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-RESEARCH ARTICLE-

A DIFFERENT LOOK AT THE RELATIONSHIP BETWEEN HUMAN CAPITAL AND ECONOMIC GROWTH THROUGH THE CONTENT ANALYSIS METHOD[3]

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Abstract

In economic life, production is realized as a result of the entrepreneur bringing together the primary production factors, natural resources, labor and capital. Today, human capital is of great importance along with physical capital in the increase of production. The concept of human capital was put forward after the 1960s and it was emphasized that it has great importance in ensuring economic growth and development. Human capital is more important especially for underdeveloped and developing countries on the path to development. It includes characteristics of individuals such as education, knowledge, skills and experience. There are many studies on human capital in the literature. The purpose of this study is to use the content analysis method while examining the studies on human capital. For this purpose, the theoretical framework regarding the concept of human capital is drawn and human capital indicators and economic effects of human capital are emphasized. Moreover, Bibliographic analysis was also performed using the information obtained from the Web of Science database using Vosviewer version 1.6.20. When the number and percentage of articles on Human Capital are examined according to the fields of study in the Web of Science database, studies on business economics stand out clearly (22,442; 31.3%); when human capital and economic growth are considered together, economics alone is at the forefront (4,365; 53.1%). In addition, empirical studies on the fact that human capital increases productivity and positively affects economic growth are included in the study.

Keywords: *Human Capital, Skilled Workforce, Economic Growth, Economic Performance, Content analysis.*

JEL Codes: *J24, O4, O47, Z00.*

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BEŞERİ SERMAYE İLE EKONOMİK BÜYÜME İLİŞKİSİNE İÇERİK ANALİZİ YÖNTEMİYLE FARKLI BİR BAKIŞ[3]

Öz

Ekonomik hayatta üretim, asli üretim faktörleri olan doğal kaynaklar, emek ve sermayenin müteşebbis tarafından bir araya getirilmesi sonucu gerçekleşmektedir. Günümüzde üretim artışında fiziki sermaye ile birlikte beşeri sermaye de büyük öneme sahiptir. Beşeri sermaye kavramı 1960'lardan sonra ortaya atılmış ve ekonomik büyüme ve kalkınmanın sağlanmasında büyük öneme sahip olduğu vurgulanmıştır. Özellikle kalkınma yolunda olan az gelişmiş ve gelişmekte olan ülkeler için beşeri sermaye daha fazla öneme sahiptir. Beşeri sermaye, bireylerin eğitim, bilgi, beceri ve deneyim gibi özelliklerini içermektedir. Literatürde beşeri sermaye ile ilgili birçok çalışma bulunmaktadır. Bu çalışmanın amacı, beşeri sermaye ile ilgili yapılan çalışmaları incelerken içerik analizi yönteminden yararlanmaktır. Bu amaca yönelik olarak beşeri sermaye kavramına ilişkin teorik çerçeve çizilerek, beşeri sermaye göstergeleri ve beşeri sermayenin ekonomik etkileri üzerinde durulmuştur. Ayrıca, içerik analizine ek olarak Web of Science veri tabanından elde edilen bilgiler Vosviewer 1.6.20 versiyonu kullanılarak Bibliyografik analiz de yapılmıştır. Beşeri Sermaye konulu makalelerin Web of Science tabanındaki çalışma alanlarına göre sayı ve yüzdelerine bakıldığında işletme ekonomisi (business economics) konulu çalışmalar belirgin bir şekilde öne çıkarken (22.442; %31,3); beşeri sermaye ile ekonomik büyümenin birlikte ele alındığında ise ekonomi (economics) tek başına (4.365; %53,1) en ön sırada yer almaktadır. Ayrıca çalışmada beşeri sermayenin verimliliği artırdığına ve ekonomik büyümeyi pozitif olarak etkilediğine ilişkin yapılan ampirik çalışmalara yer verilmiştir.

Anahtar Kelimeler: *Beşeri Sermaye, Ekonomik Büyüme, Nitelikli İşgücü, Ekonomik Performans, İçerik Analizi.*

JEL Kodları: *J24, O4, O47, Z00.*

"Bu çalışma Araştırma ve Yayın Etiğine uygun olarak hazırlanmıştır."

1. INTRODUCTION

Investments in education and health in countries cause the workforce to become more skilled and productivity to increase. Today, the inadequacy of the classical production factors such as labor, capital, natural resources and enterprise in explaining the economic growth process and the fact that the Neo-Classical growth model treats technology as an external and fixed factor have resulted in the failure of predictions to come true. For this reason, new growth models have emerged. These new models try to explain economic growth with factors such as human capital, technological progress and research and development. Human capital is defined by values such as

[3] Genişletilmiş Türkçe Özet, makalenin sonunda yer almaktadır.

knowledge, skills, experience and dynamism possessed by the workforce. These qualities ensure that other production factors are used more efficiently, leading to the development and effective use of new technologies. As a result, this situation increases economic growth and supports the faster development of the country's economy (Eser and Ekiz Gökmen, 2009: 42).

Human capital was first defined by Theodore W. Schultz in the 1960s and comprehensively addresses the human characteristics that individuals gain with increasing income. In general, human capital includes people's knowledge, skills and abilities; as well as the gains they make in their education processes and the energy and vitality they gain depending on their health and nutritional status (Özyakışır, 2011: 52).

The connection between human capital and economic growth is a significant topic that is heavily debated in contemporary development literature. Human capital is enhanced through investments in individuals and becomes a crucial component of the production process. This relationship not only captivates the interest of scholars investigating the sources of growth but also serves as a foundational element for shaping development policies (Çakmak and Gümüş, 2005: 60).

Pioneering researchers like Theodore Schultz (1961), Edward Fulton Denison (1962), and Gary Becker (1964), who were among the first to systematically study human capital, argued that traditional production factors alone could not fully account for growth. They highlighted the vital role of human capital (Köksel and Yılmaz, 2021: 158). Human capital plays a key role in promoting the economic growth and development of nations by enabling a more efficient and effective utilization of other production factors (Şimşek and Kadılar, 2010: 119).

The concept of human capital, which enables other production factors to be used more efficiently and was not widely recognized until the 1960s, has been the subject of much research since then. Human capital has gained great importance with the recognition of the impact of people's qualities such as knowledge, skills and experience, which were not taken into account in addition to the impact of classical production factors on economic growth (Akça, 2015: 35).

Societies with highly educated and healthy individuals increase social welfare by raising productive, analytical, innovative and human rights-respecting individuals, in addition to economic development. The basic components of human capital can be listed as education, health and labor. Education enables individuals to gain qualified knowledge and skills; health increases the productivity of individuals and transforms them into services; and labor increases economic productivity. Sustaining economic growth depends on the harmony between human capital and physical capital (Şimdi and Aydın, 2020: 141).

In this study, firstly, a literature review was conducted and a theoretical framework regarding human capital was drawn. Then, human capital indicators and the impact of

human capital on economic growth and development was highlighted. Data collected from the Web of Science database was subsequently analyzed bibliographically using Vosviewer software. The concluding section presents findings and recommendations.

1.1. Theoretical framework on human capital

While the rate of increase observed in world population and production in the last fifty years has been accelerating; production is expanding much faster than population growth. This development once again confirms the invalidity of Malthus' theory on production and population growth, and at the same time, it leaves traditional growth theories inadequate in explaining growth. Such a rapid increase in production and the world becoming able to feed a larger population have brought to the agenda the search for answers to questions such as what dynamics will shape population growth and the production increases that will support this growth in the future. In this context, the development of Endogenous Growth Theories and the increase in studies in this field have become inevitable, especially in the long term (Keskin, 2011: 126).

The importance of human capital has been demonstrated indisputably by endogenous growth theories. During this period, many studies conducted both nationally and internationally have shown that the effect of human capital on economic growth is greater than expected. This has made human capital a phenomenon that requires careful attention in the policies to be implemented (Schuller, 2001: 90).

Human capital is a concept that refers skilled workforce in an economy with knowledge and skills. Neoclassical theories accepted labor as a fixed factor in production and ignored changes in the productivity and efficiency of labor, namely human capital. In addition, factors such as population growth and technological change were accepted as external effects in neoclassical models. However, over time, with the increasing effects of knowledge, education, experience, skills, technological developments and motivation on production, these factors also began to be evaluated within the scope of capital. Since these elements are more related to the quality of individuals and their contributions to production, they were defined as human capital in addition to physical capital, thus expanding the scope of production factors (Şimşek and Kadılar, 2010: 117).

Becker, who developed the concept of human capital and integrated it into economics, evaluated the investments that individuals make in education, health and similar services within the framework of the benefit-cost balance. This perspective suggests that individuals have the potential to increase not only their own welfare but also the social benefit. By increasing their human capital investments, individuals contribute to social development as well as obtaining higher incomes in the future. These investments provide individuals with better job opportunities and higher incomes, while also leading to their cultural enrichment. Human capital theory dates back much further than Becker's work (Bilen and Yumuşak, 2008: 6).

Labor, which has always played an important role in economic theory, is one of the cornerstones of traditional production factors and is both the driving force of creative destruction and an element that meets the need for qualified labor brought about by technological developments. Therefore, the educational gains and health status of labor in the production process are of critical importance in terms of efficiency. Mentally and physically healthy individuals can provide higher efficiency in the production process; this represents the health dimension of human capital. On the other hand, individuals' practical thinking abilities, advanced equipment and specialization in certain fields constitute the education dimension of human capital. For these reasons, both developed and developing countries have made a continuous effort to invest in education and health policies in order to increase the human capital of their societies (Koç and Atakişi, 2021: 83).

Human capital is defined as the personnel infrastructure of the information society and essentially refers to specialized people. This concept, which was first addressed by researchers such as Becker (1964), Denison (1962) and Schultz (1961), was modeled by R. Lucas (1988), one of the pioneers of endogenous growth theories, and has taken its place in the literature as one of the fundamental driving forces of economic growth. In the models developed by Lucas and Rebelo (1991), human capital was evaluated as a production factor like physical capital. This concept was generally seen as a phenomenon that develops through education, but can also occur spontaneously through learning by doing in business processes (Özyakışır, 2011: 53).

The quality of labor input, which is among the production factors, is of great importance in terms of the production process. Some production factors may have higher knowledge and skills than others and therefore can provide higher efficiency in the production process. Education and training processes play an important role in increasing this knowledge and skills. Although human capital is not among the direct production factors like financial capital, it has an indirect effect on the efficiency of labor and capital inputs (Çiçek, 2017: 7).

1.1.1. Indicators of human capital

Today, various variables are used to measure human capital. However, most of the analyses focus on basic variables such as education, health, population and income (Köksel and Yılmaz, 2021: 159).

Education plays a critical role in the development of human capital and is one of the most important criteria. Therefore, it is imperative to educate individuals to ensure and sustain economic development. Factors used to determine the level of education in a country include education records, level of education, financial and physical criteria and literacy rate (Emirkadı, 2019: 99).

The relationship between education and technological change is quite strong. Easterlin stated that technological diffusion, which underlies economic growth, depends on the degree to which the population acquires the necessary knowledge and skills through

the "formal education system". This situation reveals that education is a critical factor that supports and shapes technological progress (Eser and Ekiz Gökmen, 2009: 46). People with higher levels of education adapt to technology more quickly, increasing productivity in production.

Another important element of human capital is health. People's ability to receive education and engage in economic activities depends on their health. Therefore, investments in the field of health play a major role in the development of human capital. (Emirkadı, 2019: 99). A healthy life provides a positive increase in the work capacity of individuals by increasing their physical and energetic levels. The productivity tendencies and practices of healthy individuals contribute to the positive progress of development with the continuation of education processes throughout life (Şimdi and Aydın, 2020: 143).

Another important factor that increases the human capital stock of countries is labor transfer. Labor transfer usually occurs in two ways. First, it refers to the migration of labor with high specialized knowledge in certain fields, called brain drain, to countries with better living and working conditions. Second, it is a labor flow in the form of employment of unqualified labor in countries where it is needed and scarce. There are various reasons behind labor transfer. These include wars, the decrease in the population growth rate, the advantages provided by imported human capital, changes in the production and trade structure in developed countries, and trade differences between countries (Eser and Ekiz Gökmen, 2009: 46).

1.1.2. Effects of human capital

Human capital, one of the cornerstones of economic and social development, has a great impact on the general welfare of both individuals and society. Current research shows that human capital stands out as the most important production factor among the sources of growth. Developments and empirical findings show that the income gap between developed and underdeveloped countries is increasing rather than decreasing. In this case, technological development and the human capital behind it stand out as the main factor that creates a leap in the production function and are of great importance for developing countries to close the gap with developed countries (Keskin, 2011: 140).

High human capital accumulation enables qualified labor to have more flexibility, mobility and entrepreneurial skills. This situation enables qualified labor to be employed in new business areas and to be unemployed for a shorter period of time. In addition, human capital contributes to the formation of new types of jobs by creating suitable job opportunities and thus causes sectoral shifts in employment in parallel with the economic transformation in the world (Çakmak and Gümüş, 2005: 62). Many academic studies have been conducted on the roles played by human capital, which consists of the sum of knowledge, skills and individual abilities, in the development of countries. It has been emphasized that human capital has an important contribution

to economic development in terms of investments in education and health (Özyakışır, 2011: 48).

Empirical studies on human capital reveal that these investments create many positive effects such as higher productivity in the agricultural and industrial sectors, more equitable income distribution, increased employment opportunities and reduced development gaps between regions. Along with the role of knowledge and qualified labor in economic life, theoretical and empirical studies examining the effects of human capital on economic development have gained momentum. The results of these studies show that human capital is one of the most important elements of economic growth (Eser and Ekiz Gökmen, 2009: 42).

Human capital developed through acquiring knowledge makes significant contributions to economic growth by creating new business areas, encouraging technological progress and increasing the efficiency of physical capital. In international trade, competitive technological products produced thanks to human capital contribute to countries becoming stronger in the global market and to their economic growth (Söylemez and Yurttançıkmaz, 2020: 177).

The skilled workforce, which is formed as a result of the knowledge and experience gained during working life and the production process, has an important place in theoretical and empirical studies evaluating its effects on development, in addition to its positive contributions to economic activities. The remarkable increase in the number of these studies and the results obtained show that human capital is a critical factor in achieving economic development (Emirkadı, 2019: 100).

1.2. Related literature

There are many studies in the literature on human capital. Here, studies that examine the relationship between human capital and economic growth are included.

There are studies in the USA that suggest that investments in education accelerate economic growth and that the unexplained 36% to 70% of economic growth belongs to human capital (Schultz, 1961). Again, Schultz (1961) emphasized the importance of education and training as critical investments in human capital in his study on human capital. He argued that individuals and societies benefit from investing in education, which increases productivity and economic growth.

Denison (1962) stated that education contributes to the increase of national income by increasing skills, productive capacity and efficiency in his study on the USA. According to Denison, the entire unexplained part of national income belongs to human capital. In continuation of these studies, the studies of Jacob Mincer, Milton Friedman and Sherwin Rosen also played an important role in the development of human capital (Becker, 1993:15). However, the desired level of gain could not be achieved because traditional western societies did not accept human capital as a type of capital (Schultz, 1961: 1).

Both Becker (1964) and Denison (1962) made fundamental contributions to the understanding of human capital and its role in economic growth. Becker's theoretical framework and Denison's empirical analysis provided a comprehensive view of how investments in human capital can lead to improved productivity and sustained economic growth. Their work influenced economic policy and research by emphasizing the importance of education and training in promoting economic development.

In the literature; studies conducted by Lucas (1988), Romer (1990), Helpman (1992), Mankiw et al. (1992), Schultz (1993), Grossman et al. (1994), O'Neill (1995), Grammy et al. (1996), Ramirez (1997), Barro (1998) and Bassanini et al. (2001) have revealed that human capital increases productivity in production and thus accelerates economic growth, especially some stresses this happens via education.

Various studies emphasize the positive effects of human capital on economic productivity. In particular, researchers such as Lucas (1988), Romer (1990) and Helpman (1992) have revealed that knowledge and skills encourage innovation in businesses and thus support economic growth. Mankiw et al. (1992) and Schultz (1993) examined the positive effects of human capital on employment and showed that higher levels of education increase labor productivity.

Grossman (1994) also examined the role of human capital in international trade and explained the productivity differences between developed and developing countries. Studies by O'Neill (1995) and Grammy and colleagues (1996) further reinforced the importance of education and skill development. Studies by Ramirez (1997), and Sianesi and Van Reenen (2000) emphasized that human capital investments have a significant effect on long-term economic growth.

Barro (1998) and Bassanini et al. (2001) discuss the effects of human capital on economic performance, arguing that high-quality education systems are critical to economic development. These studies clearly demonstrate the important role of human capital in increasing productivity.

Romer (1990), particularly in his pioneering article "Endogenous Technological Change," introduced a new perspective on how knowledge and human capital contribute to economic growth. Romer challenged traditional exogenous growth models by arguing that economic growth is driven primarily by factors internal to the economy, particularly the accumulation of knowledge and human capital.

A more educated workforce is the driving force of technological change, as are new ideas and technologies that lead to sustainable economic growth, emphasizing the importance of R&D.

In general, this type of approach (Romer, 1990) integrated human capital into the broader framework of economic growth, emphasizing its critical role in driving innovation and technological progress.

Schultz, (1993) emphasizes the importance of human capital on economic growth in his work "*The Economic Importance of Human Capital in Modernization*" and argues that education plays a critical role in economic development and growth. In this context, it examines how human capital contributes to growth by increasing the economic potential of individuals and societies.

Human capital is at the center of economic growth theories and plays an important role especially within the framework of endogenous growth theory. Romer (1994) emphasized the effects of human capital on innovation and technological development and showed that economic growth is supported not only by physical capital accumulation but also by knowledge and skill development.

In this context, education and human resource investments are critical for the sustainability of economic growth. Grossman and Helpman (1994) help us better understand the dynamics of the same concept by examining how human capital affects innovation processes.

The study conducted by Fleisher et al. (2007) examined the relationship between human capital levels and economic growth in China. This study shows that human capital is an important determinant of regional inequalities as well as its effect on economic growth. Increasing education and knowledge not only supports the income levels of individuals but also supports regional development and stimulates economic growth.

In the study conducted by Çakmak and Gümüş (2005), the relationship between these vital concepts was examined econometrically using Cointegration Analysis for the period between 1960 and 2002 in Turkey. The study concluded that there is a positive relationship between these factors in Turkey.

In their study, Şimşek and Kadılar (2010) analyzed the causality relationship between human capital accumulation, exports and economic growth using Turkey's annual real GDP, real exports and higher education enrollment series for the period 1960-2004 using cointegration and error correction models. The analysis shows that in Turkey, long-term export growth and human capital accumulation support long-term economic growth, and that the increase in GDP feeds human capital accumulation.

Keskin (2011) tested the relationship between human capital and economic development using multiple linear regression models using data from 177 United Nations member countries. The findings emphasize the importance of human capital for economic development. Regression analyses reveal that literacy rates, education levels and public health expenditures have significant effects on economic development.

Aksu (2016) analyzed the same factors in his study using statistical data from Turkey between 1960 and 2009. In the econometric analysis, short-term and long-term causality relationships were investigated between economic growth and many

variables such as education, health, employment, productivity, university schooling rate, population growth and survival time. Granger causality test and Toda-Yamamoto (MWALD) causality tests were conducted. As a result of the study, primary school schooling rate and higher education schooling rate show a significant causality effect on economic growth.

Emirkadı (2019) examined the relationship between human capital and economic development in his study. The study aimed to examine the relationship between development and various human capital indicators, with the view that physical capital alone would be insufficient to ensure economic development. In the evaluation made specifically for the Turkish economy, it was stated that a certain progress was made in human capital indicators between 2008-2019.

Şimdi and Aydın (2020) examined the human capital components of Turkey and the European Union (EU) countries using a comparative analysis method in their study. The analysis was carried out by comparing the human capital indicators of 27 EU member countries and Turkey using World Bank data. The study explored the human capital indices of Turkey and 27 EU member states, focusing on education, health, and labor. Findings indicated a positive correlation between education and health expenditures and unemployment rates in countries with high human capital indices.

Söylemez and Yurttançıkmaz (2020) examined the impact of education, health, physical capital indicators, and human capital on economic growth in Turkey from 1980 to 2017 using econometric methods. Their analysis employed the Johansen cointegration test, Granger causality test, and VEC methods. The study concluded that per capita education expenditures and fixed capital investments positively influence economic growth.

Koç and Atakişi (2021) investigated the relationship between human capital and economic growth in their study, employing ARDL Cointegration and Granger Causality tests on data from the Turkish economy covering the period from 1988 to 2019. The results indicated that a concentration of human capital positively influences the formation of physical capital.

Köksel and Yılmaz (2021) explored the relationship between human capital and economic growth across a varied group of countries with different income levels. For this analysis, countries were classified based on similar characteristics into upper-income (41 countries), upper-middle-income (28 countries), lower-middle-income (32 countries), and lower-income (16 countries) groups, using data from 1990 to 2018. They employed the Gengebach, Urbain, and Westerlund Panel Cointegration Test, the AMG coefficient estimator, and Dumitrescu-Hurlin panel causality analysis methods to derive empirical results. Their findings demonstrated that human capital serves as a key driver of economic growth across all groupings, albeit at varying rates.

Oğuz and Yalçıntaş (2024) examined the relationship between human capital and economic growth within the context of European Union countries and Turkey,

utilizing various panel data analysis methods for data from 1999 to 2019. The model developed for this study found that the "Arellano, Froot and Rogers Estimator" was the most appropriate. Their analysis revealed a positive and significant relationship between human capital and economic growth, concluding that a 1-unit increase in education expenditures yielded a 0.5 unit increase in economic growth, while a 1-unit increase in health expenditures led to a 0.15 unit increase in economic growth.

2. METHODOLOGY

The aim of the research is to examine the literature via content analysis and to evaluate the concepts of human capital and economic growth together and to reveal the map by analyzing the data provided by the web of science database with a bibliometric program. In accordance with this purpose, the questions to be answered in the research are as follows:

1. What is the distribution of studies on human capital and economic growth by year?
2. What is the relationship between publications on this subject and citations?
3. Which countries publish the most in this field?
4. What are the research areas where human capital is studied the most?
5. What are the most frequently used keywords on this subject?

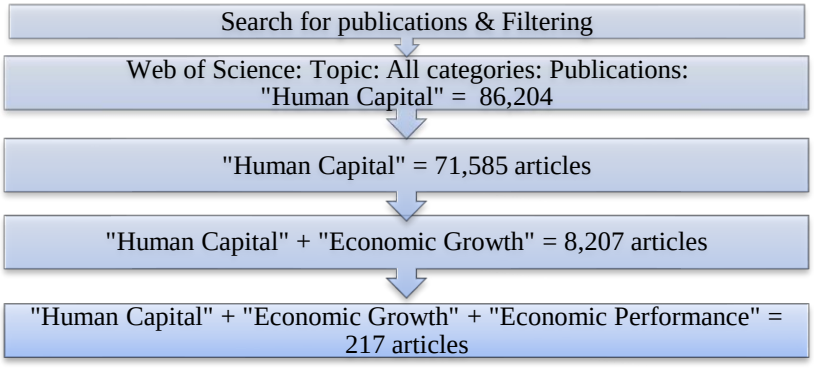


Figure 1. Reserach Flow Chart

First, "Human Capital" was scanned among all articles in the Web of Science database, reaching a figure of 86,204. In the second stage, these sources were selected to be only among the articles, and in this case, the total number of articles on the subject of "Human Capital" became 71,585. The interaction of Human Capital with Economic Growth was one of the main questions of the research, and for this reason, these two titles were scanned together in the Web of Science database, finding 8,207 articles. The diagram of the research summarizes this process (Figure 1). When Human Capital, Economic Growth and Economic Performance were taken together, 217 articles were found in the scan. When the fourth keyword, skilled workforce, was added to the scan, it was seen that 12 articles in the Web of Science database, a number

not worth analyzing, were reached, and for this reason, this result was not included in the research flow diagram and tables related to the findings.

3. FINDINGS

Both in the searches in the Web of Science database and in the analyses conducted with Vosviewer, it is very clear and obvious that human capital and economic growth are increasingly important phenomena in the world and in Turkey. Table 1, which was created after the findings were obtained, shows the distribution of articles published on Human Capital by year in the last 25 years. While the increase in the publications in question by year is clearly noticeable, it is also observed that the increase in publications on the subject titles gained momentum in 2006 and 2007. The number of publications, which was around 400 per year in the early 2000s, has reached an annual average of 6000 today.

Table 1. Publications on Human Capital and Their Percentages by Year

	Publication Year	Publications n (= 71,585)	Percentage (%)
1	2023	6,018	8,4
2	2022	6,011	8,3
3	2021	5,902	8,2
4	2020	5,181	7,2
5	2019	4,579	6,3
6	2018	4,115	5,7
7	2017	3,817	5,3
8	2016	3,470	4,8
9	2015	3,407	4,7
10	2014	3,148	4,3
11	2013	3,038	4,2
12	2012	2,721	3,8
13	2011	2,236	3,1
14	2010	1,917	2,6
15	2009	1,632	2,2
16	2008	1,332	1,8
17	2007	1,131	1,5
18	2006	997	1,3
19	2005	816	1,1
20	2004	562	0,78
21	2003	517	0,72
22	2002	422	0,58
23	2001	378	0,52
24	2000	357	0,50
25	1999	357	0,50

Source:https://www.webofscience.com/wos/woscc/summary/3dd59bbb-b454-4371-a25b-92939e5abdd8-01044774d1/relevance/1 (Access date: 27.08.2024)

After determining the research numbers of the last 25 years on human capital, it would naturally be time to address the same concept alone and together with economic growth. The number and percentage of articles on Human Capital according to their fields of study in the Web of Science database are shown in Table 2. While studies on business economics stand out clearly (22,442; 31.3%), in the table where human capital and economic growth are addressed together, economics alone (4,365; 53.1%) is at the forefront.

While fields of study such as environment, technology, education, health, psychology and sociology are at the forefront in articles on human capital, in the table where human capital is addressed together with economic growth, in addition to similar research topics, business, management and especially Geography are a notable research field in the 9th place. Accordingly, it is not surprising that fields of study related to environmental science are prominent in both tables.

Table 2. Number of Publications in the Top 10 Fields of Human Capital Study

	Fields	**Publications n = 71,585**	**Percentage (%)**
1	Business Economics	22,442	31,3
2	Environmental Sciences Ecology	6,640	9,2
3	Science technology Other topics	4,342	6
4	Education Educational Research	3,134	4,3
5	Neurosciences neurology	2,755	3,8
6	Social sciences other topics	2,604	3,6
7	Public Environmental occupational health	2,538	3,5
8	Engineering	2,336	3,2
9	Psychology	2,333	3,2
10	Sociology	2,150	3

Source:https://www.webofscience.com/wos/woscc/summary/65d7e76b-f0de-40ca-a413-04433406e5c1-010444f5c8/relevance/1(Access date: 27.08.2024)

These results provide us with a solid understanding of how certain topics and areas of study are closely related to concepts such as human capital and growth. This understanding lays a critical foundation for further exploration and inquiry. Of course, this is meaningful information for scientists who will investigate the subject from different perspectives and in more depth, enabling them to develop a more nuanced view of the implications of these relationships. The findings show that the research has achieved the desired results, confirming what was hypothesized and opening doors for future studies in related fields. These insights can lead to improved methodologies and ultimately drive innovation in addressing challenges associated with human capital development and promoting sustainable growth.

Table 3. Number of Publications in the Top 10 Fields of Study on Economic Growth with Human Capital

	Fields	Publications n=8,207	Percentage (%)
1	Economics	4,365	53,1
2	Environmental Sciences	803	9,78
3	Environmental Studies	802	9,77
4	Business	481	5,8
5	Management	461	5,6
6	Green Sustainable Science Technology	416	5
7	Development Studies	396	4,8
8	Regional Urban Studies	376	4,5
9	Geography	355	4,3
10	Business Finance	255	3,1

Source: https://www.webofscience.com/wos/woscc/summary/22694e27-e506-4682-8106-672372624f95-0104492300/relevance/1 (Access date: 27. 08. 2024)

The tables where human capital and economic growth are considered together are given below (Table 4 and Table 5). The rankings for the first 3 countries in the tables do not change, and the United States, the People's Republic of China and the United Kingdom are seen as the leading countries in their studies in these areas. While Italy, Spain, Germany and Australia stand out as countries included in both lists, Turkiye ranks 34th in the table of human capital research, and 16th in the table of countries researching human capital and economic development together with a share of 2.6%.

Table 4. Number of Article Studies by Country (Human Capital)

	Countries	Publications n=71,585	Percentage %
1	United States of America	20,609	28,7
2	People's Republic of China	19,523	27,2
3	England	5,764	8
4	Austuralia	3,654	5,1
5	Germany	3,593	5
6	Canada	3,208	4,4
7	Spain	2,898	4
8	Italy	2,754	3,8
9	Poland	2,055	2,87
10	Russia	2,044	2,85
34	Turkiye	653	1

Source: https://www.webofscience.com/wos/woscc/summary/27b6adea-4d85-4d1f-9cf8-f55520a8f015-0104490048/relevance/1 (Access date: 27.08.2024)

Table 5. Number of Article Studies by Country (Human Capital + Economic Growth)

	Countries	**Publications n=8,207**	**Percentage %**
1	USA	1,853	22,5
2	Peoples of Republic China	1,726	21
3	England	731	9
4	Russia	489	6
5	Italy	445	5,5
6	Spain	436	5,3
7	Germany	427	5
8	Australia	351	4,2
9	France	288	3,5
10	Pakistan	283	3,5
16	Turkiye	221	2,6

Source: https://www.webofscience.com/wos/woscc/summary/f8f41e04-56d8-41be-8e23-98c6722387f0-0104483fdc/relevance/1 (Access date: 27.08.2024)

It is easily seen that the leading countries in the world economy attach great importance to the issue of human capital. This emphasis arises from the understanding that the more significance placed on human capital and its strongly related concepts, the more substantial their impact on the economic growth of countries becomes. Consequently, the number of studies conducted on these interrelated topics is remarkable. The ongoing research not only sheds light on the intricate relationships between human capital and economic performance but also highlights the necessity for policies that foster education, skills development, and workforce training. By prioritizing human capital development, these nations aim to enhance productivity and innovation, ultimately driving sustainable economic growth and improving overall living standards for their citizens. This growing body of literature further underscores the need for collaborative efforts in the global community to address challenges and share best practices in harnessing human capital for economic advancement.

Table 6 shows the relationship between Human Capital and Economic Growth. Although the keywords of the study were "human capital", "economic growth", "economic performance" and "qualified labor", the search conducted with four key concepts in particular did not yield any results. When *human capital*, *economic growth* and *skilled workforce* were scanned together, they were not taken into account in the study because they yielded a result as small as 12, which was not worth analyzing.

Thus, although our first three keywords were included in the searches conducted in the Web of Science database, the relationship between human capital and economic growth was addressed in the tables as the findings obtained.

Table 6. The 30 Most Frequently Used Keywords

	Key words	Frequency		Key words	Frequency
1	Human capital	165	**16**	Schooling + training	11
2	Economic growth + Growth + Endegenous growth	107	**17**	Panel data	11
3	Innovation	29	**18**	Institutions	10
4	China	29	**19**	R&D	10
5	Productivity	28	**20**	SMEs	8
6	Entrepreneurship	28	**21**	Health	8
7	Economic performance + Firm performance + Performance	28	**22**	Efficiency	7
8	Education	27	**23**	Intelectual capital	7
9	Financial development + sustainable development + development	22	**24**	India	7
10	Social capital	15	**25**	Agriculture	6
11	Foreign direct investment	15	**26**	Europian Union	6
12	Sustainable development + sustainability	14	**27**	Structural change	6
13	Total factor productivity	14	**28**	Africa	5
14	Competitiveness + creativity	14	**29**	Migration	5
15	Convergence	13	**30**	Digital economy	5

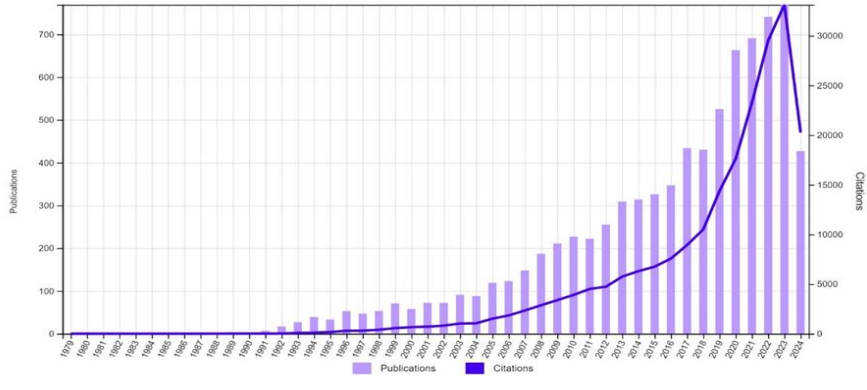
Source: https://www.webofscience.com (Access date: 30.08.2024)

According to the research flow chart, a keyword table was created based on the results obtained. When Table 6 is examined carefully, it is seen that some close concepts are shown together in the frequency of use column. This means that the table above actually contains more than thirty most frequently used keywords. It is a normal situation that the same keywords are used in different or similar ways in research. For example, due to a simple spelling error, words shown separately in the vosviewer analysis as “innovation” and “innovation” were combined. Close and similar keywords were combined in the 2nd, 7th, 9th, and 12th places in the order of most frequent use. Some similar ones were written together in the same column.

These and similar confusions are the limitations that arise due to the human element in such programs. Again, continent and country names such as China, India, and Africa could have been removed from the keyword list. The words "sustainable development" and "sustainability" can also be given as examples of situations that create limitations in this analysis. Similarly, the words "growth" and "economic growth" were written together in the same order. The fact that many keywords were used in the research also reveals that human capital interacts directly and indirectly with many factors.

It should also be noted that many other keywords are not shown in the table because their usage frequency is less than five. Examples of these are keywords such as labor productivity, technology transfer, and manufacturing. Researching human capital and similar variables with many more relevant keywords can also shed light on the relationships between some very important factors affecting the growth of the economy. Of course, the clear truth for now is that the interaction between the concepts of human capital and growth is very important.

Graph 1. Human Capital + Economic Growth Publication and Citation Numbers by Year



It can be said that the above graph, which shows the publications on human capital and economic growth that form the basis of the research and the citations made to these publications, adds another importance to the research. It is seen that the number of articles on the mentioned subject from 1979 to 2024 increased almost exponentially in the 2010s. On the other hand, when the citation numbers are examined, it will be seen that the number of publications is much more than the citations until 2020-2021. It is seen that the number of citations to articles in 2022 and 2023 is almost neck and neck with the number of articles. This very noticeable increase proves that both human capital and economic growth are among the most studied concepts of ecent years and that great importance is given to their research.

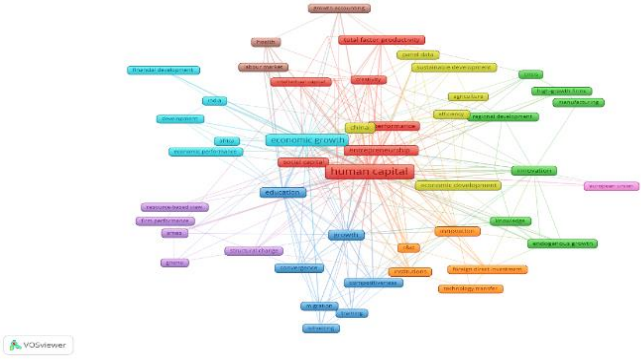


Figure 2. Word cloud of Research Keywords created with Vosviewer.

The keyword cloud created with Vosviewer 1.6.20, the bibliometric analysis program used in the study, is shown above (Figure 2). After the necessary filters in the Web of Science database options, a word cloud with 55 different items in 9 groups was obtained. It should also be noted that the concepts of Human Capital and Economic Growth together yielded 8,207 articles in the Web of Science database search, while Scopus yielded 8,440 results. The fact that there was no major difference and that both databases gave similar and close results in covering academic publications prevented any hesitation in using different databases in the word cloud.

4. DISCUSSION

In academic studies, one of the most effective ways to reach up-to-date and accurate information on a subject is to examine the literature in that field. Bibliometric analysis studies conducted in this way provide researchers with a comprehensive theoretical framework and present the obtained data, revealing the development and impact of scientific branches. Of course, researchers better understand the nature of the field they work in, and such analyses reveal the effective and deficient aspects of scientific publications.

Human capital includes people's knowledge, skills and abilities; as well as the gains they make in their education processes. The basic components of human capital can be listed as education, health and labor. Education enables individuals to gain qualified knowledge and skills; health increases the productivity of individuals and transforms them into services; and labor increases economic productivity. Human capital is defined as the personnel infrastructure of the information society and essentially refers to specialized people. The concept of human capital emerged when traditional production factors were inadequate to explain the concepts of growth and development. Especially with the development of endogenous growth theories in the 1980s.

Another important element of human capital is health. People's ability to receive education and engage in economic activities depends on their health. Therefore, investments in the field of health play a major role in the development of human capital. A healthy life provides a positive increase in the work capacity of individuals by increasing their physical and energetic levels. Human capital, one of the cornerstones of economic and social development, has a great impact on the general welfare of both individuals and society. Current research shows that human capital stands out as the most important production factor among the sources of growth.

In the research the obtained data of Web of Science data was analyzed using Vosviewer version 1.6.20, and very important results were obtained regarding the relevant concepts. First of all, it was customized according to the course of the studies of the articles related to "Human Capital" in Web of Science. At this stage, epidemics related to business economics emerged clearly (22,442; 31.3%). In addition, human capital was also examined together with economic growth, and in this case, the economy was registered (4,365; 53.1%) was determined to have the highest rate alone. When the keywords economic performance and qualified system were searched together, the results showed very few articles to be analyzed, so the research was conducted by following three of the four keywords.

Of course, according to education, human capital means economic growth and it is technologically at our hands. The effective use of an educated and qualified reporting increases the possibility of finding a current and available job. High human capital contributes to the economic growth of countries and increased productivity, which leads to an increase in personal income and welfare.

The research provided answers to the publication and citation numbers regarding the number of studies on human capital and economic growth on a yearly basis, as well as providing sufficient information regarding which countries have published in which fields regarding keywords and the most frequently used keywords.

CONCLUSION

Human capital, which is considered a fundamental element of economic and social development, increases economic welfare by maximizing the potential of individuals. Therefore, human capital investments should be at the center of development strategies. As a result of schooling and training, the workforce becomes more skilled and economic efficiency increases.

The concept of human capital was first put forward in the early 1960s. Many theoretical and empirical studies have been conducted on human capital. Studies have shown that human capital accumulation supports economic growth in the long term. Investments in education and health also contribute to the economic development of countries at a considerable level.

The analysis of data from the Web of Science database, conducted using Vosviewer version 1.6.20, yielded highly significant insights into relevant concepts. Initially, the study explored the distribution of articles related to "Human Capital" across various academic fields within Web of Science. It was observed that research in business economics was notably prominent, comprising 22,442 articles, or 31.3%. Furthermore, when human capital was analyzed in conjunction with economic growth, the economics field stood out with the highest proportion of articles, totaling 4,365, which accounts for 53.1%. However, when searching for the keywords "economic performance" and "skilled workforce" together, there were too few articles for analysis. Consequently, the research focused on three out of the four keywords.

The research findings clearly indicate that human capital plays a vital role in fostering economic growth and technological advancement. A trained and skilled workforce is capable of utilizing technology efficiently, enhancing their chances of securing employment in the labor market. Strong human capital boosts productivity, which in turn drives the economic growth of nations and leads to higher personal income and overall welfare.

Above all, human capital enhances a nation's overall economic growth, development, and international competitiveness. To attain the desired level of growth, underdeveloped and developing countries should invest more resources in human capital. Additionally, these nations need to create policies that discourage the emigration of skilled workers who have received vocational training.

BEŞERİ SERMAYE İLE EKONOMİK BÜYÜME İLİŞKİSİNE İÇERİK ANALİZ YÖNTEMİYLE FARKLI BİR BAKIŞ

1. GİRİŞ

Beşeri sermaye, bireylerin eğitim, bilgi, beceri ve deneyim gibi özelliklerini içermektedir. Literatürde beşeri sermaye ile ilgili çok sayıda çalışma bulunmaktadır. Bu çalışma, beşeri sermaye ile ilgili yapılan çalışmaları incelerken içerik analizi yönteminden yararlanmayı amaçlamıştır. Ayrıca bibliyografik analiz programı olan Vosviewer 1.6.20'den de yararlanılmıştır. Beşeri Sermaye konulu makalelerin Web of Science tabanındaki çalışma alanlarına göre sayı ve yüzdeleri tespit edilmiştir. Buna ek olarak, çalışmada beşeri sermayenin verimliliği artırdığı ve ekonomik büyümeyi pozitif olarak etkilediği bilgisine de ampirik çalışmalar aracılığıyla yer verilmiştir.

2. YÖNTEM

Araştırmanın amacı, beşeri sermaye ve ekonomik büyüme kavramlarını birlikte değerlendiren literatürü içerik analizi ile incelemek, ayrıca web of science veri tabanının sağladığı veriler yardımıyla da bibliyometrik analiz kullanarak anahtar kelime bulutunu ortaya çıkarmaktır. Bu inceleme esnasında "Beşeri sermaye ve ekonomik büyüme üzerine yapılan çalışmaların yıllara göre dağılımı nasıldır?", "Bu

konudaki yayınlar ile atıflar arasındaki ilişki nedir?", "Bu alanda en çok yayın yapan ülkeler hangileridir?", "Beşeri sermayenin en çok incelendiği araştırma alanları nelerdir?" ve "Bu konuda en sık kullanılan anahtar kelimeler nelerdir?" sorularına da cevaplar verilmiştir.

3. BULGULAR

Web of Science veri tabanında yapılan aramalarda ve Vosviewer ile yapılan analizlerde insan sermayesi ve ekonomik büyümenin dünyada ve Türkiye'de giderek daha önemli olgular haline geldiği çok açık ve belirgin olarak görülmektedir. Bulgular elde edildikten sonra son 25 yılda İnsan Sermayesi konusunda yayınlanan makalelerin yıllara göre dağılımı gösterilmiştir (Tablo 1). Söz konusu yayınlardaki yıllara göre artış açıkça göze çarpıyor ve ilgili konu başlıklarındaki yayınlardaki artış 2006, 2007 yıllarında ivme kazanmış olarak görülüyor. Net olan şu ki, araştırmanın odaklandığı konularda 2000'li yılların başında yılda 400 civarında olan yayın sayısı günümüzde yıllık olarak 6000'lere ulaşıyor.

4. TARTIŞMA

Web of Science veri tabanından elde edilen veriler Vosviewer sürüm 1.6.20 kullanılarak bibliyografik olarak analiz edildiğinde, ilgili kavramlarla ilgili olarak oldukça önemli sonuçlar elde edilmiştir. Öncelikle Web of Science'da "İnsan Sermayesi" ile ilgili makalelerin çalışma alanlarına göre dağılımı incelenmiştir. Bu aşamada işletme ekonomisi ile ilgili çalışmaların belirgin bir şekilde öne çıktığı görülmüştür (22.442; %31,3). Ayrıca beşeri sermaye ekonomik büyüme ile birlikte de incelenmiş ve bu durumda ekonomi alanının (4.365; %53,1) tek başına en yüksek orana sahip olduğu belirlenmiştir.

Elbette, araştırmanın sonuçlarına göre, ülkelerin beşeri sermayesi ekonomik büyümeyi ve teknolojik gelişmeleri destekliyor. Eğitimli ve kalifiye bir işgücü teknolojiyi etkili bir şekilde kullanma kapasitesine sahiptir ve işgücü piyasasında iş bulma olasılığı artıyor. Yüksek beşeri sermayeleri ülkelerin ekonomik büyümesine, kişisel gelir ve refahın da artmasına yol açarak üretkenliğine katkıda bulunuyor.

SONUÇ

Beşeri sermaye, genel olarak, ekonomistler tarafından ekonomik büyüme ve kalkınmanın temel unsurlarından biri olarak kabul edilir. Bu önemli kavramın en önemli bileşenleri eğitim ve öğretimdir. Bunlar bireylerin bilgi ve becerilerini artırarak işgücü piyasasında daha etkili ve üretken olmalarını sağlayan unsurlardır. Elbette, daha yüksek eğitim seviyesine sahip bireyler genellikle daha yenilikçi fikirler üretebilir ve teknolojik gelişmelere daha hızlı uyum sağlayabilir. Ekonomik büyümeyi de teşvik eden bu durum günümüzde teknolojik gelişmelerin hızlanması, işgücünün bilgi ve becerilerini sürekli olarak güncellemesi ile içiçe geçmiş bulunuyor.

Bireylerin potansiyelini en üst düzeye çıkaran ve ekonomik refahı da belirgin bir şekilde artıran unsur ekonomik ve sosyal kalkınmanın temel bir unsuru olarak kabul edilen beşeri sermayedir. Bu nedenle, beşeri sermayenin yatırımları kalkınma stratejilerinin merkezinde olması gerekiyor ve gelişmiş ülkelerin verileri incelendiğinde bu durumun öyle olduğu da görülüyor. Çünkü beşeri sermaye yatırımları, bireylerin eğitimine, sağlığına ve mesleki gelişimine yapılan yatırımları doğrudan içerir. Eğitim ve öğretim sonucunda ise işgücü daha yetenekli hale gelir ve ekonomik verimlilik artar.

Bu bağlamda gerçekleştirilen araştırmada içerik analizi ve bibliyografik analiz kullanılarak ilgili kavramlara ilişkin oldukça önemli ilişkiler tespit edilmiştir. Başlangıçta, çalışma Web of Science'daki çeşitli akademik alanlarda "Beşeri Sermaye" ile ilgili makalelerin dağılımını inceledi. İşletme ekonomisindeki araştırmaların 22.442 makale veya %31,3 ile özellikle belirgin olduğu gözlemlendi. Beşeri sermaye ekonomik büyüme ile birlikte analiz edildiğinde, ekonomi alanı 4.365 makale ile en yüksek makale oranına sahip olarak öne çıktı ve bu da %53,1'e denk geliyordu. Ancak, "ekonomik performans" ve "nitelikli işgücü" anahtar kelimeleri birlikte arandığında, analiz için çok az makale vardı. Böylece, araştırma dört anahtar kelimeden üçüne odaklanarak gerçekleşti.

Sonuç olarak, beşeri sermaye bir ülkenin genel ekonomik büyümesini, gelişimini ve uluslararası rekabet gücünü artırır. Az gelişmiş ve gelişmekte olan ülkeler, istenen büyümeyi elde etmek için beşeri sermaye yatırımlarına daha fazla kaynak ayırmalıdır. Ayrıca, bu ülkeler mesleki eğitime sahip kalifiye işgücünün ülke dışına göçünü önleyen politikalar geliştirmelidir.

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Veri Toplama ve İşleme / *Data Collecting and Processing*	Verileri toplamak, düzenlenmek ve raporlamak / *Collecting, organizing and reporting data*	Bilal EZİLMEZ / Adnan ÇALIŞKAN
Tartışma ve Yorum / *Discussion and Interpretation*	Bulguların değerlendirilmesinde ve sonuçlandırılmasında sorumluluk almak / *Taking responsibility in evaluating and finalizing the findings*	Adnan ÇALIŞKAN / Bilal EZİLMEZ
Literatür Taraması / *Literature Review*	Çalışma için gerekli literatürü taramak / *Review the literature required for the study*	Bilal EZİLMEZ / Adnan ÇALIŞKAN