Technium Business and Management (TBM)
Vol. 8, pp. 136-158 (2024)
ISSN: 2821-4366
www.techniumscience.com

Investing in Human Capital and Its Role in Achieving Economic Development in Iraq

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Abstract. This research aims to identify the importance of activating the role of Human Capital (HC) in Iraq's education and health sectors, as well as to analyze the reality of investment in HC in the Iraqi economy and identify the challenges and appropriate policies to activate this investment. The research relied on the descriptive and analytical approach to HC and used data from 2011 - 2021. The research reached a set of conclusions, the most important of which is that HC has a vital role in the education and health sectors. In addition, Iraq suffers from several problems and challenges. In the crucial sectors for investing in HC, namely education, and health, there are also a group of adverse effects represented by high rates of poverty and unemployment among HC, in addition to the low level of health and the increasing numbers of dropouts from education.

Keywords. Human Capital; Economic Development; Iraq

1-Introduction:

Investing in HC is one of the essential investments, as it is an important strategic element in achieving any society's economic development. Economic development programs are implemented through trained and qualified HC availability. Therefore, countries with different social economic systems, including Iraq, seek to develop this element. What is important is that it uses various methods, relying on investment in the field of health and education, to increase the stock of knowledge of its individuals and to provide the necessary and essential workers with high skills that have a significant role in improving productivity (Nusratovich, S. K., & Asidakhan, 2023). Investment in HC is the mobilization of latent human energies that can be used to achieve optimal use of economic resources, accelerating economic growth over long periods (Flayyih & Ali, 2021). Forward to achieve economic development, that is, the development of self-capabilities that would Achieving optimal use of society's internal economic resources can contribute significantly (Nehme et al., 2023). Effective in achieving economic and social development of society, as well as positive effects This is reflected in society that accompanies investing in HC (Ifejika, 2017). That investment in HC formation exceeds its economic and social results investment in material resources (Hasan et al., 2023). Thus, human resource development has become one of the most important and widespread issues, as it is a necessary process for work. To mobilize, refine, formulate, and develop scientific, practical, technical, and behavioral capabilities (Ogunmakinde et al., 2022).

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ISSN: 2821-4366
www.techniumscience.com

Economists were interested in investing in education in the late fifties and early sixties of the last century under the influence of many factors, including that education has a vital role in economic development and economic growth (Wang, 2022), and many studies have proven that increasing national income in many developed countries of the world It is due to increased investment in HC, and not to the quantitative growth of the labor and capital components, but instead to improve their quality, which led to the search for a comprehensive concept of capital after it became clear that it was a mistake to give physical capital alone the leading role in the process of development and growth (Tan et al, 2024). As a result of this interest, attention has turned towards developing the resources allocated to spending on education. Therefore, investment in HC is one of the most important current issues that concern societies with their various systems and levels of development, as the human element is the main element. In all components of development (Chaaben et al., 2024). The development of the human element plays an active role in economic development through the optimal use of resources, and therefore, maximizing and increasing the national product is a function of human development. The relationship between them is reciprocal (Khajuria et al., 2022), and investing in HC indicates that it is the use of part of society's savings. Or individuals, to develop the capabilities, information, and behaviors of the individual to raise his productive capacity and then the total capacity of society to produce more goods and services that achieve economic well-being whose effects are reflected in the internal and external economic situation (2019, Chijioke, A. K., & Amadi, A. I), Therefore, the extreme importance of HC and the creative energies it possesses has called for economists to consider it the first productive element in the processes of economic and social development. It is impossible for all processes necessary to create the material means required to achieve an appropriate level of scientific and technical development and high rates of development without it being the human factor being the first driver of the process, provided that it has an appropriate level of development, openness, and self-motivation (Guang et al., 2023).

2-Literature review and developing hypotheses:

The study (Uddin et al., 2021) aims to know the relationship and impact between institutions, HC, and economic growth in developing countries. (120) Developing countries represented the study sample for 1996-2014, and the researchers used simultaneous quantitative regression and the generalized moments method to analyze their data. (GMM), and one of the most critical findings reached by researchers is that human development and institutions have a significant positive impact on economic growth and that institutions and human development have a significant negative interactive impact on the economic growth of developing countries. The study (Prokopowicz, 2020) aims to identify the relationship between HC and economic development and the adoption of digital technologies across countries. The statistical program SPSS was used, and the researchers relied on data representing 175 countries for 2015. The researchers concluded He noted that HC is an essential driver of digital transformation and that HC has a positive correlation with the Digital Adoption Index (DAI). At the same time, the per capita GDP positively correlates with the digital adoption index. The study (Pang et al., 2022) aims to explore and compare the impact of HC on economic growth during different stages of development. The study sample represented 141 countries, including 93 developing countries and 48 developed countries, and the researchers relied on generalized system methods for moments from from 1980- to 2008; the study concluded that all aspects of HC positively affect growth in developing countries, and HC helps support growth in developed countries. While the study (Bekele et al., 2024) aims to know the HC and environmental protection on sustainable

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development goals in developed countries with economies such as China, the researcher relied on global development indicators. Data was adopted from 1986 to 2019 and was also used. The researcher tested the Dickey-Fuller test to verify reliability and validity and used an autoregressive model to test the relationship between the study variables. One of the most critical results reached by this study is that control variables such as population growth and economic growth have a positive relationship with carbon emission, and this study also provided Guiding principles for responsible parties and organizations while developing policies related to sustainable development goals. The study (Goldin, 2024) investigates whether HC, patents, and education positively affect economic growth in Scandinavian countries from 1990 to 2019. The researcher used cross-sectional autoregression and panel cointegration tests in a study. One of the most important results of this study is the existence of a stable, long-term complementary relationship between population, life expectancy at birth, education, growth, and gross fixed capital formation. This study also showed a negative effect between spending on education and economic growth, and there is a significant positive effect—statistically, the number of patents in Scandinavia on economic growth. The study (Ma et al., 2024) aims to identify the relationship between HC development, capabilities, and economic growth. This study was applied in Nigeria, and the researchers relied on financial data from 1984-2021, and the cointegration estimation technique was used. Distributed autoregression is used to analyze the relationship between HC development, capabilities, and economic growth. The study (Eweade et al., 2024) aims to measure the impact of the components of the Human Development Index (life expectancy, gross national income index, and education index) on economic growth in Nigeria with the help of secondary education and the researchers relied in their study on the development indicators of the World Bank, which cover A period of 32 years (1990-2022). The researchers used the ordinary least squares method to analyze the financial data. The study concluded that adult literacy and life expectancy positively and insignificantly impact economic growth. In contrast, gross national income and gross fixed capital formation significantly impact economic growth in Nigeria. The study (Ezeudu, 2024) aims to analyze the impact of three vital macroeconomic variables represented in (rapid growth, tourism development, and income). This study was conducted in Singapore and relied on financial data from 1978 to 2019. The study concluded that development tourism substantially impacts income, and economic growth has a moderate impact on HC. Based on the literary contributions, we have developed the following hypothesis to appropriately deal with the research variables and provide answers to the following questions:

- HC contributes to achieving economic development in the education and health sectors in Iraq
- Are there problems and challenges in the education and health sectors that require investing HC?

3- Research methodology

3-1 Research objective: This research aims to address the concept of HC and the mechanisms for investing in it, and the extent of the importance of activating its role in economic development in Iraq, as it is one of its essential elements, and to analyze the reality of investment in HC in the Iraqi economy, and then identify Challenges and appropriate policies to activate this investment.

3-2 Importance of the research: The importance of the study stems from the importance of the topic itself, as it is one of the critical economic topics that have a significant role in economic development by addressing the concept of HC and investing in it, and identifying the reality of HC and its indicators in the Iraqi economy and the obstacles to investment. It will also discuss

the extent of the possibility of activating its role in achieving economic development in Iraq by developing some necessary policies for that. Research hypothesis: The research starts from the hypothesis that:
(Attention to HC through attention to its qualification, development of skills, and abilities in education is one of the fundamental matters for the success of economic development in Iraq)

4- Conceptual framework of human capital

4-1 The concept of human capital:

Interest in HC goes back to ancient times among economists. Many writings have appeared calling for it to be considered capital, and this trend was embodied in the ideas of many thinkers in the eighteenth century, such as A. Smith, J. S. Mill, and Alfred Marchal, as A. noted. Smith pointed out that all capabilities of a country are part of its capital and that the acquisition of valuable skills and abilities is an investment in HC, and human effort appears as the origin of all wealth, and A. Marchal supported him in this, stressing that the human element is capital and that education Training is an investment.

It is a national investment that increases the productivity of individuals. Capital must be invested to benefit from its capacity, constructive energies, diverse skills, and knowledge in discovery, analysis, and creativity, like physical capital. The human being is the essential element in economic development because he is the producer and consumer element, and because he combines these two functions, he is the influential element. Firstly, the development process requires an increase in production and a change in the structure of this production, and only man is capable of production and change (Semibratov, 2023). Then came the contributions of Gary Becker, and professional thinking about HC emerged as economic elements that contributed to economic development in the twentieth century. Becker called for this century to be considered the century of HC and that the first determinant of the standard of progress and development of any country is the extent of its success in developing and increasing its benefit. The skills, knowledge, health, and habits of its individuals, and he began to be interested in studying the different forms of human investment, such as education, immigration, and health care, with his research focusing in particular on training, which is one of the most compelling aspects of human investment in clarifying the impact of HC on revenues, employment, and other economic variables. In an attempt to analyze the financial aspect of training, there is a difference between the two types. The first type is general training, while the second is private training. The study dealt with the relationship between the work variable and the cost of the previous two training types (Pronińska, 2023).At the end of the sixties and the beginning of the seventies, the theory of HC appeared, and the first to use the phrase "HC" was the economic thinker Mincer Jacob in an article published in 1958. Still, the real emergence of the new theory was seen in the article "Investing in Capital Human Resources," published by economist Theodore Schultz in 1961. According to this theory, human resources are considered capital of the same importance as other material resources and operate on the same principles. Investment in the human element is every investment expenditure on education that leads to increasing the productivity of the individual who has received education, increasing his income, and raising his standard of living (Brühl, 2024). The contributions of the American economist Theodore Schultz are considered the basis for the emergence of the science of economics of education, as he was the first to provide a theoretical framework to explain the relationship between education and increasing the productivity of the educated worker through the theory of HC, which was presented through a study entitled HC. Schultz's concept of investment is In HC, one of the significant contributions in the field of economics, as he pointed out the necessity of considering the skills and knowledge of individuals as forms of capital that can be invested in and that many

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Vol. 8, pp. 136-158 (2024)
ISSN: 2821-4366
www.techniumscience.com

indicators indicate the presence of a large portion of the increase in national income that can only be explained through comparing the increase in the national product (outputs) and the increase in the resources used to achieve this output (inputs), he stressed that recognizing the economic purpose of education does not negate its cultural purpose. In addition to attaining cultural goals, some types of education cannot improve the capabilities of individuals necessary to perform their work and manage their affairs. Such an improvement could increase national income (Krisna, 2023).

Because Schultz is a supporter of the neoclassical school, he contributed to solving the labor problem that faced the capitalist system, which it was unable to solve in practice, through his treatment of the labor element as HC and developing it because it is an investment in HC, that is, he worked to build capital to make it is a focus of the theory of economic development, as development includes all investment resources, including the labor component, and they are distributed according to the economic criterion determined by the interest rates from investment opportunities (Osakwe & Ekoh, 2024). Schultz emphasized that the individual acquires knowledge and experience, and his competence increases, but it is not self-evident that this knowledge and competence are a form of capital. However, HC resulting from prior investments grows faster than conventional (non-human) capital. Many modern economic theories have emerged that emphasize the importance of HC in economic development processes and the creation of excellent capabilities that contribute to producing material wealth, and many economic and social studies have begun to increasingly pay attention to HC and its formation (Uddin, 2024). There are many concepts for the term HC, defined as the extent of individuals' knowledge of their abilities characterized by changes in work and economic growth. HC is developed through education and training to renew the individual's capabilities to do good work in society (Pang, 2022).). It is also defined as the knowledge, abilities, qualities, capabilities, and various characteristics that reside in individuals, which have a strong relationship with the development and growth of economic activity, and to what extent what individuals have learned can be employed or used to create wealth or income directly or indirectly or provide any other non-market activity. (Glavič, 2021). It is an economic term used to describe the knowledge and skill that individuals focus on to generate valuable outputs such as creativity and job innovation, and the goal of the capital strategy is to transform human resources into a more tangible asset (Zhang, 2024). The researcher believes that HC is a set of human energies available in society, representing a combination of knowledge, skills, and renewable potential, which can be used to exploit economic resources in the country.

4-2 The concept of investing in human capital:

Alfred Marshall emphasized the importance of investing in HC as a national investment and that the highest type of capital is where humans invest and through which nations advance. The economy is of limited value if it is not exploited for the sake of progress, and that is through human forces that transform wealth. From mere qualitative quantities to diverse technological energies that achieve the desired progress (Sirenko et al., 2024). Investing in HC means spending on developing human capabilities, skills, and talents in a way that enables them to increase their efficiency, or it means using part of society's or individuals' savings to develop the capabilities, skills, information, and behaviors of individuals to raise production capacity and then society's total capacity to produce more goods. Services that achieve the well-being of society and prepare it to be a good citizen (Eweade et al., 2024). It is also defined as a set of concepts, knowledge, and information on the one hand, and skills, experiences, and performance elements on the other hand, that a person obtains through formal and informal education systems, which contribute to improving his performance and productivity (Hernández

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& Chávez, 2024). Therefore, attention to HC is an important part of achieving economic justice and sustainable development to achieve equal opportunities for all members of society and make them more productive, in addition to giving the educational and health aspects great importance and developing training and qualification programs to keep pace with modern economic trends and labor market requirements, which requires increased spending on social services.

4-3 Investment in HC and its role in economic development:

There is an influential relationship between HC and productivity, as investment in HC positively affects productivity, which in turn can increase financial accumulation, which is used to achieve economic growth and accelerate its pace in the long term, which helps in achieving economic development. What distinguishes HC is the multiplier effect on worker productivity. Moreover, it is added to physical capital. In that case, it eliminates diminishing returns without technological change and paves the way for long-term growth without any external technological change. The presence of a workforce at the aggregate level will increase the total production function through integration with physical capital and by influencing technology and creativity (Porfiriev, 2020). Investing in human resources contributes to alleviating the severity of unemployment significantly by providing individuals with more excellent education and skills in line with the needs of the labor market through education, training, etc. so that the labor required in the market is highly skilled and thus productivity increases. (Blinova, et al, 2022). Therefore, the role and importance of investment in HC in economic development are represented by the following (Zheng, 2023) (Osipov, 2020) (Weldegiorgis et al., 2024):

1-The skills and knowledge that individuals acquire are a form of capital and an essential part of the output of circulating investment, and its growth will be more distinctive for the future of the economic system of any country.

2- Spending on the human element, which may appear wasteful, is, in fact, investment spending in terms of its motives and impact on labor productivity, as Schultz emphasized that direct spending on health, education, and internal migration to obtain better jobs, and indirect or implicit expenditure on the human element such as income. The implicit income that students give up to devote themselves to study, the implicit income that workers give up during their training periods, and the use of rest time to improve skills and knowledge. All these types of spending lead to improving the quality of the human element and maximizing its productivity, and this type of investment is the main reason for most real increases that each worker receives.

3- The human element is a significant source of ideas and a primary tool for developing competitive capabilities through developing mental energies, which are a fundamental source of knowledge and developing innovative capabilities that are transformed into services and products that meet beneficiaries' desires.

4- Providing individuals with high intellectual skills who are distinguished by training and education allows for stimulating production and achieving growth by increasing the level of knowledge in the economy and applying it in production processes by including innovations, technology, and new productive means in the production process and economic activity thereof.

5- The human element is one of the most critical productive elements that can contribute to economic development. It will not play its distinguished role without education, as education contributes to the accumulation of HC, which works to increase the rate of economic growth in the long term, and technical progress increases when there is a vital work is better and more educated, and hence the accumulation of HC helps in technical progress and is a source of sustainable economic growth.

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ISSN: 2821-4366
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6- HC development represents the mobilization of human energies and the crystallization of their potential

Its multiple mental and physical talents increase its value and raise its status so that it can be used innovatively in the optimal exploitation of all economic resources.

5 - The reality of investment in HC in Iraq from 2019-2023

The reality of investment in HC in the Iraqi economy can be identified through the following:

5-1 The reality of investment in education:

Education is one of the important factors in the accumulation of HC and has a vital role in economic development because the productivity of an educated individual is greater than that of an uneducated individual. Therefore, it is essential to increase educational opportunities by expanding spending on health and education and considering them as investment expenditures. In addition, education is a human investment that accumulates HC, increases individuals' productivity, and diversifies their capabilities. To learn about the reality of this investment in the Iraqi economy, the researcher will address the following indicators :

1-Investing in HC at the primary stage:

This stage is considered one of the basic stages for individuals, through which they learn reading, writing, and basic sciences. From here, investment in this vital resource begins and is one of the intangible investments. It consists of continuing to invest in it so that its efficiency increases in the future. The duration of study in this stage is six years. Identify the rate of investment in HC at this stage. By observing the following table:

Table (1) The number of schools, students, and educational staff members at the primary schools in Iraq from (2011-2021)

Year	Number of schools	Annual growth rate%	Number of students	Annual growth rate%	Number of teaching staff members	Annual growth rate%	The ratio of students to teaching staff
2011-2012	14674	-	5124257	-	271734	-	18.86
2012-2013	15156	3.28	5351319	4.43	277792	2.23	19.26
2013-2014	15807	4.30	5558674	3.87	287502	3.50	19.33
2014-2015	10779	-31.81	4283044	-22.95	223310	-22.33	19.18
2015-2016	12973	20.35	4997052	16.67	247919	11.02	20.16
2016-2017	14024	8.10	5473997	9.54	259836	4.81	21.07
2017-2018	15965	13.84	6197870	13.22	286097	10.11	21.66
2018-2019	17235	7.95	6501053	4.89	290664	1.60	22.37
2019-2020	17945	4.12	6637127	2.09	291904	0.43	22.74
2020-2021	18393	2.50	6454872	-2.75	292251	0.12	22.09

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ISSN: 2821-4366
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Source: preparation of the researcher based on: 1-Central Bureau of Statistics, report on primary education, for the years(2011-2021), Baghdad: Ministry of planning.2- The researcher calculated the annual growth rate based on the data of the table itself and the application of the equation:

$$r\frac{\mathrm{P2}-\mathrm{P1}}{\mathrm{P1}}*100$$

We notice from Table (1) that the number of schools decreased from 14,674 schools in 2011-2012 to 10,779 schools, with a growth rate of -31.81% for the year 2014-2015, then it increased to 17,235 schools, with a growth rate of 7.95% in 2018-2019, then to 18,393 schools, with a growth rate of -31.81% for the year 2014-2015. Growth of 2.50% in 2020-2021 is small compared to the number of students enrolled in schools that represent the primary educational centers for investment in HC. About the number of students, we notice a decrease in the number of students from 5,124,257 students in 2011-2012 to 4,283,044 students, with a growth rate of - 22.95% in 2014-2015, then it increased to 6,637,127 students with a growth rate of 2.09% in 2019-2020, then it decreased to 6,454,872 students with a growth rate of -2.75 in 2020-2021. These numbers are small compared to the population increase in Iraq, and this decrease resulted from the economic and social conditions. The Iraqi economy's difficulties greatly affected this basic and important investment segment in HC. As for the number of teaching staff members in primary schools, we notice a decrease from 271,734 teachers for the year 2011-2012 to 223,310 teachers in 2014-2015, with a growth rate of -22.33%, then it decreased to 290,664 teachers in 2018-2019, with a growth rate of 1.60%, then to 292,251 teachers, with a growth rate of 0. 12% in the year 2020-2021, and about the ratio of students to the number of teachers, we notice that it increased from 18.86 in the year 2011-2012 to 20.16 in the year 2015-2016, then to 22.09 in the year 2020-2021. This increase came to accommodate the increasing numbers of students, as many schools are witnessing a double shift system, which will hurt investing in HC at this important stage.

2-5 Investing in HC at the secondary schools:

This stage is considered one of the important stages of investing in HC, as providing a limited amount of free public secondary education in any economy is important. It will be economical to provide it in cities, where most families live who can financially bear the cost of keeping their children for an additional four years or two years. During this stage, assistants for those with high-end professions, such as nurses, technicians, supervisors, senior clerical staff, secretaries, and others, can be provided. It is important to provide higher education than primary education for many professions and learn about the reality of investment at this stage in the Iraqi economy. We note the following table. :

Table (2) The number of schools, students, and educational staff members at the secondary school in Iraq from (2011-2021)

Year	Number of schools	Annual growth rate%	Number of students	Annual growth rate%	Number of teaching staff members	Annual growth rate%	The ratio of students to teaching staff
2011-2012	6041	-	2211421	-	141355	-	15.64
2012-2013	6425	6.36	2394678	8.29	146276	3.48	16.37

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2013-2014	7083	10.24	2528133	5.57	160323	9.60	15.77
2014-2015	4953	-30.07	2032880	-19.59	128667	-19.75	15.80
2015-2016	6022	21.58	2442935	20.17	141300	9.82	17.29
2016-2017	6605	9.68	2624140	7.42	148832	5.33	17.63
2017-2018	7485	13.32	2933539	11.79	164744	10.69	17.81
2018-2019	8139	8.74	3140110	7.04	168330	2.18	18.65
2019-2020	8612	5.81	3258718	3.78	173805	3.25	18.75
2020-2021	8633	0.24	3311210	1.61	174219	0.24	19.01

Source: preparation of the researcher based on: 1-Central Bureau of Statistics, Secondary Education Report, for the years (2011-2021), Baghdad: Ministry of Planning.2- The researcher calculated the annual growth rate based on the data of the table itself and the application of the equation:

$$\frac{P2 - P1}{P1} * 100$$

We notice, from Table (2), an increase in the number of schools from 6,041 in 2011-2012 to 7,083 in 2013-2014, with a growth rate of 10.24%, then decreasing to 4,953, with a growth rate of -30.07% in 2014-2015, then increasing to 8,633, with a growth rate of 0. 24% in the year 2020-2021, and about the number of students, it increased from 2,211,421 for the year 2011-2012 to 2,442,935, with a growth rate of 20.17% in the year 2015-2016, then to 3,311,210, with a growth rate of 1.61% in the year 2920-2021. As for the number of educational staff members in Secondary schools, We notice an increase from 141,355 in 2011-2012 to 160,323, with a growth rate of 9.60% in 2013-2014, then to 168,330, with a growth rate of 2.18% in 2018-2019, then to 174,219, with a growth rate of 0.24% in 2020-2021. As for the percentage of educational staff members In secondary schools, we notice an increase from 15.64 in 2011-2012 to 17.29 in 2015-2016, then to 19.01 in 2020-2021.

It is clear from the above that the deterioration of education in Iraq is mainly caused by the weakness of the infrastructure in the educational sector and the number of schools compared to the number of students, which causes overcrowding in the number of students inside schools, which have begun to receive more significant numbers than their capacity to bridge the gap between the number of students and schools. Despite the increase in educational centers, it differs from the number of students in Iraq, which has a large percentage of young people. This has dramatically affected the absorption of this growing population and the provision of appropriate school buildings for students.

5-3 Investing in vocational education:

Regarding vocational education, the preparation of students and teachers and vocational education schools (industrial, agricultural, commercial, applied arts, computers, and computer technology) will be addressed. General theoretical and applied artistic, vocational, and technical subjects are studied at this stage. The duration of study is three years after the end of the term.

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Primary education (middle school), and the student obtains a middle school certificate. To learn about the reality of investing in HC at this stage, we note Table No. (3) as follows:

Table (3) The number of schools, students, and educational staff members at the secondary school in Iraq from (2011-2021)

Year	Number of vocational schools	Annual growth rate%	Number of students	Annual growth rate%	Number of teaching staff members	Annual growth rate%	The ratio of students to teaching staff
2011-2012	295	-	56301	-	12553	-	4.49
2012-2013	298	1.02	58689	4.24	12745	1.53	4.60
2013-2014	304	2.01	56048	-4.50	12787	0.33	4.38
2014-2015	223	-26.64	44696	-20.25	10527	-17.67	4.25
2015-2016	267	19.73	51138	14.41	11371	8.02	4.50
2016-2017	280	4.87	53003	3.65	11159	-1.86	4.75
2017-2018	305	8.93	50039	-5.59	11245	0.77	4.45
2018-2019	314	2.95	50603	1.13	10976	-2.39	4.61
2019-2020	316	0.64	52131	3.02	10741	-2.14	4.85
2020-2021	322	1.90	108155	107.47	10111	-5.87	10.70

Source: Prepared by the researcher based on 1- The Republic of Iraq, Ministry of Planning, Central Bureau of Statistics, annual statistical collection 2022-2023, Baghdad.2- The annual growth rate was calculated by the researcher based on the data of the table itself and the application of the equation:

$$r = \frac{\mathrm{P2} - \mathrm{P1}}{\mathrm{P1}} * 100$$

We notice, from Table (3), that the number of vocational schools increased from 295 in 2011-2012 to 304 in 2013-2014, with a growth rate of 2.01%, then it increased to 322 in 2020-2021, with a growth rate of 1.90%. As for the number of students, it decreased from 56,301. In 2011-2012, it rose to 44,696, with a growth rate of -20.25% in 2014-2015, then it increased to 52,131, then to 108,155, with a growth rate of 107.47% in 2020-2021. As for the educational staff members, we notice a decrease from 12,553 in 2011-2012 to 10,527, with a growth rate of -17. 67%. Then it decreased to 10,111, with a growth rate of -5.87% in 2020-2021. The ratio of educational staff members to students increased from 4.49 in 2011-2012 to 4.75, then to 4.85, then to 10.70 in 2020-2021. Light of these data, which show a decline in the number of students, the number of schools, and the number of teaching staff, which came as a result of the wars and

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economic crises to which the Iraqi economy was exposed in its various stages, and the weakness of the financial allocations necessary for its development, which limits its ability to join the ranks of professional and technical institutions in the countries of the developed world, And its inability to keep pace with scientific and technical developments and changes, and the lack of policies, planning, and educational and pedagogical philosophy to develop this vital sector, as well as society's view and culture of this type of education and the lack of great demand for it compared to the rest of the other sciences. In their view, graduates of this type of institute are not equal to the rest of the graduates in Medicine, engineering, law, economics, and administrative sciences, which has limited interest in this vital sector, which is important for the public and private sectors. It is clear from this that vocational education in Iraq suffers from a set of challenges and problems.

5-4 Investing in university education:

It is considered one of the basic and important elements for supporting HC because it not only provides the basic skills necessary for the labor market but also provides the necessary training for all individuals in their various specializations, after training them, developing and improving their abilities and skills, which will advance the economy and their ability to make the necessary decisions that affect the economy—the entire community. To understand the investment reality at this stage, we note Table No. (4) as follows:

Table (4) The number of universities, students, and academic staff members at the university in Iraq from (2011-2021)

Year	Number of universities	Number of students	Annual growth rate%	Number of teaching staff members	Annual growth rate%	The ratio of students to teaching staff
2011-2012	31	489105	-	37374	-	13.09
2012-2013	31	554272	13.32	39389	5.39	14.07
2013-2014	31	626700	13.07	40938	3.93	15.31
2014-2015	35	574741	-8.29	35319	-13.73	16.27
2015-2016	35	608308	5.84	38570	9.20	15.77
2016-2017	35	647598	6.46	41183	6.77	15.72
2017-2018	35	743642	14.83	47874	16.25	15.53
2018-2019	35	792374	6.55	49634	3.68	15.96
2019-2020	35	845939	6.76	50662	2.07	16.70
2020-2021	35	105364	-87.54	52090	2.82	13.09

Source: Prepared by the researcher based on 1- The Republic of Iraq, Ministry of Planning, Central Bureau of Statistics, annual statistical collection 2022-2023, Baghdad.2- The annual growth rate was calculated by the researcher based on the data of the table itself and the application of the equation: $r = \frac{P2-P1}{P1} * 100$

We note from Table (4) that the number of Iraqi universities remained constant from the year 2011-2012 until 2013-2014 and then increased to 35 from the year 2013-2014 until the year 2020-2021 to accommodate the number of students and the number of students, it may It increased from 489,105 in 2011-2012 to 743,642 in 2017-2018, with a growth rate of 14.83%, then decreased to 105,364, with a growth rate of -87.54% in 2020-2021. As for the number of teaching staff in universities, it is noted that it increased from 37,374 in 2011-2012 to 47,874 in

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2017-2 018 with a growth rate of 16.25%, then it increased to 52,090, with a growth rate of 2.82% in the year 2020-2021, and about the number of teaching staff to the number of students, we notice an increase from 13.09 in the year 2011-2012 to 16.27 in the year 2014-2015, then a decrease to 13.09 in the year 2020-2021. It is clear from this the problems that this important stage of investment in HC suffers from as a result of the conditions to which the Iraqi economy was exposed in various aspects, in addition to the deterioration of the security situation that affected students and qualified university professors on the other hand, which led to the migration of many of them. Abroad, in addition to the low level of public spending on this vital sector for developing HC.

5-5 investing in health:

HC is one of the basic components to ensure the success of economic development efforts in any country in the world and to build the human element capable of doing what the development process requires: the health of individuals, in addition to their education and training, must be a top priority for macro policymakers in any country (Maag, E., Lou, C., Casas, M., Daly, H., Garriga, G., & Hunter, L., 2023)

Therefore, we will discuss the life expectancy index at birth, one of the important indicators that express the general health status of individuals in a country and is evidence of the quality of healthy life that individuals receive. It is defined as the average number of years a newborn is expected to live if the Health and living conditions at the time of birth are at the same level. In general, life expectancy at birth in a country is determined based on various social and economic factors, such as poverty, malnutrition, access to clean water and sanitation, and the availability of primary health care services and immunization coverage. Roffia, P., Bucciol, A., & Hashlamoun, S. 2023), and to learn about the reality of this indicator in Iraq, we note the following table:

Table (5) Life expectancy at birth and the average per capita share of health services in Iraq from (2011 - 2021)

Year	Life expectancy at birth (year)	Number of primary health care centers	Annual growth rate%	Per capita share of spending on health services	Annual growth rate%
2011	69.0	2441	-	189824	-
2012	69.4	2538	3.97	191224	0.74
2013	72.77	2642	4.10	224571	17.44
2014	72.57	2632	-0.38	187143	-16.67
2015	72.69	2680	1.82	173264	-7.42
2016	73	2669	-0.41	154700	-10.71
2017	73.4	2658	-0.41	119000	-23.08
2018	73.6	2818	6.02	110670	-7.00
2019	71.1	2808	-0.35	107100	-3.23
2020	71.5	2805	-0.11	149100	39.22
2021	71.2	2693	-3.99	169625	13.77

Source: prepared by the researcher based on the: 1-Republic of Iraq, Ministry of Health, Department of Planning and Resource Development, Department of Health and Life Statistics, annual reports for different years.2-1-Republic of Iraq, Ministry of Planning, Central Bureau of

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Statistics, annual statistical collection 2022-2023, Baghdad.3- The researcher calculated the annual growth rate based on the table's data and the application of the equation:

$$r = (\frac{P2}{p1})^{\frac{1}{n}}\text{-}1*100.$$

We note from Table No. (5) that life expectancy at birth has witnessed an increase between (69-71) years for the years (2011-2021), resulting from an increase in the number of live births at a rate of 3% annually and the number of health centers, we note It took a fluctuating path, as it rose from 2,441 in 2011 to 2,642, with a growth rate of 4.10% in 2013, then rising to 2,818, with a growth rate of 6.02% in 2018, then decreasing to 2,693, with a growth rate of -3.99 in 2021. These numbers are not commensurate with the increasing population, which is growing at a rate of 3% annually, and this indicates a lack of interest in these centers and their development over time to become highly efficient for the majority of the population to benefit from them, in addition to the neglect of some of them due to insufficient financial allocations for their rehabilitation. Regarding the share of individuals receiving health services, it is noted that it decreased from 189,824 in 2011 to 119,000, with a growth rate of -23.08 in 2017, then it increased to 149,100, with a growth rate of 39.22%, then to 169,625 with a growth rate of 13.77% in 2021. This results from the multiple problems and challenges that it suffers from. The health sector in Iraq, as a result of wars and the militarization of the economy, the deterioration of the security conditions that led to the destruction of infrastructure and social construction, the depletion of financial and human resources, the decline of the role of social and health insurance, the deterioration of services and the disruption of preventive health care programs, and the poor quality of drinking water and sanitation services, are all these factors. It led to the decline and deterioration of health services, disrupting human development by disrupting investment in HC.

5-6 Investment in research and development:

It is intended as the main source of technological innovations and one of the essential investment channels that contribute to managing technological changes with their material, financial, and human components and their theoretical and applied activities, or it is the creative work that is based on a systematic basis to increase the stock of knowledge, including the knowledge of human society, and it is the process of creating. Establishing institutions that support investment in the research and development sector is an important matter for financing the economic development process, strengthening the link between research institutions and stimulating cooperation between research centers and universities, and then contributing to supporting development in its various aspects and directions, and achieving competitiveness across local and international institutions in the economic field. (Cowling, M., Liu, W., & Vorley, T. 2024). We note Table No to learn about the reality of investment in this field in the Iraqi economy. (6) as follows:

Table (6) Researchers working in the field of research and development in Iraq from (2011-2021) (Numbers are in per million people).

Year	Researchers working in the field of research and development	Compound growth rate
2011	427.00	-9.23%
2012	66.00	
2013	63.00	
2014	62.00	
2015	102.00	

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2016	107.00	
2017	117.00	
2018	135.00	
2019	162.00	
2020	427.00	
2021	66.00	

Source: prepared by the researcher based on: 1-World Bank, the World Bank database is available on the website:www.data.albankaldawli.org/indicator.2- The researcher calculated the compound growth rate based on the data of the table itself and the application of the equation:

$$r = (\frac{P2}{p1})^{\frac{1}{n}}\text{-}1*100.$$

We notice, through Table (6), a decrease in the number of workers in the field of research and development from 427.00 in 20011 to 62.00 in 2016, then an increase to 102.00 in 2017 and continuing to rise, but at a lower rate than previous years, to 162.00 in 2021, with a compound growth rate of -9.23. % from from (2011 to 2021), which indicates the problems and challenges that this vital sector suffers in the field of investment in HC and the possibility of employing research in the areas of economic development to advance the reality of the Iraqi economy, which is mainly dependent on oil revenues, and to ensure the competitiveness of the economy. This reflects the deteriorating reality of this sector due to the lack of interest in scientific research in Iraq and a lack of awareness of its usefulness, which appears through the deficient volume of spending in the field of research and development. In addition to this, technological dependency on foreign countries to solve production and development problems, resulting from a lack of confidence in local cadres and research institutions, in addition to the migration of many Iraqi minds and educated cadres who could have contributed to supporting development and development projects if the appropriate conditions were provided for them, which increases The current deteriorating reality of scientific research in the Iraqi economy.

6- Spending index on the education, health, and research and development sectors: To understand this index, we note the following:

6-1- Education spending index: This measure indicates what financial resources are spent on materials or services that are consumed or benefited from in the short or long term in the educational process to achieve a specific educational outcome, whether in quantitative terms represented by the number of graduates, Or in qualitative terms, which is represented by the level of knowledge, skills, and experiences acquired by students? The education spending index reflects the state's tendency to increase society's cultural and living standards (Matos, S., Jorge, S., & Moura e Sá, P. 2023). It is considered one of the important social indicators for knowing the extent of the development capacity of the Iraqi economy, and Table No. (7) shows the percentages of spending on education in Iraq.

6-2- Health spending index: Given the importance of health in the formation of HC, and then in the formation of the gross domestic product and then economic development in any country, the health of individuals, along with their education and training, are essential matters in any country, so Health care must be provided to them through continued government spending on this vital sector, and Table No. (7) shows the percentages of spending on health in Iraq.

6-3-Indicator of spending on research and development: Different countries are interested in this activity and allocate a large portion of their budgets to it. Investment in this field is one of the basic factors determining the growth level and reflects the total government spending on basic and applied research. Investment plays a role in economic development and high economic growth rates by increasing production capacity and replacing consumers with it. It

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has a role in improving technical progress and supplementing it with advanced production techniques. Table No. (7) shows the percentages of spending on research and development in Iraq.

Table (7) Spending on education, health, research, and development as a percentage of the gross domestic product in the Iraqi economy from (2011-2021)%

Year	Spending on education	Spending on health	Spending on research and development
2011	3.63	1.53	0.03
2012	3.71	1.52	0.03
2013	3.86	1.71	0.04
2014	3.60	1.62	0.04
2015	4.42	1.54	0.04
2016	4.73	1.55	0.04
2017	0.94	0.26	0.04
2018	1.57	0.01	0.04
2019	1.63	0.62	0.05
2020	5.24	2.26	0.04
2021	4.33	2.79	0.03

Source: prepared by the researcher based on: 1-Central Bank of Iraq, Annual Statistical Bulletin, multiple years, scattered pages. 2 - Ministry of Finance, General Budget department,2016, P.28. 3 - Ministry of Finance, General Budget department, 2017, P.40. 4-World Bank, the World Bank database is available on the website:www.data.albankaldawli.org/indicator

We notice from Table (7) that the percentage of spending on education as a percentage of GDP decreased from 3.63% in 2011 to 0.94% in 2017, then it increased to 5.24 in 2020, then it decreased to 4.33% in 2021. Regarding the spending percentages in the sector, we also noticed a decrease in health, from 1.53% in 2011 to 0.26% in 2017, then an increase to 2.26% and 2.79% in 2020 and 2021, respectively.

As for the percentage of spending on research and development as a percentage of GDP, we also notice from Table (7) that these percentages remain low, as they increased from 0.03% in 2011 to 0.04% in 2020, except 2019, which reached 0.05% and then decreased to 0.03%. Most research and development activities are related to something other than production and development activity but rather to obtaining a certificate or promotion rather than for practical application beneficial to the Iraqi economy.

Spending rates were low in both the education, health, and research and development sectors, influenced by the economic and social conditions that the economy is going through, as well as the decline in oil prices, which significantly affects public revenues, and the poor security conditions to which the Iraqi economy was exposed, through which it was forced to increase the proportion of spending. Compared to the rest of the sectors necessary for HC investment, military spending negatively affected the reality of the educational and health sectors and research and development. Iraq suffers from a decrease in spending on research and development, as financial funding is one of the essential sources of support and development of scientific research, as the availability of a scientific mentality alone is not sufficient without the availability of financing capacity to provide requirements such as equipment and laboratories related to scientific research and technological development.

7- Challenges and proposed policies to activate the role of HC in economic development in Iraq

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7-1- Challenges:

We conclude from the above that the process of investing in HC in Iraq faces challenges in terms of their quality and number, which constitutes a difficulty facing any development plan aimed at raising the level of investment indicators in HC, especially in the health sector, which means a continued inability to improve the standard of living for a segment of people. A wide range of Iraqi society members, and the most important of these challenges are the following:

1- The high standard of living in Iraq is mainly due to the consumption of oil reserves, while investment in building HC is weak. Iraq lacks a comprehensive, fair, and equal social protection system that can absorb shocks and protect older people and people with disabilities despite the high cost and difficulty. The financial sustainability of the current system is that it needs more coverage, benefiting mainly public sector employees, about 3 million people, compared to 200,000 private sector employees. In contrast, coverage only includes about 5 million others. In addition, the social protection system needs economic and social challenges, leading to a large disparity between public and private sector employees and between the various individuals who benefit from the system. In addition, the current design of the retirement system produces negative incentives, such as incentives for early retirement. The obstacles hinder the development of the private sector due to the preference for working in the public sector, and the current retirement system needs to provide beneficiaries with sufficient pensions whose size can be estimated before retirement.

2- The unstable security reality. From 2011 to 2014, we witnessed acceptable relative security stability, which prompted Iraq to increase spending on health, environment, and education. We find this in the investment budget for these sectors, as the volume of investment spending on the Ministries of Higher Education and Education increased from 800 million dollars to 1.6 billion, as well as health and environment from 633 million dollars to 1.2 billion dollars. This is confirmation of the objectives of the 2010-2014 development plan and the 2013-2017 development plan until, at the end of 2014, Iraq was subjected to a major terrorist attack by ISIS groups, which reached the borders of the capital, Baghdad, after... These terrorist groups occupied three governorates: Anbar, Salah al-Din, Mosul, and parts of Babil Governorate, which prompted Iraq to significantly increase military spending significantly, reaching 9 billion dollars in 2015, after 425 million dollars in 2013.

3- The unilateralism of the Iraqi economy. The Iraqi economy depends on oil to finance its annual budgets, as oil constitutes 94% of Iraq's annual budgets, which generally affects the Iraqi economy by the level of international oil prices and the volume of daily oil exports to Iraq. When oil prices increase, budgets increase and increase. Development allocations are one of the most important reasons for the increase in the size of the budgets for the years 2011-2012-2013, which were as follows (68 - 90 - 102 billion dollars) respectively. At the same time, the budgets decreased after the oil shock of 2014-2015 to 69 and 61 for the years 2015-2016. Increasing the budget deficit from $8 billion in 2015 to $16 billion in 2016, noting that Iraq achieved a financial surplus estimated at $12 billion in 2012, and since the Ministry of Higher Education, Education, Health, and Environment relies on the general budget to finance its investment budgets, and if we take the shock together, Oil revenues 2014-2015, which reduced oil revenues from 92 billion dollars in 2013 to ($47-36-54 billion) (for the years 2015-2016-2016), respectively, with an increase in military spending to finance the war against ISIS, which constituted approximately 20% of the budgets over the years—mentioned, which means undermining the efforts made for development, as the budget for education and higher education combined decreased from 1.6 billion dollars in 2013 to 276 million dollars in 2015 and almost stopped in the years 2016 and 2017. The health and environment investment budget also

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decreased to 340 million dollars in 2015 after it was 1.2 billion. Dollars in 2013, and also stopped for the years 2016 and 2017. If we add to the health reality the size of the losses of martyrs and wounded,

In addition to the educational reality, the extent of the destruction inflicted on schools and three major universities, the picture becomes more tragic for HC in the years 2014-2015-2017.

4- The Corona epidemic. In mid-2017, Iraq was able to liberate the city of Mosul, which is the last stronghold of terrorist groups in Iraq, as Iraq witnessed a large amount of destruction in infrastructure, schools, universities, and hospitals, which required special budgets for the reconstruction of those governorates.

After 2018, oil prices began to noticeably recover until, on some days in 2019, they reached $75 per barrel. However, at the end of 2019 and the beginning of 2020, and after the announcement of the spread of the Corona epidemic in the world, oil prices began to deteriorate gradually until they reached in April to $37 per barrel.

Table (8) Investment budget of some ministries (Numbers are in million dollars).

Year	Oil	Military	Agriculture	Industry	Education	Health and environment
2010	2645	676	172	423	720	976
2011	6950	435	1937.6	644.6	858.6	1059
2012	9000	3950	177	474	800	633
2013	18000	4222	1610	1000	1673	1288
2014	17000	400	1610	900	1670	1200
2015	14000	9063	380	110	276	346
2016	12250	1399	49	41	53	123
2017	13750	4050	256.5	16.8	15.3	41
2018	11200	210	30	40	119	81
2019	19492	3246	661	90	275	351
2020	19492	3246	661	90	275	351
2021	8333	631	36	27	173	362

Source: Republic of Iraq, Ministry of Finance, Budget department, budgets of Iraq for the years (2011-2021).

That indicates Iraq faced a double crisis, namely the outbreak of the Corona epidemic, which required particular budgets to confront the spread of the epidemic and treat infected cases, and the decline in oil prices, which directly affected Iraq's budget.

From the above, it is clear from Table (8) that the investment budgets allocated to the ministries related to HC were very modest and were only sufficient to sustain existing projects. With the size of the challenges mentioned previously, HC in Iraq needs greater attention and financial allocations that at least correspond to Population growth in Iraq, not to mention its development, which parallels global scientific development. At the same time, we clearly notice a decline in investment spending for industry and agriculture, which are supposed to provide jobs and job opportunities for university graduates, which prompts young people to become interested and compete in primary and university studies, and from On the other hand, it reduces the burden on the general budget and thus allows it to increase investment spending.

7-2- Proposed policies to activate the role of HC in economic development in Iraq:

Investing in HC includes paying attention to educating and training individuals, ensuring that they obtain good health, and working to improve their social conditions, as the wealth of people

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measures the development of human resources. The wealth of people can only be achieved by increasing knowledge, which is the basis of development, and investment in HC is the basis of development. The economy, along with information and communications technology, infrastructure, and the innovation system, is considered a basic pillar of the knowledge economy, and the role of HC in economic development in Iraq can be activated through the following:

1- Paying attention to education as an investment. Economic development is linked to preparing the necessary specializations of the workforce.

The absorptive capacity in any country is affected and determined by, among other things, scarcity.

Some types of labor force consider this scarcity as an economic obstacle that must be

Confront it with economic measures within the framework of development programs.

2- Paying attention to training to invest in HC. Training is no longer a traditional concept limited to organizing training courses and granting passing certificates. Still, rather it goes beyond being a strategic goal in the field of investment to develop HC. According to it, the person is no longer described as a worker but rather is described as a It is a human resource. On this basis, training is no longer considered a traditional seminar but rather a complete investment of HC, and training has become a goal for real, comprehensive economic development to achieve a high level of efficiency.

3- Interest in measuring the impact of education and training on the extent of actual benefit from HC qualification and its suitability to the needs of the labor market.

4- Paying attention to research and development institutions in Iraq, financing them through a stable financial budget, paying attention to Iraqi scientists and thinkers, providing laboratories and research and development equipment, especially in the health sector, and supporting their innovations in a way that serves economic development in Iraq. In addition to the partnership between the university and the private sector, there is research and development and the provision of job cadres appropriate to the needs of these companies.

5- Improving the level of education of the younger generation, raising their capabilities and skills, and supporting the workforce with programs and training would reduce production hours and costs and raise production levels and quality. This could also come through paying attention to HC, health, and society, which will have a role in achieving sustainable economic development.

6- Working to make education outcomes commensurate with the requirements of the labor market, as education isolated from it and the needs of society cannot play an effective role in economic development, through reforming the educational structure in line with rapid technological developments and this requires discovering technical skills and creating a new quality. Of the cadres who contribute to creating wealth and self-employment opportunities that stem from individual initiatives and are not dependent on work in the public sector.

7- Approving health insurance for all members of Iraqi society, which reduces the costs of treatment and, at the same time, provides them with appropriate health care by deducting an amount from the income of individuals who have health insurance, which offers amounts that support the Ministry of Health's investment budget.

8- Working to enact laws that preserve and protect the environment, the most important of which is the oil and gas law, as oil extraction and gas burning are among the largest pollutants of water, air, and land, so a comprehensive law must be put in place that protects oil-producing cities from these adverse effects that affect human health. It affects agricultural areas, water, and the quality of life in general.

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Conclusions and recommendations:

First: Conclusions:

1-The education sector is one of the important sectors in economic policies that raises important issues, including the role of the public sector in providing education services and the optimal amount of government spending on education.

2- A decrease in the number of students in the various educational levels, as a result of economic and social conditions and poor security conditions, which negatively affected individuals, resulting in a decrease in the number of students enrolled or in school seats and the reluctance of many of them to enroll in education.

3- The low spending rates on HC investment as a percentage of the gross domestic product in education, health, research, and development indicates a lack of interest or prioritizing investment in this important resource.

4- Failure to invest in HC results in several adverse effects, the most important of which are high rates of poverty and unemployment among HC, in addition to a decrease in their level of health in addition to the increasing numbers of people dropping out of education.

5- Spending on the health sector should have put the health service in its proper place, by international standards for investment in HC, as the health sector in Iraq suffers from multiple problems reflected in the poor health care provided to individuals.

Second: Recommendations:

1- Working to increase educational opportunities by expanding spending on education in line with the population increase and considering it as investment expenditures because education is a human investment that works to accumulate HC, which raises the productivity of individuals and diversifies their capabilities.

2- It is important to pay attention to the level of primary education, in terms of providing a greater amount of all requirements, better training of teachers to move away from traditional education, providing better schools with more expansive classrooms to accommodate a more significant number of students, and being equipped with the best supplies necessary for their education, to keep up with recent developments in different countries of the world,

3- Develop policies that will reduce illiteracy rates and encourage females and males to enroll in education in light of improving the education system in Iraq, which aligns with the requirements of the new global economy based on knowledge and technology.

4- Working to achieve quality education by preparing plans and strategies based on scientific foundations to raise the efficiency of educational systems and paying attention to the field of research and development by increasing spending and attention to this critical field to enhance the direction of higher education towards scientific and practical studies to achieve the goals of economic growth and its requirements for Advanced human resources.

5- Increasing interest in the educational sector by increasing the number of schools, universities, and vocational institutes, and paying attention to the quality of educational services provided to them, starting from kindergarten centers to universities and institutes, and increasing investment in them to ensure obtaining an educated human resource that can be relied upon in the subsequent stages. In addition to the need to expand and deepen compulsory education and make it more ambitious, it should include kindergarten and middle school and work to integrate literacy eradication and adult education into the mandatory general education program.

6- The need to follow a rational financial policy that works to increase the efficiency of spending on the health sector, increase health returns by addressing waste in financial and health resources, and work to diversify funding sources to improve health supply to meet the increasing health demand.

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