

Measuring human capital - Case study Singapore experience -

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Abstract:

This study aims to identify methods and indicators for measuring human capital as an intangible asset that is difficult to measure using traditional methods, and to identify the reality of measuring it in the State of Singapore. In this research, we raised a main question about the most important approaches and indicators in measuring human capital and how to measure it in the country of Singapore. We tried to answer it by researching the Singaporean experience by presenting hypotheses, relying on the method and analyzing data, The study concluded that the famous indicator is the World Bank's Human Capital Index.

Key words: human capital; Measuring human capital; Investing in human capital; Singapore; The development experience in Singapore.

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1. INTRODUCTION

The intellectual wave brought by researchers in the field of accounting, which related to the necessity of evaluating human resources as assets and including them in the financial statements of institutions, sparked many models, methods and methods that searched for ways to measure human capital and give it a tangible value, as human capital occupies a strategic and pivotal position. In the success and distinction of any institution, the interest of competing institutions has shifted from focusing on physical assets to focusing on possessing a human resource distinguished by competencies and skills and trying to attract and preserve them, which has increased interest in searching for ways to know the economic, financial and moral value that each institution possesses and which is embodied in its resources, from By researching ways to measure it, include digital information about it in the institution's financial statements, record it, and deal with it like other assets that fall into the institution's possession.

The quality of human capital, managerial skills, and intangible capital all had a strong impact on economic performance in Singapore. Singapore designed its policies to discover and benefit from human talent based on a number of main assumptions, the first of which is that some people are more talented than others by nature. The second is that exceptional talents and abilities can be found among the poor just as we find them among the rich without any difference. Based on these two rules, Singapore has used important factors such as health and quality of life that will unleash human potential that will ultimately lead to unprecedented individual and collective achievements.

1.1. The problem of the study: From the above, the problematic features of this study emerge as follows:

What are the most important approaches to measuring human capital? How is human capital measured in Singapore?

1.2. Sub-questions: Through the previous problem, several sub-questions can be raised, including the following:

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- What is the concept of measuring human capital? What are the most important approaches to measuring it?;
- At what levels is human capital measured?;
- How does Singapore measure its human capital, and what model does it adopt for measurement as a country?;
- What are the most important components of the World Bank's Human Capital Index?.

1.3. Hypotheses: Through the above, we put forward the following hypotheses:

- Human capital cannot be measured because it is a set of knowledge, abilities and experiences in the minds of individuals;
- Human capital can be measured through a set of indicators at different levels;
- Singapore succeeded in its experience in measuring and developing human capital.

1.4. The importance of the study: The great importance of the study lies in the importance of the topic, which is considered one of the most important and most developed modern administrative topics, especially in the field of human resources, given the difficulty of measuring the return on investment in human capital, and the continuous search for the latest approaches, methods and methodologies that enable us to stand On the actual performance and also the expected performance of human capital to evaluate it or evaluate deviations, if any.

1.5. Objectives of the study: The most important fundamental objectives of this study can be summarized as follows:

- The research aims to gain knowledge of all theoretical aspects of the subject;
- Identify methods and indicators for measuring the return on human capital;
- Highlighting the development experience in Singapore and the main factor in the success of this experience;

- Knowledge of the mechanisms for measuring human capital in Singapore and the model followed at the state level.

1.6. Study methodology: This study relied on the descriptive approach in analyzing and describing reality and data, relying on collecting data and information from various references and sources, presenting and analyzing them.

1.7. Previous studies:

The first study: (Chaouche & Makhnan , 2022) This study aims to identify the most important theoretical and applied approaches to evaluating the performance of human resources and measuring their effectiveness by presenting the most important intellectual currents that have addressed the subject. Then, the quantitative and qualitative tools and indicators used to measure human capital from the point of view of education were presented. This study included three countries: Algeria, Tunisia, and Singapore for the period 2017-2020. The applied study was carried out by measuring four indicators, which were the illiteracy index, the schooling rates index, and the index index. For education, education expenditure structure index. It was concluded that the performance and effectiveness of the human resource is linked to coordination between the previous indicators on the one hand, and the educational enabling environment on the other hand. The knowledge society depends mainly on skills, values, and educational enabling environments.

The second study: (Madfouni, 2017) This research paper aims to highlight the new intellectual approach based on knowledge assets, especially the human element, while demonstrating the importance of investing in it by presenting the mechanisms for its growth and development, and clarifying the aspects of difficulty imposed by its intangible nature in measuring its returns, in addition to creating... A measurement model for intellectual assets. The results of the study showed that the university is committed to its long-term decisions and responsibilities by transforming human capital from assets (stock) to results (flow). It was found that this flow can be measured through

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specialized publications and the launch of knowledge-based products and services, in addition to measuring the university's overall performance through participation in Global databases and obtaining awards for the quality of educational service. A measurement model was built that combines global university classification indicators and the learning dimension of the balanced scorecard.

The third study: (Al-Saidi & Hadeel , 2017) This research aims to discuss the impact of investment in human capital in its dimensions (training, education, knowledge management, skills development and its elements (knowledge, skills, capabilities, value) among employees of the Office of the Inspector General - Ministry of Culture in Iraq The questionnaire was adopted as a tool in collecting data and information, and was subjected to a measure of validity and reliability. It was distributed to a sample of (63) individuals, distributed in positions (department director, division director, employee. The research data was analyzed using the ready-made statistical program (SPSS). A test was used. Hypotheses, the Spearman correlation coefficient, and regression analysis. The statistical methods produced a number of conclusions, perhaps the most prominent of which is the existence of differences in the orientations of managers and employees regarding investment in human capital. Investment in human capital appeared generally acceptable, and human capital achieved a good position in the long term. In light of the research findings, the research recommended the necessity of developing an integrated strategy for investing in human capital because the general trend of investment is declining, which will reflect negatively on human capital. The importance of investing in human capital lies because it contributes to strengthening, improving and developing the performance of the Office of the Inspector General, and giving attention to the activity Training and deepening it until we know how much real value it adds through advanced training programs that benefit from the expertise of academics and consultants.

1.8. Study topics:

The first axis: What is human capital

The second axis: measuring human capital

The third axis: levels of human capital measurement

The fourth axis: a case study of the Singapore experience

2. What is Human Capital

2.1. Definition of human capital

Human capital theory appeared for the first time in the work of the American economist (**Schults**) in 1961, where he considered that the competencies and knowledge of the individual are a form of capital that can be invested in. There are many definitions, the most important of which are:

Definition 01: (Theodor & Schultz) define human capital as “the set of human energies that can be used in exploiting all economic resources and represents the total, quantitative and qualitative sum of human resources available in society”. (Hassan, 2011, p. 65)

Definition 02: “Both (**George and Ekaterina**) believe that human capital consists of three characteristics, embodied in ability (knowledge, collective skills, practical knowledge, attitudes, level of motivation, behavioral patterns), agility, innovation, creativity, flexibility, and adaptation”. (George & Tulugurova, 2007, p. 699)

Definition 03: “The qualitative stock of knowledge and competencies possessed by the human resource, which can appear when performing the work entrusted to him, and this stock can accumulate and multiply by investing it”. (Samia, 2017, p. 12)

By definition, human capital represents the accumulated balance of innate and acquired knowledge and skills that individuals possess through education and the various training they obtain, and the experiences they acquire during the course of their work, which in turn contribute to achieving the competitive advantage of institutions.

The importance of human capital in organizations emerges, as it represents the elite of human resources, which works to provide new ideas, innovations, and creativity that contribute to enhancing the

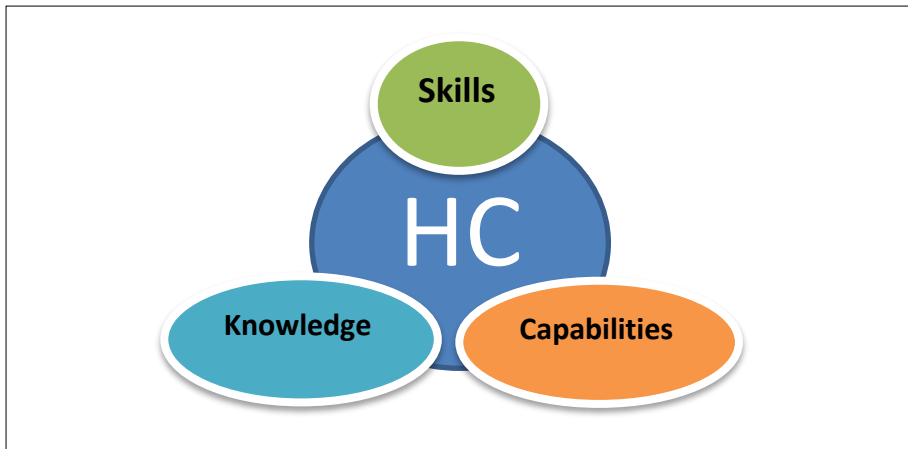
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organizations' ability to respond to the changes that occur in their external environment. In confirmation of its importance, Becker referred to it by saying that capital Human resources are organizations' investment in the field of education and training to increase employees' knowledge, experience, and skills, which leads to maximizing the organization's productivity and outputs. (Al-Enezi & Hamid Ali, 2015, p. 08)

2.2. Components of human capital

The most important components of human capital are:

Fig.1. Components of human capital



Source: (Al-Enezi & Hamid Ali, 2015, p. 10)

- **Knowledge:** Knowledge has become the cornerstone of the new economy (the knowledge economy), as it is an invisible commodity and is not subject to the law of diminishing returns. On the contrary, it achieves increasing returns, and talking about knowledge or acquaintances (Samah, 2016, pp. 138-139), and thus Knowledge is a combination of data and information that has been organized and processed, in addition to experiences, understanding, and accumulated learning, the impact of which increases when shared. It is divided into exoteric and esoteric knowledge. (Farhan & Amira, 2009, pp. 55-56)
- **Skills:** According to (Coleman), human capital is created if new

skills and abilities contribute to making a person able to act in new ways or able to improve productivity, and that acquiring knowledge is one of the biggest motivating factors for an employee training program, and knowledge, skills, and skills are obtained from During training, exchange of visits, and interaction with other employees, it is evaluated into technical, cognitive, diagnostic, human skills. (Al-Enezi & Hamid Ali, 2015, pp. 13-14)

- **Capabilities:** They are talents present among the organization's employees, and are used to achieve its goals and solve its problems through the creative work climate that exists in it, They are among the important characteristics that influence the relationship between knowledge management processes and competitive advantage, The capabilities that human capital possesses must be among the capabilities. The distinguished capabilities that have an impact on the work of the organization, and these capabilities can be called the distinguished capabilities that are appropriate to the nature of its work, as the distinguished jobs that have an impact on the work require the availability of distinguished capabilities among the workers). (Al-Masoudi, Ahmed Muhammad , & Salem, 2019, pp. 20-21)

3. Measuring human capital:

(Campell) defined the concept of measurement in general in that it "represents the connection of numbers with things to express their properties based on natural rules that are discovered, either directly or indirectly." But (Steven) added a mathematical dimension to the definition of the measurement process, where he defined it as: "It is represented by "Measurement is the correspondence between properties or relationships according to a mathematical model." As for the most specific definition of the measurement process according to **the American Accounting Association (AAA)**, "measurement consists of relating numbers to the entity's past, current, and future events based on past or ongoing observations and in accordance with specific rules". (Sbihi, 2017, p. 400)

3.1. Definition of measuring human capital:

Definition 01: (Brummett) defines human capital measurement as: “a dynamic process of measuring the human element in an organization, including preparing reports, and the basic idea of measurement revolves around monitoring the economic value of the human element in the organization”. (Souad, 2018, p. 113)

Definition 02: “That process that would give numerical values to all intangible economic elements and events related to the human side, as an expression of their value, according to specific rules and methods”. (Abbabsa, 2021, p. 692)

Definition 03: It is defined as “the process of evaluating the economic events resulting from the performance of human capital activity within the organization, with a statement of the changes in those events and their impact on income and financial position” (Souad, 2018, p. 113)

Definition 04: “Measuring investment in training and education to estimate human capital, considering that embodied skills and knowledge constitute human capital”. (Kafi, 2024, p. 99)

Among the above definitions is **the importance of measuring human capital** in the following elements: (Madfouni, 2017, p. 10)

- Measuring human capital makes the financial statements reflect the value of the organization and the resources and assets that most represent the true wealth or value of the organization;
- The urgent need to develop standards used to calculate the value of cognitive capabilities to convince management and owners of the justifications for paying attention to them and spending on them;
- It reveals the characteristics and abilities of individuals working in the organization and identifies those with creative abilities;
- The measurement process is useful in linking knowledge to performance;
- Modern models are able to measure many components that are not measured by traditional accounting methods, such as measuring

human and innovative capital. These models provide the organization with standard tools capable of accurate measurement;

- It allows predicting the behavior of individuals in the future.

3.2. Approaches to measuring human capital:

Many methods have emerged that attempt to measure the costs resulting from human capital, and the modern view has focused on financial and non-financial measurement as follows:

3.2.1. Quantitative approaches (financial measurement): Financial metrics express the value of human capital in numbers, and this approach in turn is divided into two entries:

First: The approach to measuring the cost of human capital: According to this approach, these:

Table 1. Methods of measuring human capital according to the cost approach methods

Measurement method	Inventor	Method Content of the method
Historical cost method	Flamholtz Pyle and Brummet	These are the actual costs incurred by the organization as a result of obtaining human resources through attraction, selection, employment, and training, as capital expenditures that can be used for several periods, which must be depreciated over the productive life of those assets.
Opportunity cost method	James Hekimian and Curtis Jones	Opportunity costs refer to the monetary expenditure that an organization incurs to acquire or replace human resources. Opportunity cost refers to the forgone revenues that an organization sacrifices in order to acquire or replace a resource. Opportunity cost therefore refers to the benefits that must be sacrificed in order to use or use resources in an alternative way.

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Replacement cost method (replacing human resources)	Flamholtz and Likert	The cost of replacing human resources refers to the sacrifice that the organization bears today to replace human resources at the present time. For example, if an individual were to leave the organization, the organization must bear the costs of attracting and selecting another replacement.
Future returns method	Schwartz and Lev	This method is done by evaluating human assets on the basis of arriving at the present value of the salaries and wages that the human element will receive in the future until his productive age, in order to be able to calculate the total value of human assets.

Source: (Qawadriya, 2016, pp. 54-55)

Second: Approaches to measuring the value of human capital: (Souad, 2018, pp. 115-117)

These approaches focused on the returns that organizations can obtain from human capital, and among the most important methods used to measure the value of human capital we find:

Table 2. Methods of measuring human capital according to the value approach

Measurement method	Method content
Method of capitalizing salaries and wages	Salaries and wages express income flows, and the salaries and wages that an individual may receive at retirement age or death are capitalized, given that the value of the individual is the current value of salaries and wages, and the same method can be used for groups. So determining an individual's value depends on the capitalization of salaries and wages during his stay in the organization, taking into account cases of death before retirement.

Return on effort method (Watson model)	This method focuses on the effort expended by individuals in the organization's various operations. Watson explained that this model helps in obtaining useful data that raises the efficiency of the organization's human capital, i.e. (characterization coefficient x efficiency degree coefficient x experience level coefficient). The effort expended by each individual in the organization is measured.
method (worse)	This method has added other variables to arrive at the value of human capital. These variables are: - Measuring the present value of future services expected from human capital or future revenues from it; -Measuring the total cost expected to be spent on human capital.
Flamholtz model of the determinants of individual value)	This model provided determinants of the value of the individual, through which it explained that the individual has the ability to move through organizational functions, and his value is determined by the processes he provides to the organization, taking into account a group of variables to reach the conditional expected value (the value of the services that the individual provides to the organization from During the future jobs he is likely to hold).

Source: Prepared by the researcher based on: (Souad, 2018, pp. 115-117)

3.2.2. Descriptive approach (non-financial): Descriptive measures express the value of human capital that cannot be converted into money. Among the most important standards adopted by institutions are: **measuring job satisfaction; Performance evaluation; Measuring organizational commitment; Measuring work motivation.**

3.3. Levels of measuring human capital:

Some researchers have tried to distinguish between different indicators for measuring human capital, some of which are intended

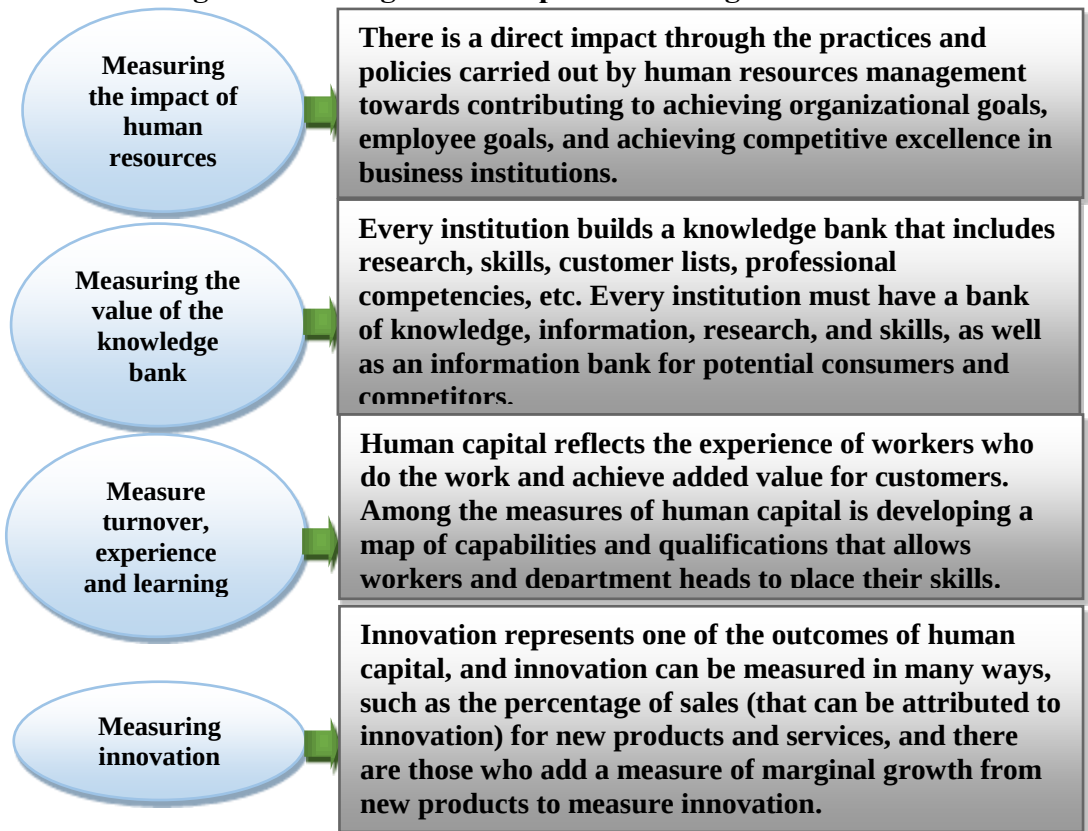
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for use at the macro level, and what are intended for use at the micro level. Two types presented: (Adoun, 2004, pp. 131-132)

- Indicators that measure the human capital stock of a particular country and this stock shows the level of human development;
- Indicators that measure the raw growth of the human capital stock during a certain period.

3.3.1. At the institution level: (Sayed, 2006, pp. 442-449)

Fig.2. Measuring human capital at the organization level



Source: Prepared by the researcher based on: (Sayed, 2006, pp. 442-449)

3.3.2. At the state level

Human capital is measured at the state level through a set of measures, methodologies, and indicators that researchers have agreed on their

effectiveness and credibility, the most important of which are: (AL-Bantour, 2019, pp. 09-27)

First: Human capital index in the “Barro-Lee” methodology

The Barrow-Lee methodology is considered one of the most important methodologies that produce indicators to measure human capital in every society, represented by the average years of schooling for the working-age population; This methodology is considered among the methodologies based on indicators of educational attainment as it is based on school enrollment data and demographic data. Which constitutes the basic entry point for estimating educational attainment according to educational levels, and thus evaluating the overall average years of schooling. The “Barrow-Lee” database is considered an essential source for many researchers and those interested in the uses of human capital indicators for the purposes of analysis, research, and building other indicators such as the Human Development Index. Barrow-Lee methodology estimates average years of schooling by gender for different working age groups.

Content and methodology: The “Barrow-Lee” database provides educational attainment statistics for 146 countries periodically every 5 years from 1950 to 2010. It also provides information about the distribution of educational attainment relative to the total population, for the working-age population according to 13 age groups with a range of five There are 13 categories of years (15-19 years, 20-24 years, 70-74 years, 75 years and above), and according to gender (male and female) and educational level: 1%, the percentage of those who have not obtained any formal education, 2%. Percentage of those enrolled in primary education who did not complete the primary stage, 3% Percentage of those enrolled in primary education who completed the primary stage, 4% Percentage of those enrolled in secondary education who did not complete the secondary stage, 5% Percentage of those enrolled in secondary education who completed the secondary stage 6% Percentage of those enrolled in university

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education who did not complete the stage University, and 7% of those enrolled in university education completed the university stage.

Second: Penn World Table (PWT) Human Capital Index for the Universities of California and Groningen

The PWT database is jointly prepared by researchers from the University of California and the Growth Development Center at the University of Groningen to produce many real economic indicators, such as real GDP, investment, government consumption, and current and constant prices in the form of time series extending until the 1970s. This database bases its calculations on a group From data from the Maddison World GDP Project (Angus Maddison), which provides estimates of GDP at current as well as constant prices, and provides more detailed estimates at the sector level extending back to a long period of time even before the Industrial Revolution in Europe), the Maddison data were used "For the output to build a statistics base (PWT), especially in national accounts such as GDP accounts, and its sectoral components. These data enable researchers to analyze the process of economic growth and structural change over a long period of time. The (PWT) database is concerned with calculations and estimates of the stock of physical capital. And also human capital indicators.

Regarding **the methodology adopted** in calculating the latter, the researchers rely on the "Barro-Lee" database, especially the average years of schooling for the working-age population, and it is adjusted to take into account the quality of education. The adjustment is made taking into account the return on education in each country and assuming a linear relationship (Mincerian) between the number of years of education and human capital, and the value of this return can be estimated through the "Mincer" model, which links individuals' income to education levels. For more information on the methodology for calculating the return on education.

Third: World Bank Human Capital Index

HCI methodology: The World Bank launched a new classification of countries within its “Human Capital” project, through which it aims to enhance investment in the human element, saying that many countries lack this type of investment, and thus miss an opportunity to create a positive link between physical and human capital, growth and poverty reduction, The human capital project is based on three basic pillars: (platform Arqaam, 2018)

- The first is the Human Capital Index, which is designed to capture the amount of human capital among today's children who are expected to reach eighteen years of age at a certain stage. The index will be updated periodically to monitor the progress that has been achieved;
- Strengthening the measurement and research process, as the Bank says: This medium-term program for data and analytical work aims to improve the measurement of a wide range of outcomes related to human capital, improve understanding of the composition of this component, and link it to policy actions at the country level.
- The importance of countries' participation, which is an essential element in this project. The Bank supports governments and development partners to identify national priorities for human capital development and implement policies that overcome the obstacles that prevent countries from reaching their goals in this regard.

Components of the human capital index: The World Bank's composite index measures the value of human capital that a child born today can attain at the age of eighteen, taking into account health risks and the quality of education in the country in which he lives. The World Bank's human capital index differs from other indices. Based on academic achievement only, such as the previous “Barrow-Lee” index, it is explained in two ways: The first relates to the fact that the human capital index has a forward-looking view, as it relies in its

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calculations on the human capital of the next generation, which is shown by adopting future variables such as the expected average years of schooling and indicators of interest. Children born currently. The second issue relates to considering health as an essential factor in evaluating human capital. (Aart Kraay, 2018, p. 02)

4. Measuring human capital in Singapore according to the HCI Human Capital Index

The Human Capital Index is a cross-country measure of the human capital that a child born today can expect to achieve by her 18th birthday, given the risks of poor health and poor education prevalent in her country. (child survival, stunting, adult survival rates) and quantity and quality of education (expected years of schooling and international test scores) Using estimates of the economic returns to education and health, the components are combined into an index that captures the expected productivity of a child born today as a worker in the future, compared to the education standard Complete and complete health. The index reveals that a child in a country may grow up to only 29 percent of its productivity. The same girl, in another country with stronger systems for health and education outcomes, could reach 88% of her potential productivity. (Yusuf Shahid, 2020, pp. 01-02)

The aim of this case study is to assess the trajectory of human capital development in Singapore – a country that was at the top of the 2018 Human Capital Index global rankings, examine the factors that have driven this trajectory and draw lessons from this experience. The study explores not only how to achieve improvements, but also what can be done in the future to maintain and amplify the government's investment in its people. (Yusuf Shahid, 2020, p. 01)

Table 3. Classification of countries in the world according to the human capital index

Ranking	Countries	Rating (1:0)
01	Singapore	0.88
02	South Korea	0.84
03	Japan	0.84
04	Hong Kong	0.82
05	Finland	0.81
06	Ireland	0.81
07	Australia	0.80
08	Sweden	0.80
09	Holland	0.80
10	Canada	0.80

Source: (platform Arqaam, 2018)

4.1. Drive economic growth in a resource-poor economy

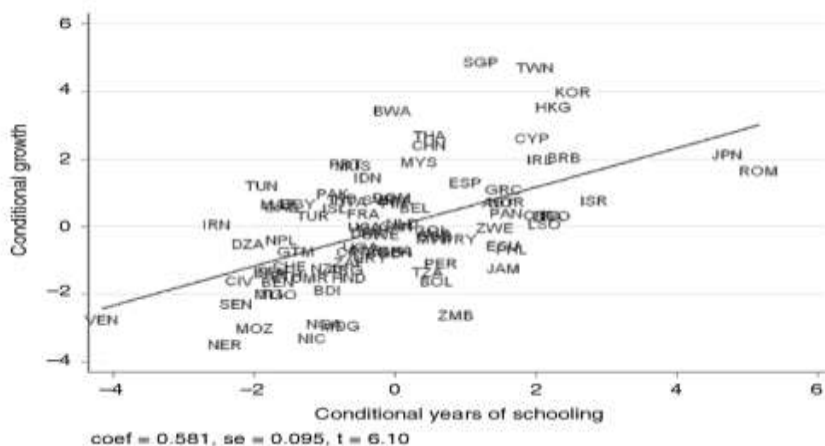
The quality of human capital, managerial skills, and intangible capital have all had a strong impact on Singapore's economic performance. Nobel Prize-winning American economist Gary Becker has asserted that we live in an "age of human capital," meaning that human capital constitutes... By far the most important form of capital in modern economies, the economic success of individuals, as well as of entire economies, depends on how effectively and intensively people invest in themselves. (Worldbank.org, 2020)

Benefiting from learning

Many studies have shown that it is not school achievement (years of schooling) that contributes the most to individual productivity and GDP growth, but rather the amount of learning achieved, which is measured by graduates' science and mathematics test scores, and while years of schooling are related Weakly related to growth, cognitive capital, which embodies learning, is strongly related to growth in terms of size and importance, and the ability of teachers and educators strongly determines the amount of learning that is imparted. (Worldbank.org, 2020)

Fig.3. The economic impact of quality education

The economic impact of educational quality 9



Source: (Dixon, Chris , & Steve, 2015, p. 09)

4.2. Benefit from health

Medical care negatively affects children's mortality, morbidity, height, and, most importantly, an individual's ability to learn and produce. Although causality is difficult to determine, health variables such as infant mortality, life expectancy, and malaria prevalence appear to correlate with GDP, Nutrition and nurturing during early childhood determine cognitive skills, academic performance, and earnings later in life. Using data from 21 OECD countries, (Madsen) found that healthier and longer-lived populations are more likely to have access to and benefit from education and that Be more innovative, thus promoting growth. (Yusuf Shahid, 2020, p. 03)

4.3. Establishing a world-class educational system

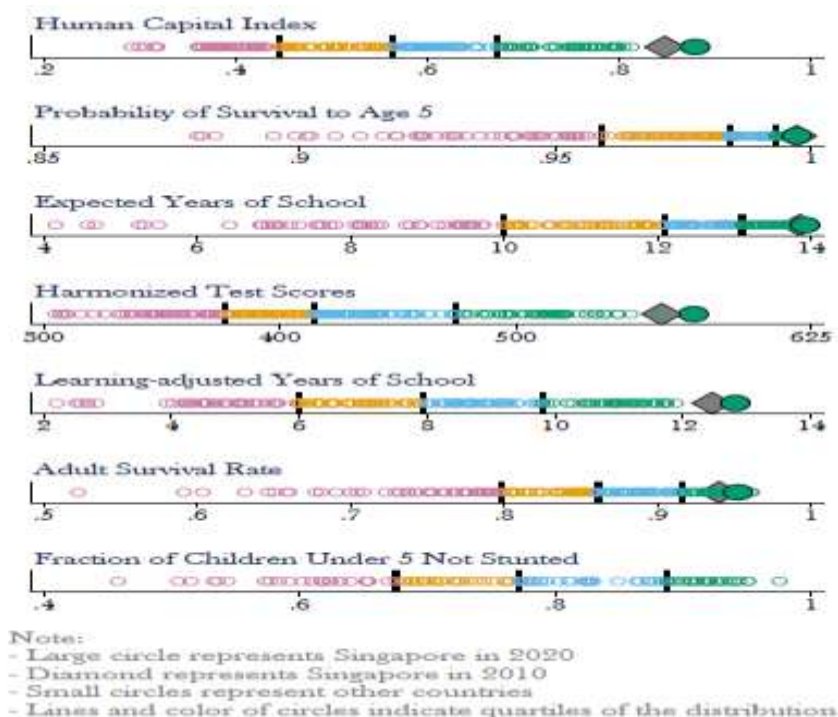
Singapore has proven that investing in human capital can have a high return and that nothing is impossible, and its model should inspire others to redouble their efforts, not necessarily replicating the Singapore model in its entirety, but taking full advantage of the various lessons that can be learned from the course of its development strategy, Successful. (Yusuf Shahid, 2020, p. 34)

4.4. Measuring HC for Singapore by Human Capital Index 2020

This brief provides an update to the Human Capital Index (HCI). First launched in 2018, the HCI measures how much human capital a child born today can expect to have by age 18. It conveys the productivity of the next generation of workers compared to an education benchmark. Fully and fully healthy around the world A child born in 2020 can expect, on average, to be 56 percent as productive as he or she can be when he or she grows up. All data represent the situation of countries before COVID-19.

A child born in Singapore today will be 88 percent more productive when he or she grows up with full education and full health. This is higher than the average in the East Asia and Pacific region and high-income countries. Between 2010 and 2020, the HCI value for Singapore increased from 0.85 to 0.88. The figure shows how HCI and each of the components have evolved over time.

Fig.3. HCI and Components in Singapore



Source: (Worldbank.org, 2020, p. 01)

Some statistics for human capital indicators in Singapore:

- **Health spending:** Singapore spent 2.1 percent (2017) of its GDP on public health spending. This is lower than the regional average (4.9 percent) and the income group average (5.3 percent), 9 percent (2012) of the population incurs catastrophic health expenditures measured as out-of-pocket expenditure exceeding 10 percent of household consumption or income.
- **Education spending:** Singapore spends 2.9 percent (2013) of its GDP on government spending on education, which is less than the regional average (4.7percent) and the income group average (4.5p).
- **Spending on social assistance and in Singapore:** Data on spending on social assistance is not available and the average for the region is 1.1 percent and for its income group it is 1.7 percent.
- **Government revenues:** General government revenues in Singapore are 18.6 percent (2019) of GDP. This is lower than the regional average (40.7%) and the income group average (37.3%).
- **Universal Health Coverage (UHC) index.** The index, which ranges from 0 to 100, measures coverage of basic health services based on tracking interventions: In Singapore, the UHC index score is 86 (2017), which is higher than the average for the region (65) and the average income group (79).
- **Social safety net coverage and in Singapore:** There are no data available on social safety net coverage for the poorest quintile, and the average for the region is 45 percent and income group 70 p.
- **Adequacy of the social safety net in Singapore:** There are no data available on the adequacy of the social safety nets for the poorest quintile, and the average for the region is 9 percent and for its income group it is 22 percent.
- **Use of human capital in Singapore:** 72 percent (2015) of the working-age population is employed, which is higher than the average for its region (65 percent) and the average for its income group (70 percent).

Table 04: HCI by gender and socioeconomic group

Element	Girls in general		
HCI	0.78	0.89	0.88
Survival to age 5	1.00	1.00	1.00
Expected years of study	13.9	13.9	13.9
Harmonized test scores	573	578	575
Learning-adjusted years of schooling	12.8	12.9	12.8
Adult survival rate	0.94	0.97	0.95
No stunting rate	-	-	-

Source: (Worldbank.org, 2020)

5. Conclusion

Singapore has worked to make human capital a decisive factor in its development experience. Given the importance of human capital as a critical element in the stages of economic development, its economic and social contribution to the development of societies must be evaluated. By investing in human capital and measuring it, it has been possible to fight poverty and social disparities, build well-being societies, and achieve comprehensive and sustainable development goals. To evaluate the impact of human capital on growth and development, an accurate and unified measurement of this indicator must be created with the aim of allocating the necessary investments to it. However, what makes it the case Open to diligence and multiple measurements, this is mainly because the knowledge, abilities and skills embodied in people and used in production techniques cannot be separated from people compared to financial and material assets which can be separated and therefore clearly measured.

5.1. Study results: Through this study, a set of results were reached, which we summarize as follows:

- Measuring human capital is a complex and difficult process due to the lack of accurate standards;
- There are many approaches to measuring human capital, and through them there are many methods and indicators;

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- The World Bank's Human Capital Index and the Barrow-Lee Index are considered the two most important indicators through which human capital can be measured at the country level;
- Measuring human capital at the country level differs from what it is at the institution level;
- Singapore applies the World Bank's HCI index, which provides statistics and data on the progress and growth of human capital from birth until the individual becomes a productive element in society;
- Singapore is the largest developing country in the field of investment and human capital development, which has made it depend on it in its development experience according to a long-term strategy;
- The health, education and survival component represents the most important indicators that Singapore relied on to invest and measure its human capital;
- The development experience in Singapore succeeded because of its ability to build an integrated strategy to invest in educating children from the age of five and preserving their health and protecting them so that they become productive once they reach eighteen years of age.

5.2. Testing hypotheses: Through what we learned in this research, we found that:

- Human capital cannot be measured because it is a set of knowledge, abilities and experiences in the minds of individuals (**false**);
- Human capital can be measured through a set of indicators at different levels (**valid**);
- Singapore succeeded in its experience in measuring and developing human capital (**correct**).

5.3. Recommendations:

- Benefiting from countries' experiences in measuring human capital;
- Putting human capital at the center of attention, achieving economic development, and developing long-term strategies for investing in it;
- Emphasizing the establishment of a development vision led by human capital in Algeria by providing factors from childhood to become a productive factor in the future;
- Enabling the World Bank for Human Capital to obtain most of the data in Algeria to determine the reality and situation.

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