided to the mixture of intangible assets enabling the business to function appropriately (Luthy, 2008).

There are many organizations still unaware of its real significance and IC value. The basis of competitive edge is intellectual capital (Kalkan et al., 2014). Another definition of IC is that; any organization that can generate the value that is full of true information,

technology and message system, education, customer relationships, and dealer relationships (Swanson, 1999).

There are four IC measurement methods. One approach is to acknowledge and estimate various sections of IC with due regard to money. The other strategy is to calculate surplus percentage return on investments with the normal tangible resources of the company in order to evaluate their extra annual income. The third strategy focuses on the price and IC is calculated by the difference between the market and the book value (Attar et al., 2018).

IC includes all assets through psychological operations such as achievement, modernization, and the creation of distinct understanding (Yeh-Yun & Yi-Ching, 2007). IC positively influences knowledge management and upgrades its learning capacity. Knowledge innovation plays a key role in creating the economy's product quality and economic growth of the company. The primary players in the company's achievement are its workers (Erickson & Rothberg, 2009).

A recent study which measures the intellectual capital of the EU countries, states that the knowledge based economies provided the impulse which made it easier to focus on the factors which could not be observed directly, regarding the production processes. These factors are not only difficult to select but also to measure. However, once they have been selected, it becomes easy to predict the numbers further ahead. As the results prove a strong relationship between GDP per capita and IC indices, hence, it is evident that IC explains a significant level of the development of the countries (Weziak, 2007).

Another study about 148 developing countries, state that national relational capital holds a lot of weight, when measuring economic performance. Also, that the variance in the economic performance is 70% due to the national intellectual capital (Seleim & Bontis, 2013). The national HC has positive effects on the economic performance (Lynham & Cunningham, 2006). Investment in Human capital mainly helps in building up the knowledge structures, which further lead to structural capital (Rastogi, 2002). The developed countries are solely dependent on the knowledge-based societies and knowledge based economies. It is evident to develop a more generalisable theory regarding the national IC, for countries across the world (Seleim & Bontis, 2013).

IC is important for organizational performances. There are few studies, which have been carried out on the effects of organizational performance on IC's dimensions (human capital, structural capital, and relational capital). There is a research gap, which exists while investigating IC dimension in developing countries. The comparison of IC-based countries will lead policymakers to benchmark their skills, abilities, and promote integrated national growth. Since the majority of measures capture IC and its influence at the national level, the methodology for evaluating national intellectual capital is not widely recognized (Tsouli & Elabbadi, 2018).

Measurement and managerial activities vary between countries, industries, and businesses. There is still no universal perception of IC measurement and widely accepted standards. The methodology is in progress and plenty of unanswered issues are still there. Company IC methods vary and rely on various factors. But the influence of these variables

is in practice and there is a noticeable gap in the literature to access those factors which are affecting IC measurement for methodology (Užienė & Stankutė, 2015).

IC focuses on adapting and adopting an organization's technology of management. Its basic principle is that the effect of IC should be better understood rather than just IC interventions (Secundo et al., 2018). A study regarding the influence of IC on the competitiveness of organizations, suggests that the organizations which focus on fully utilizing the HC index of the IC, would be able to sustain and grow further in the future in the highly competitive market. Non-tangible assets are of such value and importance, that they can substitute the deficiency of the financial assets in the process of value creation (Ashton, 2013). As the process of innovation, can be attributed to the research done by HC, and with a combination of the Structural capital, enterprises can gain significant competitive advantage (Gagné, 2001).

The importance of IC is undeniable, especially HC, research has proved that the any organization is driven towards success due to the knowledge and the experience of the employees (El Telbani, 2013). The knowledge and skill of the employees not only helps it develop, but also grow and expand and ultimately lead towards sustainability (Adams et al., 2010).

Other studies have explored the relationship between IC and economic value (Rajaei et al., 2019) and IC and competitive advantage (Attar et al., 2018), and have not found any meaningful relationship. However, all organizations should initially evaluate their IC. Further, manage and develop it for future sustainability. Moreover, it proves that the investment on one IC component has a meaningful impact on the other IC components also. In other words, if the IC indicators are synergized, impactful result would be witnessed (Sharabati et al., 2010).

The key aspects of recognition of IC include human capital (i.e., expertise, schooling, intrinsic and extrinsic motivation), organizational capital which includes the capacity of a business to deploy and expand. Market resources and rapid adaptation to environmental changes are important intangible assets for the creation of business networks. It usually reflect the efficiency of integrating existing resources into organizing processes as well the capabilities to execute effective strategies, i.e., the integration of the values and access of the stakeholders, customers and suppliers (Liu & Jiang, 2020).

In the past years, not only academicians and CEOs, but also national policy makers have gained growing attention from knowledge management and IC. The report of World Bank stated that in addition to rising profits, implementing policies to raise a country's intellectual wealth would improve the lives of people. A country's knowledge management is intangible assets and their impact on future national value is important because they represent the source of competences and skills that are regarded as key to domestic economic growth, human development, and life quality (Yeh-Yun & Edvinsson, 2008).

Intangible assets allow nations to identify and evaluate their talents and abilities. These evaluations can help to promote holistic national development through the adoption of

policies and practices (Malhotra, 2003). The major problem lies in the lack of a systematic reference system at the level of input and output measurements by the national IC (Pomeda et al., 2002).

While IC is widely recognized for its increased contribution to economic growth and development, there are still difficulties in appreciating and managing IC among governments, businesses, medium-sized enterprises, and ultimately holders of the intellectual property rights (Marr & Moustaghfir, 2005). IC evaluation and management has become a very important subject for all companies over the last years. In future, this will become much more important, as conventional accounting approaches do not fit the market climate in today's world. The goal is to understand how IC is measured in such organizations (Sharabati, Nour, & Eddin, 2013).

A different study has reviewed all the literature from 1960 to 2016 and the focus of this research was National IC, regional IC, and organizational IC. The study concluded that the research on IC should be conducted thoroughly in future, which will in turn help develop the strategies and device policies to attain sustainability for all three dimensions of IC, namely, national , regional and organizational IC (Pedro et al., 2018).

The very basis of the intellectual capital has also been studied thoroughly. The study was conducted from data taken from five countries from 700 plus firms, to study the factors, which constitute the intellectual capital. The results show that the basic elements of the IC are the same, across countries, however there are a few factors, which are different structurally, and culturally, which influence the IC. The results show that the management of IC will eventually become more uniform and similar (Inkinen et al., 2017).

Another study about the comparison of the national IC of South Africa with the IC of Poland and Romania, states that despite having a number of natural resources and advantages, South Africa is far behind Poland and Romania. The study is based on the longitudinal data for 15 years, from 2001 to 2015. Although the countries started with similar politically influenced backgrounds, and at the beginning, South Africa had a better IC ranking than the other countries. However, due to better policies they have long surpassed South Africa, and are currently doing well (Lin, 2018).

Although there is a lot of literature regarding the IC and also about the comparison of national IC, however, there is no study about the national IC regarding the Asian countries. The gap has been identified and hence the research has been conducted regarding the selected Asian countries.

This study contributes to emphasize human dedication and motivation. It is interesting that attention is paid to it, as it is concerned with human motivation. This is typically ignored by other techniques for measuring knowledge assets. Additionally, based on a very thorough knowledge audit questionnaire, the majority of metrics and indicators from this forum have not yet been established.

4. RESEARCH METHODOLOGY

This research proposes a measurement model using World Economic Forum (WEF) databases that are generally recognized with quantitative as well as qualitative indices Table 1. This article focuses on the IC framework most frequently used, with human, market, process and renewal capital being included. From the World Competitiveness Report (WER), the variables were chosen. The first type of national IC is the Human capital, which is described as individuals' competence to achieve domestic objectives (Bontis, 2004). In addition to information about co-workers and other specific communication skills, it comprises of the understanding of faiths, regulations, and values. The basis of human capital is education. The factors in this study include education system quality, local accessibility of research and training facilities, life expectancy, organized crime and commodities export (OECD, 2001).

The second type of national IC is the Market Capital, which is comparable to micro-compatible external relations and social capital. It reflects the country's abilities and success in offering appealing, competitive incentives to satisfy global customers' requirements and shares its expertise with the globe (Seleim & Bontis, 2013). The current research takes into account the accessibility of venture capital, prevalence of the index of foreign ownership foreign market size, transparency of public policy making, index of national market size.

The third type of national IC is the Process Capital, which is embedded in the infrastructure of a country, these sources enable data to be created, accessible and disseminated. This form of assets is evaluated by the intensity of local competition, politicians' government confidence, protection of intellectual property, easy access to loans (Luthy, 2008).

The last type of national IC is the renewal capital, which is defined as the future intellectual wealth of a nation and the capacity for innovation that supports the competitive benefit of a nation. It includes Company spending on R&D, University-industry collaboration in R&D, Capacity for innovation, Quality of scientific research institutions, Availability of scientists and engineers and Government procurement of advanced technology products.

Table 2 shows the comparison based on data of 6 years from 2014 to 2019, for four Asian countries. However, the variables have been selected from the Global Competitiveness report by WEF. The variables are further assigned weights according to their importance. Next, the current year ranking is divided by the base year ranking which is further multiplied by the assigned weights. We calculate the values for all the variables by the same process for each year. Next, all the values are merged up to get one major value (Tsouli & Elabbadi, 2018).

Table 2. Shows the names of all the 21 variables, which are included in this research.

Market Capital Index	Human Capital Index
• Venture capital availability • Prevalence of foreign ownership • Foreign market size index • Transparency of government policymaking • Domestic market size index	• Quality of the educational system • Local availability of specialized research • Life expectancy • Organized crime • Export of Goods
Process Capital Index	Renewal Capital Index
• Intensity of local competition • Public trust of politicians • Intellectual property protection • Ease of access to loans • Quality of overall infrastructure	• Company spending on R&D • University-industry collaboration in R&D • Capacity for innovation • Quality of scientific research institutions • Availability of scientists and engineers • Government procurement of advanced technology products

Source: (Tsouli & Elabbadi, 2018).

5. RESULTS AND DISCUSSION

The four Asian countries have common strategies, but they also have similar histories, in order to improve their competitiveness. The overall ranking sequence, in order is, as follows:

Table 3. Comparative ranking of means amongst Asian countries.

Mean of 2014-2019		Pakistan	India	Bangladesh	China
Market Capital	Mean	97.74	81.08	82.16	103.40
	Ranking	2	4	3	1
Human Capital	Mean	81.34	90.55	97.08	93.36
	Ranking	3	4	1	2
Process Capital	Mean	85.27	76.37	93.52	107.98
	Ranking	3	4	2	1
Renewal Capital	Mean	94.72	79.48	87.63	94.57
	Ranking	1	4	3	2

Source; Developed by the author

Table 3 shows the results of Human, Market, Process, and renewal capital of four most competitive countries. The result shows that, China ranked highest in Market Capital followed closely by Pakistan. Bangladesh ranked highest in Human Capital and China ranked highest in Process capital, and Pakistan ranked highest in Renewal capital (Tsouli & Elabbadi, 2018).

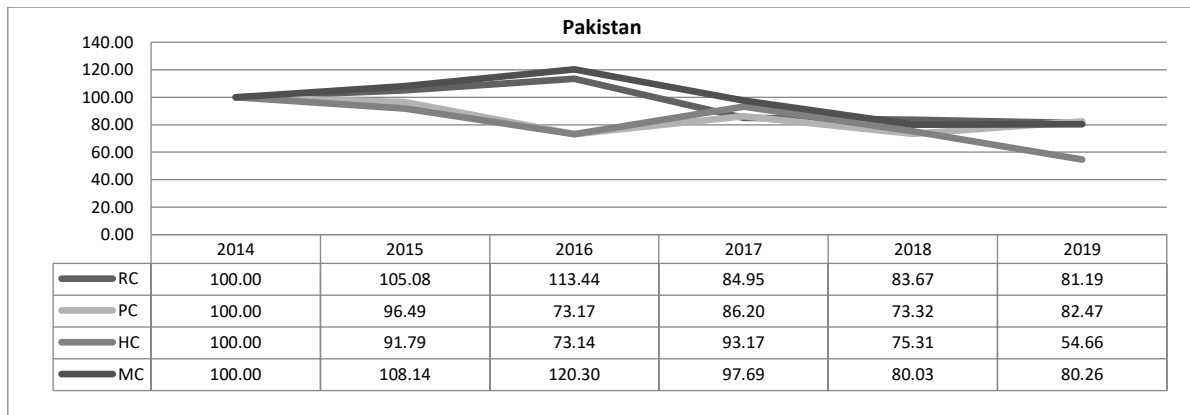


Fig. 1. Trends of Intellectual Capital in Pakistan

Source; Developed by the author

The results for Pakistan can be seen in a graphic form in Fig. 1. The MC index was at the highest in 2016. However, since then it has been gradually decreasing. It reached a value of 80.03 in 2018 and has shown slight upward trend in 2019 with a value of 80.26. The HC index can be seen to be at the best in 2017 with a value of 93.17, however, it has dropped drastically since then, and the value in 2019 was 54.66. About the PC index, it can be said that it shows a zigzag trend, as it was 96.49 in 2015, went further down to 73.17, improved to 86.20, dropped again in 2018 and in 2019 it again improved to 82.47. RC index was at the highest in 2016, dropped to 84.95 in 2017 and since, then has remained at a somewhat consistent value. In Pakistan, the economic growth is dependent on the Government policies. The Government is focusing on the development of HC. There is need to further investment at the secondary level, which will directly affect the technological progress. It is also one of the variables of PC. In the 1990s, the labor force and the expansion of the secondary education were not at the same rate so the percentage of educated work force declined (Abbas & Foreman-Peck, 2008).

Pakistan is, currently, lacking in MC as Foreign Market size is negligible, and the government is working to further improve the transparency in the government policymaking. Some other indices which are affecting HC, RC and PC and which need urgent attention are intellectual property protection, quality of overall infrastructure, exports, life expectancy, quality of education system and government procurement of advanced Technology. The government is focused towards investment in these areas.

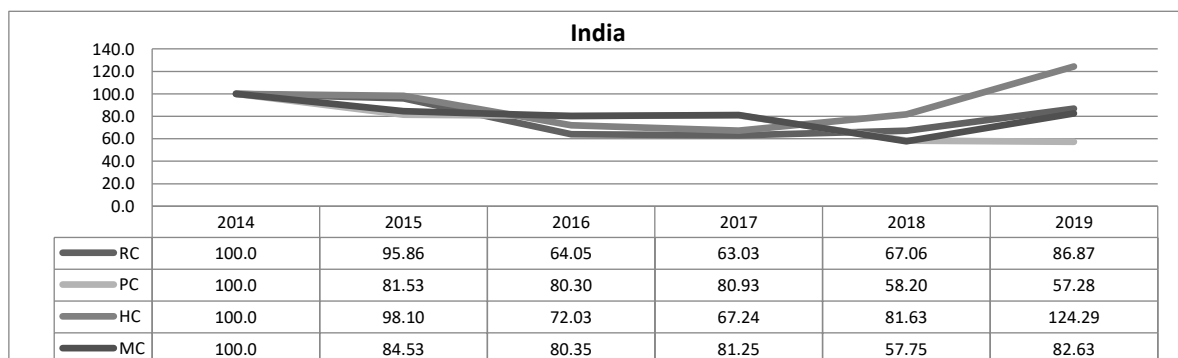


Fig. 2. Trends of Intellectual Capital in India

Source; Developed by the author

The overall results for India in Fig. 2 shows a downward trend initially until 2016, but the values remained consistent until 2017, again show a downward trend in 2018. However, in 2019 all the indicators are showing an upward trend. MC was at the highest index in 2015 with a value of 84.53. Next, it dropped in 2016 to a value of 80.35 improved a bit in 2017 but dropped drastically in 2018 and reached a value of 57.75 but improved in 2019 with a value of 82.63. The HC for India was 98.10 in 2015 but in the next three years, it kept on decreasing and dropped to a value of 67.24 in 2017, but then it improved and now has a value of 124.29 in 2019, which is even better than the base year value. The index for PC is highest in the year 2015. It decreases in the next year, slightly improved in the year 2017. However, it dropped to a value of 58.20 in the year 2018. The index of PC remained stable with a slight decrease in 2019 and was 57.28. The trend for RC was at the highest in 2015, the value for RC was significantly lesser than this in the next 3 years, however, later there was a remarkable improvement, and the index increased to 86.87 in 2019. There are a few factors contributing to the lack of economic growth in India. The factors are the initial state of the economy, culture and traditions, and the legal system. The demographics and the distribution of income also play a major part (Dossani & Kenney, 2002). In the comparison of indices for the all the countries, it is evident that India is falling in the 4th ranking. All the selected indices are lacking in ranking and are affecting the overall position of India in comparison to the other countries.

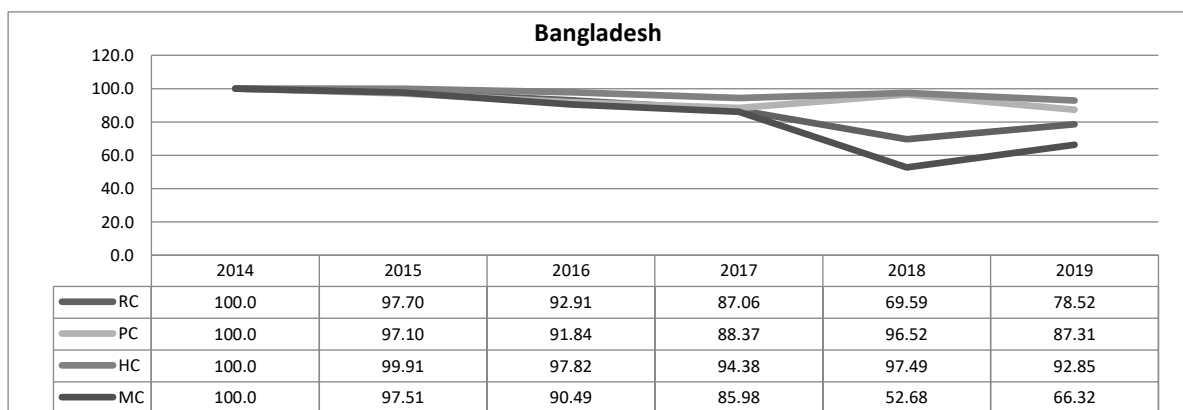


Fig. 3. Trends of Intellectual Capital in Bangladesh

Source; Developed by the author

The trend for Bangladesh in Fig. 3 showed a gradual downward trend, which reached to the lowest indices in 2018, but started increasing after that. The trend for MC, can be seen to have faced a major decline in 2018, however it recovered somewhat and the value for MC in 2019 was 66.32. The HC for Bangladesh has a steady trend with minor decrease in year 2017 with a value of 94.38, further went up next year, with a value of 97.49, but in 2019 the index reached a value of 92.85. The value for PC also decreased to 97.10 in 2015; however, it decreased steadily and the index was 87.31 in 2019. The value for RC was at 97.70 in 2015, but decreased for the next three years, but in 2019, the trend started improving and reached an index of 78.52. There are a few factors which hinder the economic growth like the power outages, government policies and currency value (Islam, 1978). For Bangladesh HC and PC show better index value, but is lacking in MC and RC.

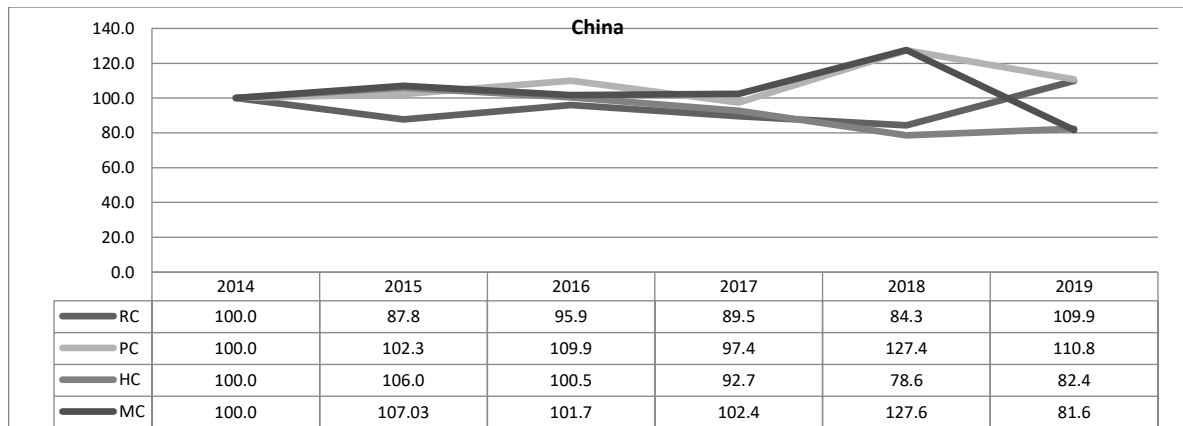


Fig. 4. Trends of Intellectual Capital in China

Source; Developed by the author

The results for China in Fig. 4 show mixed trends for the IC indicators. The MC steadily was at the highest index value of 127.6 in 2018; however, it dropped to index value 81.6 in 2019. The HC is continuously showing a downward trend and has drastically dropped to 78.6 in 2018, also being the lowest index for HC. Furthermore, HC improved slightly in 2019 with an index of 82.4, PC also had the highest index of 127.4 in 2018; however, it dropped to 110.8 in 2019. The RC index for China was 87.8 in 2015, improved in 2016, then faced a decline until the year 2018, and improved to 109.9 in 2019. China has invested a lot in the infrastructure during the 1990s. Hence, China has lesser power outages and loses about 2% revenue to power outages. Whereas, Bangladesh loses about 5.6% revenue to power outages. The Export GDP of China was 34.0 in 2004, but for Pakistan, India and Bangladesh it was 16.0, 19.1 and 15.5 respectively (Akpinar & Akdemir, 1996).

The intellectual capital of each country is showing an increasing trend for a few variables. India and Bangladesh have similar trend, which show an upward trend after 2018. It is also evident that Pakistan and China both have the lowest index value for HC among the other indicators.

The research also compares the four types of capitals individually for each country. As the countries share a number of similarities of high population density and lack of infrastructure, but over the years, we see the differences in the trends of all the countries for all the IC indicators. Table 4 shows the comparative ranking of means within Asian countries.

Table 4. Comparative ranking of means within Asian countries

Mean of 2014-2019		Market Capital	Human Capital	Process Capital	Renewal Capital
Pakistan	Mean	97.74	81.34	85.27	94.72
	Ranking	1	4	3	2
India	Mean	81.08	90.55	76.37	79.48
	Ranking	2	1	3	4
Bangladesh	Mean	82.16	97.08	93.52	87.63
	Ranking	4	1	2	3
China	Mean	103.40	93.36	107.98	94.57
	Ranking	2	4	1	3

Source; Developed by the author

The mean of all the indices of IC have been ranked with reference to the relative ranking for each country. For Pakistan, MC has the highest value, followed by RC. India is doing better with HC and MC. For Bangladesh HC has the highest ranking, followed by PC, RC and MC. China, however, is doing well and has the highest PC, followed by MC and RC. The value for HC is however, lowest for China.

The comparison of MC for all the countries in Fig. 5 does not show a similar trend.

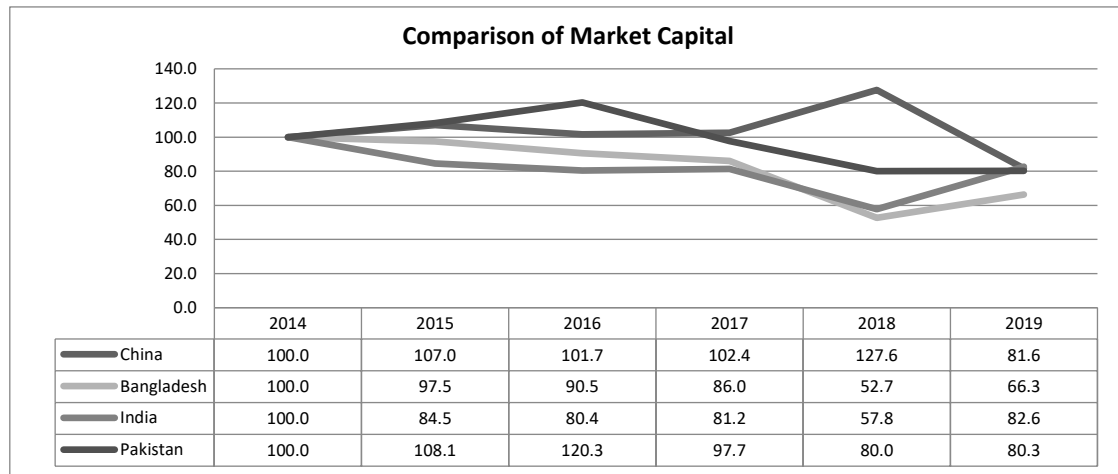


Fig. 5. Comparison of Market Capital of the four most competitive Asian Countries.

Source; Developed by the author

MC for Pakistan was as the highest value in 2016 of 120.3, which was also the best among all the countries, however it dropped drastically. For the next two years, the value has been stable. In 2017 and 2018, China had the highest value for MC. India had the lowest value for MC until 2017 but since then Bangladesh has the lowest value.

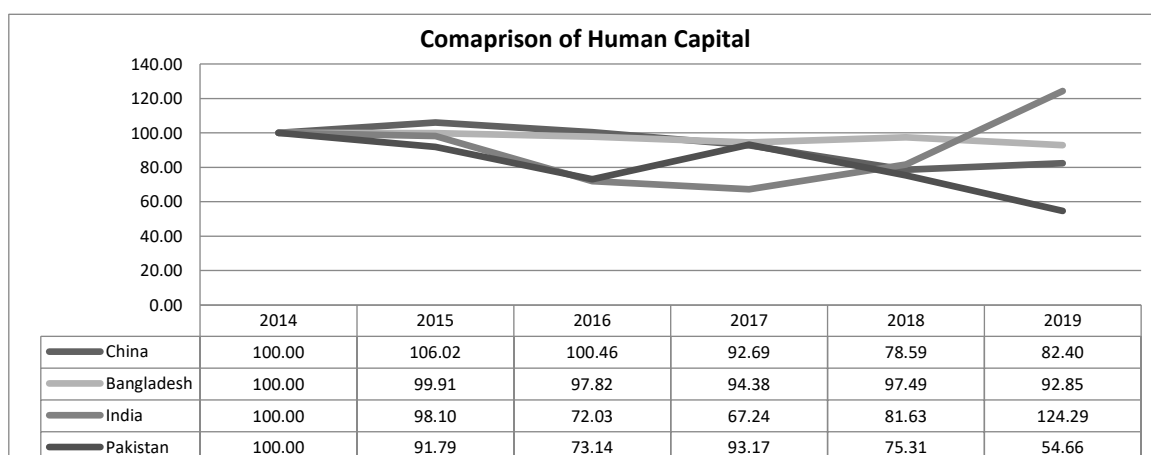


Fig. 6. Comparison of Human Capital of the four most competitive Asian Countries.

Source; Developed by the author

For the years 2015-2016, as shown in the above Fig. 6, China had the highest value for HC, however, the trend for Pakistan and India had taken a major dip. In 2017, the HC for Pakistan improved and came almost up to the level of China and Bangladesh whereas, HC value for India further decreased and was at the lowest index. The HC for Pakistan also

started decreasing for Pakistan in 2017 and reached the lowest index in 2019, however, the index for India reached the highest value in 2019, and the graph for China showed a slight upward trend.

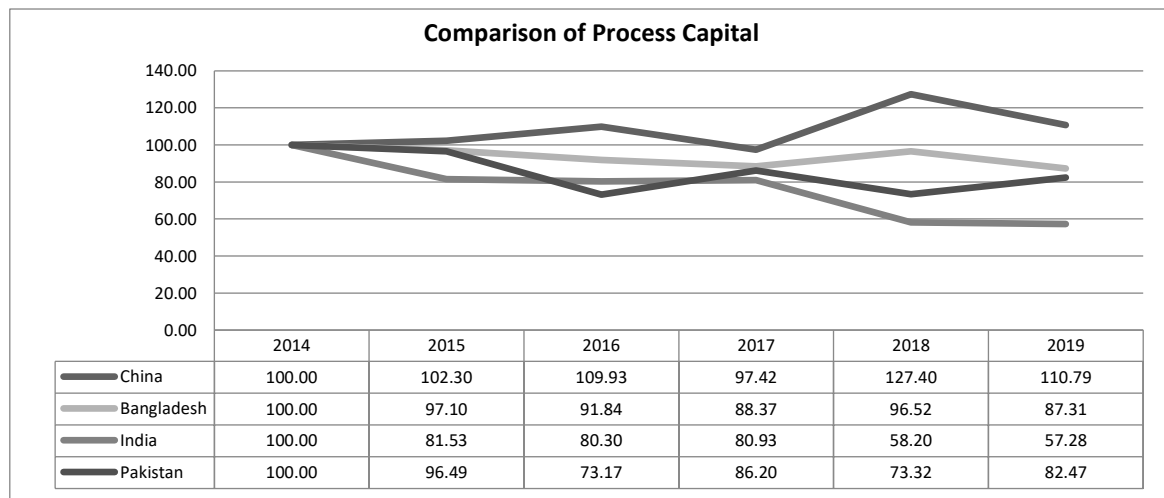


Fig. 7. Comparison of Process Capital of the four most competitive Asian Countries.

Source; Developed by the author.

The value for China was at the highest in 2015, as shown in the above Fig. 7, whereas all the other countries showed a downward trend. In 2017, China had the highest value for PC, and all the other countries had almost similar values. In 2018, India had the lowest value for PC and China the highest. However, in 2019, the values of PC show an increasing trend for Pakistan, but a downward trend for China India, and Bangladesh.

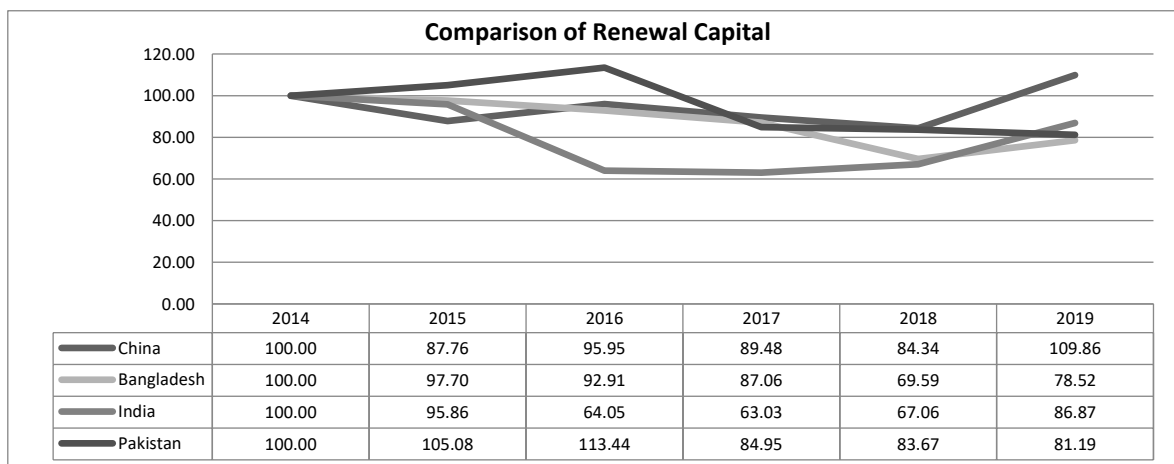


Fig. 8. Comparison of Renewal Capital of the four most competitive Asian Countries.

Source; Developed by the author

Fig. 8 shows Pakistan had the highest RC index of 113.44 in 2016 whereas, India had the lowest RC index. The RC had a downward trend for all the countries in 2017- 2018, whereas for India, the index value increased. However, in 2019, China is leading in RC with an index of 109.86 and India Pakistan and Bangladesh are following with 86.87, 81.19, and 78.52 indices respectively.

6. CONCLUSIONS:

The study compares the National IC of four Asian countries, which are Pakistan, India, China, and Bangladesh. The comparison is done based on the 21 selected country specific indices for the four IC indicators, which are MC, HC, RC, and PC. The IC indicators show how effectively the resources of a country are being utilized. The competitiveness report is based on the increased prosperity and productivity of any country.

The selected countries share a number of similar issues, threats, and historical backgrounds. It can be said that the comparison of the national IC shows the standing of a country in comparison to the others. However, these indices show that these countries are competitive to each other, but these indices do not prove that the countries are successful. The comparison of the National IC of the countries shows that China is ahead of the other countries in terms of RC, MC, and PC. Whereas for HC, India has surpassed all the other countries and rapidly developed HC, whereas in 2018, the value of HC for India was the lowest among the selected countries. India is also struggling with RC and PC; however, both the indices have an upward trend.

The degree of IC and competitiveness of a country may not be the true depiction of the effective production and wise use of resources. As stated in the theoretical framework of this study IC and competitiveness of nations are highly linked. A country might be considered as competitive with respect to other countries or not, depending on its national intellectual capital and other factors. Therefore, a country will be more competitive if it has a higher IC than other countries with reference to the indicators that measure IC, even while this does not necessarily imply that the country is doing well; it simply implies that it is doing better than others.

This paper's idea sought to evaluate and contrast IC from the competitiveness pillars. To consider a country's competitiveness and avoid the existing pillar compensation mechanism, it requires a high level in certain pillars that make up the index of every IC component. In addition, our suggestion offers some recommendations for Asian nations looking to boost their IC and competitiveness in addition to considering each country's situation in respect to others.

We can draw the conclusion that comparing the four most competitive Asian countries IC is a comparison of the hidden value of the people, businesses, institutions, and communities that make up the existing and potential sources of national wealth. We may infer that the intellectual capital comparison of the four Asian countries measures the unseen interest of the individuals, businesses, organizations, and societies that makes up the current and future income.

Policymakers are finally beginning to understand the full effects of globalization as businesses integrate into global networked economies. They are currently studying the basic mechanisms of how recession in one country may trigger an even worse recession in a different country on the other side of the world. Additionally, people are now becoming more aware of the connections between various national policies. Increased literacy benefits the region's economic activity as well as health-related metrics,

according to education policy-related initiatives. Foreign policy, which cannot exist independently, will have a comparable impact on a country's trade strategy.

Understanding these relationships would enable politicians to effectively use a nation's resources by giving equal weight to the nation's tangible and intangible assets. The economic managers would have to admit that it is no longer appropriate to plan for economic growth in a vacuum and that they must instead pay equal weight to indications of processes and human component. The result of all of these resources combining to enhance a nation's well-being is its IC. The Pakistani government can make better decisions by using this tool to evaluate the socioeconomic performance of the country and pinpoint its advantages and disadvantages.

7. IMPLICATIONS:

Policy makers can device policies for the economic growth of the region based on the study. This study provides a guideline for the countries to focus on the problematic areas. For example, Pakistan should invest heavily in HC. Bangladesh should focus more toward its market capital as compared with the rest. India is lacking behind in process capital therefore their focus should be more toward enhancing their process capital. Pakistan and India should put more effort into enhancing their renewal capital. China should also find ways to boost HC. The PC for China also has a downward trend, whereas all the other countries are comparatively doing well. This research is an overview of the strengths and weaknesses of the selected countries and highlights the IC indices, which should be focused on for value creation and sustainable development. The drawbacks of this study comprises: comparisons are initially limited to the competitiveness studies worldwide. Secondly, the selection of qualitative scales of 1-7, and the six-year study duration, thirdly, the number of variables that have been taken into account are only 21. The results could be different with increased variables.

Author Contributions:

Conceptualization, Saeeda Mirza; methodology, Saeeda Mirza and Sidrah Qaiser; software, Saeeda Mirza; validation, Saeeda Mirza and Sidrah Qaiser; formal analysis, Saeeda Mirza; investigation, Saeeda Mirza and Sidrah Qaiser; data curation, Saeeda Mirza and Sidrah Qaiser; writing—original draft preparation, Saeeda Mirza; writing—review and editing, Sidrah Qaiser; supervision, Sidrah Qaiser.

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On reasonable request, the corresponding author will provide the datasets/materials used and/or analyzed for this study.

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