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Impact of World Digital Competitiveness Indicators on Per Capita Income

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Abstract

Many parameters affect on the Gross Domestic Product Per Capita (GDPPC) index of countries. Including population, population growth rate, natural resources, economic growth, business performance, exports and imports, information technology and…

The main purpose of this study is to investigate the impact of world digital competitiveness indicators on the GDPPC. For this purpose, 21 countries from around the world have been selected and analyzed between 2013 to 2018. World Bank and IMD World Digital Competitiveness annual reports were used to collect the data. Also the data analysis was done according to the panel data method using Stata15 software. The results shows that in general, there is a positive relationship between World Digital Competitiveness indicators with GDPPC.

Keywords: Competitiveness, IMD, Digital, GDPPC

1. Introduction

The main source of growth for economies based on traditional agriculture is seen as population growth. Later, with industrialization, growth was associated with the increase in labor and physical capital, and it was accepted that the level of production could be determined by capital stock per labor. However, the theory based on the concept of understanding, which regards the technology as a product of knowledge accumulation, is insufficient to explain today's production increases.

Per capita income is important because it acts as an indicator of the stability and wealth within a country. Per capita income is a proportion of the amount of all a country's income divided by its population. Thus, per capita income demonstrates standard of living in a region.

On the other hand, studies have been conducted on the factors affecting GDP, which have often been conducted on a country and have identified the internal factors of a country. The results of some of these studies show that the men and women labor force participation, foreign direct investment, inflation rate and the amount of goods and products consumed are effective in per capita growth (Aziz & Azmi, 2017). Some authors also consider employment, activity rate and population ratio as factors affecting per capita income (Marattin & Salotti, 2011). In addition, some authors, in addition to foreign investment, have considered a country's imports and exports to be effective in per capita income growth (Jain et al., 2015). To solve this problem, according to the World Bank reports, we identified three lower-middle income, upper-middle income and high-income countries and their rank and score in the IMD world digital competitiveness during the years 2013 to 2018 from the main sources.

Our study makes multiple contributions. First, we are one of the first studies to concentrate on the relationship between digital competitiveness indicators and per capita income from an international environmental perspective.

The remainder of this paper is structured as follows. In Section 2, we provide the theoretical foundations and research background. In Section 3, we describe the research method. We present the data for our empirical analysis along with findings in Section 4 and report the discussion and recommendations in Section 5.

2. Research Background

In performance theory, the relationship between environmental, strategic and organizational factors on the one hand and the firm's financial performance on the other is examined. The performance of a company is measured using capital return, return on assets and return on capital applied (Ace Equity database). Zhang (2017) considers firm performance as a function of the characteristics of managers, business characteristics, environmental factors, and the urban population in which the company is located.

Contingency theory was introduced by Thompson in 1967, and he knows the key to business in how to achieve its goals in an uncertain environment based on rationality. According to Parsons (1960), businesses manage and control their affairs at the three technical, managerial,

and institutional levels. These three levels differ in their origin and degree of uncertainty. The underlying assumption in this theory is that in order to achieve rationality and control the activities of the business, the business aims to reduce the impact of uncertainty on the technical core. This policy can only be enforced when the activities related to the supply of product and supply factors are separated from the technical sector, and there is a greater uncertainty over the managerial and institutional levels. The key contingency factors that influence the structure of an organization are uncertainty, complexity, and variability.

According to Scott (1983), institutional theory emphasizes that the organizational environment must be seen in cultural, technical, and economic relations. Organizations and their members are rooted in cultural systems, which include a set of rules, norms, and assumptions about how to govern the world. The origin of the power of cultural dimensions is one of modern beliefs and the other of modern statehood. As a result, the institutional approach directs attention to two aspects: one at the macro-level government structures such as legal systems and the other at the micro-level in daily interactions. In the institutional approach and in the modern state, the forms and sources of beliefs are rationalized and optimized, and beliefs and customs form the basis of rules, laws and regulations. This approach redirects attention from material factors, such as the location of physical or consumer resources, to the government and to specialized and professional individuals because they are directly influenced by the organization through indirect imposition of constraints and requirements. And spreading new logical beliefs are vital.

The Organization for Economic Cooperation and Development (OECD) Program on Technology and the Economy 1992 defines that a country's competitiveness is based on better productivity performance and the ability of the economy to increase output to a higher level of activity which in turn can generate a high level of real wages. Competitiveness is related to an increasing standard of living, developing employment opportunities, and the ability of a nation to maintain its international obligations. Competitiveness can be limited as an open market environment, which can produce goods and services that pass the competitiveness test and at the same time maintain and expand domestic real income (Monga & Lin, 2015).

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues (Kenton, 2020). Profitability is closely related to profit – but with one key difference. While profit is an absolute amount, profitability is a relative one. It is the metric used to determine the scope of a company's profit in relation to the size of the business. Profitability is a measurement of efficiency – and ultimately its success or failure. A further definition of profitability is a business's ability to produce a return on an investment based on its resources in comparison with an alternative investment. Although a company can realize a profit, this does not necessarily mean that the company is profitable (Horton, 2019).

The WEF (1996) defines that a country's competitiveness is as a national economic ability to achieve sustainable growth rates as measured by annual changes in GDP per capita (IDABC Government Observatory, 2005). A country is said to be competitive if its population can

enjoy a high standard of living and increase and its employment opportunities are always high continuously. The WEF publishes the Global Competitiveness Index (GCI) Report every year with the aim of assessing the capacity of the world economy to achieve sustainable economic growth (McArthur & Sachs, 2002). One important component of the GCI Report is to summarize a nation's technological strengths, features of public institutions and the macroeconomic environment. This index underwent a major revision in 2005 due to the inability to capture the effects of globalization.

Due to the GCI measures the productivity of a country, it is often interpreted that a country's economic growth can not only be made but also must be sustainable which can be demonstrated by a high index. Therefore, the GCI contains the short-term components and the long-term components that can explain the economic growth potentiality. As claimed by the authors of this index, the GCI can determine the aggregate growth of the economic level (Lopez-Claros et al., 2007). Kordalska and Olczyk (2016) and Martin (2004) state, in fact, most of these pillars are taken from six major economic theories: classical, neoclassical and Keynesian economic theory, development economics, trade theory, and economic growth theory. Therefore, the determinants of economic growth often become "key drivers" simultaneously in the GCI pillars, so it can be said that the GDP growth rate can predict the Global Competitiveness Index (GCI). Vice versa that the GCI can be a good predictor of the GDP growth. This statement has been reinforced by Lopez-Claros et al. (2007) which state that GCI can determine the aggregate level of economic growth. Schwab (2015) also argues that a more competitive economy will grow faster over time.

Wong et al. (2005) examined the impact of technological innovation and of different types of entrepreneurial activities on GDP growth. The results of the study show that innovation is a positive and significant determinant of GDP growth. With regards to entrepreneurship, the authors find that high-potential entrepreneurial activity influences GDP growth more strongly than other types of entrepreneurial activity. Mueller (2007) tested the West German regions for whether increased entrepreneurship contributes to regional economic growth. Empirical results showed that an increase in the activity of innovative start-ups contributes more to economic growth than to an increase in entrepreneurship in general. The author also points out that only parts of the regional economic growth are stimulated by entrepreneurship, because it is mainly driven by research and development activities in existing firms, investments in physical capital stocks, and human capital. Additionally, other researches show that the impact of entrepreneurship on economic growth is different depending on the stage of economic development of a country, but the empirical results are quite heterogeneous.

At the first exit point of neoclassical growth theory, growth is linked to an increase in physical capital stock per labor, and technological development is included as an external factor that increases labor productivity (Keskin, 2011, p. 138). Until the emergence of endogenous growth theories, the dominance of the neo-classical understanding developed by Solow (1956: 65-94) is observed in the growth models (Kar & Taban, 2003, p. 3). In the first growth models of neoclassical theory, it is assumed that capital has decreasing income, while it is argued that in the endogenous growth theories, that argue that the capital will also

contain human capital, there may be an increase in capital growth and therefore long-term growth will not decrease (Sala-i-Martin, 1990, pp. 3-10).

In the theory explaining growth with labor and capital increase, it is inevitable that the capital grows due to the decreasing return of the capital. The concern that the growth will endure a limit has brought to mind the idea that new production factors should be put into effect. In this context, the search for a new production factor that will provide long-term economic growth brings the concept of 'human capital' to the forefront (Keskin, 2011, p. 139).

Neoclassical labor theorists have abandoned the idea that since the late 1950s the labor force is homogeneous and that education expenditure is also consumption expenditure. New theorists of the neoclassical approach (Schultz, 1961; Becker, 1962; Mincer, 1958 and 1962) argue that the productivity of individuals is different because of their different quality levels. Because of the productivity awareness, the workforce is heterogeneous and for this reason they argue that labor demand and supply will balance at different wage levels. They believe that educated work will be more demanding and that it will be more expensive, as it will be more productive than uneducated. They have shown that individuals who see that education increases their wages will want to invest in training to get more wages, and as a result they will consider the expenditure they have educated as investment expenditure.

Prominent contemporary theories such as neo-Schumpeterian theories (Schumpeter, 1934; Pyka & Andersen, 2012) and neoclassical growth theory (Solow, 1956) have highlighted the existence of a significant positive relationship between Information Technology (IT) and economic growth. These theories suggest that IT enters as an input into the economic supply in the form of capital and causes the improvement of the production process through deepening capital and making advancements in technology and labor force quality. As a result, IT creates added value at the firm level and at the sectoral level and therefore leads to the improvement of productivity and economic growth at the country level (Quah, 2002; Aghaei & Rezagholizadeh, 2017).

Lee et al. (2012) examined the relationship between economic growth and technological infrastructure investments such as land line telephony and mobile phones in the SSA region. They applied a linear GMM estimator on data from 44 Sub-Saharan countries over the period 1975–2006. The results confirmed that mobile phone expansion is an important determinant of the rate of economic growth in Sub-Saharan Africa. Focusing on data from a cross section of 17 MENA countries, Sassi and Goaied (2013) found a positive and statistically significant impact of ICT diffusion measured by three indicators, namely, mobile phone, fixed-line telephone, and Internet, on economic growth between 1960 and 2009. Using panel co-integration techniques, Pradhan et al. (2015) investigated the nature of causal relationships between IT infrastructure, financial development, and economic growth in 21 Asian countries over the period 2001-2012. They concluded that both IT infrastructure and financial development matter in the determination of the long-run economic growth of Asian countries.

According to the above, the research hypotheses are as follows:

Hypothesis 1: The Talent (Ta) Index has a positive relationship with the GDPPC.

Hypothesis 2: The Training and Education (TE) index has a positive relationship with the GDPPC.

Hypothesis 3: The Capital (Ca) Index has a positive relationship with GDPPC.

Hypothesis 4: The Technological Framework (TF) Index has a positive relationship with GDPPC.

Hypothesis 5: The Business Agility (BA) Index has a positive relationship with GDPPC.

Hypothesis 6: The IT integration (IT) Index has a positive relationship with GDPPC.

2. Hypothetical Research Model

Based on the hypotheses presented, the hypothetical model of the present study is shown in Figure 1.

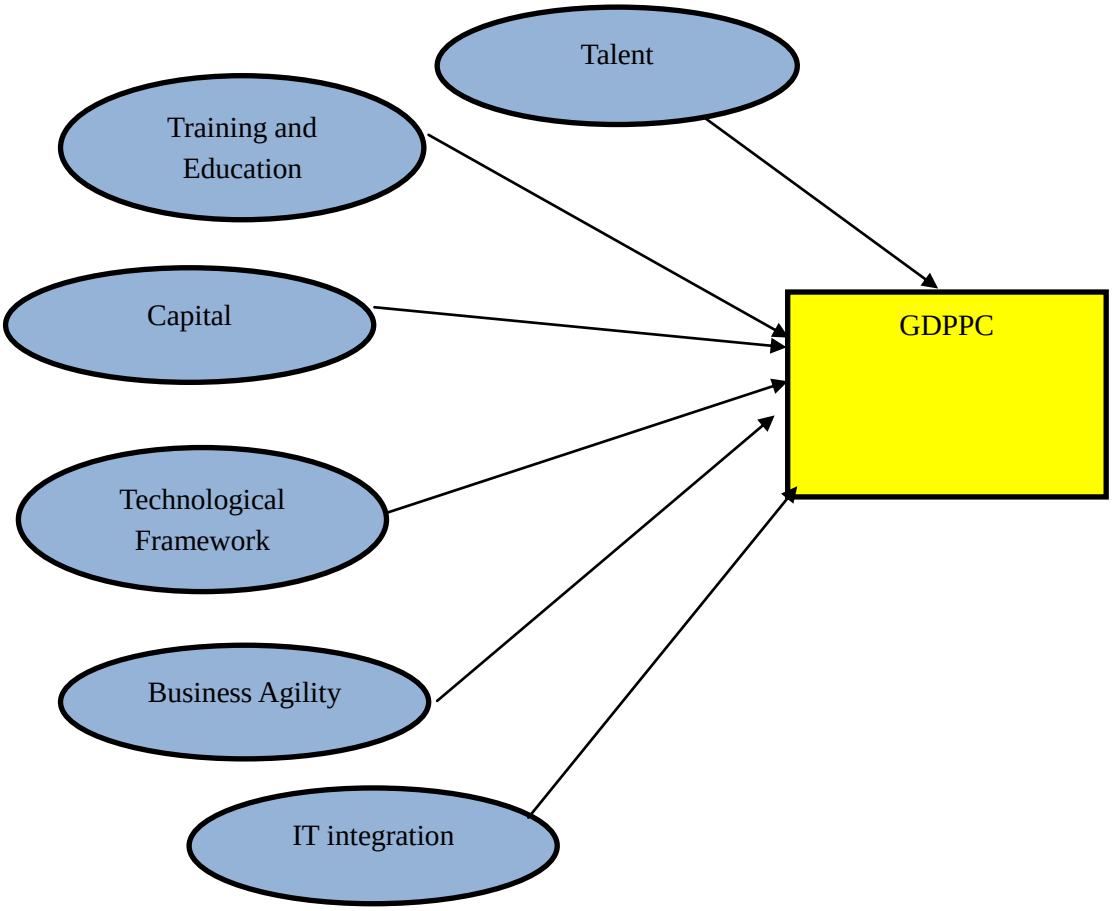

Figure 1. The hypothetical research model

3. Research Method

This study is practical and in terms of data collection method this is secondary data. It is also a quantitative research method because it seeks to distribute the characteristics of a statistical population. The research consists of three general stages; firstly, using library studies,

reviewing existing texts, models, and related theories, and selecting the appropriate model. In the second step, the data are collected and pre-processed according to the hypotheses and sample size, and in the last step, using panel data modeling approach and using SPSS and Stata software, the collected data were analyzed using econometric methods and data were analyzed.

The dependent variable of the research is the GDPPC. The independent variables of the research are Ta, TE, Ca, TF, BA and IT.

Every year, the World Bank publishes information on countries' per capita incomes. On the other hand, the scores of different countries in Ta, TE, Ca, TF, BA and IT indices are reported annually by IMD. As the present study attempts to investigate the impact of Ta, TE, Ca, TF, BA and IT indices on the GDPPC. The statistical population of this study consists of 21 countries from around the world. The method of selecting countries is clustered and from all continents, lower-middle income, upper-middle income, and high-income countries (World Bank, 2020) are selected.

Table 1 shows the per capita income of 21 selected countries between 2013 and 2018.

Table 1. GDPPC of 21 selected countries between 2013 and 2018

Country	GDPPC(2013)	GDPPC(2014)	GDPPC(2015)	GDPPC(2016)	GDPPC(2017)	GDPPC(2018)
SPAIN	35441.6	36039.7	37450.9	38553.6	38553.6	40328.9
AUSTRALIA	47192.1	47671.1	48020.3	48585.9	48585.9	49576
ENGLAND	43423	44228.3	44912.8	45428.7	45428.7	46309.8
ITALY	36314.7	36194.9	36909.3	39922.9	39922.9	42816.2
IRELAND	47897.3	51068	69056	71921.7	71921.7	84459.6
GERMANY	44993.9	47011.6	47683.8	50564.3	50564.3	54456.9
USA	53117.7	55047.7	56822.5	57927.5	57927.5	62996.7
BRAZIL	15588.7	15718.6	14744.1	14256.2	14256.2	14940.7
BELGIUM	43671.1	44929.7	46213.3	48609	48609	52249.6
CHINA	11923.8	12549.8	12978.8	13572.6	13572.6	15602.9
RUSSIA	26073.9	25761.6	24085.3	24125.4	24125.4	28763.5
JAPAN	38974.1	39179.2	40396.2	39970.7	39970.7	41335.5
SWITZERLAND	60108.5	61902.2	63939	65720.1	65720.1	69357.5
FRANCE	39523.9	40144	40860.9	42920.3	42920.3	46605.2
CANADA	44298.6	45753.8	44671.4	46480.5	46480.5	50077.8
SOUTH KOREA	34244.3	35324.5	37907.5	39567	39567	42136.1
MALAYSIA	23478	24607.7	24801.9	25546	25546	28186.7
MEXICO	17373.9	18046	18284.9	19314.3	19314.3	20396.5
NETHERLANDS	49241.5	49233.2	50302.1	52283.2	52283.2	57565.2
INDIA	5057.22	5233.87	5464.86	5839.9	5839.9	6650.11
HONGKONG	53691.8	54781.6	56408.9	57221.4	57221.4	62513

4. Data Analysis

Descriptive statistics and inferential statistics were used to analyze the collected data. The descriptive statistics of the graphs, Central indicators (mean) and dispersion (standard deviation) indices and SPSS software is used for this purpose. In the inferential statistics section, since the nature of the data is cross-sectional and time series, the panel data technique is used.

Panel data is a combination of cross-sectional data and time series, meaning that we observe cross-sectional data over time. It is clear that such data have two dimensions, one dimension being related to different units at each specific time point and the other dimension being time. The use of panel data methods over cross-sectional and time series methods has two major advantages: First, it allows the researcher to consider the relationship between variables and even units (countries) over time, and The second advantage is the ability of this method to control the individual effects of countries (as cross-cutting units) that are not observable and measurable.

In statistics, linear regression is a linear model approach between response variables with one or more descriptive variables. Regression is often used to explore the linear relationship model between variables. In this case, it is assumed that one or more descriptive variables whose value is independent of the other variables or under the researcher's control can be effective in predicting the response variable whose value is not dependent on the descriptive variables under the researcher's control. The purpose of regression analysis is to identify the linear model of this relationship.

The general form of the linear K-variable regression model is as follows:

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \ldots + \beta_K X_{Ki} + u_i \qquad (i = 1, 2, \ldots, N)$$

Where the β_1 is width of the origin, β_K is the coefficients of partial angles, u are the random disruption component (estimation error), N is the size of the original population, and i represents the i-th observation. Y denotes the dependent variable and X denotes the independent variable. (Gujarati, 1995, p. 323).

By expanding the main equation we will have:

$$Y_1 = \beta_1 + \beta_2 X_{21} + \beta_3 X_{31} + \ldots + \beta_K X_{K1} + u_1$$

$$Y_2 = \beta_1 + \beta_2 X_{22} + \beta_3 X_{32} + \ldots + \beta_K X_{K2} + u_2$$
$$\vdots$$
$$Y_N = \beta_1 + \beta_2 X_{2N} + \beta_3 X_{3N} + \ldots + \beta_K X_{KN} + u_N$$

$$\begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_N \end{bmatrix} = \begin{bmatrix} 1 & X_{21} & X_{31} & \ldots & X_{K1} \\ 1 & X_{22} & X_{32} & \ldots & X_{K2} \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ 1 & X_{2N} & X_{3N} & \ldots & X_{KN} \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_K \end{bmatrix} + \begin{bmatrix} u_1 \\ u_2 \\ \vdots \\ u_N \end{bmatrix}$$

$$\begin{array}{ccccccc} Y & = & & X & & \beta & + & u \\ N \times 1 & & & N \times K & & K \times 1 & & N \times 1 \end{array}$$

$$Y = X\beta + u$$

If one observes autocorrelation or variance heterogeneity, the generalized least squares (GLS) method can be used to estimate the coefficients. However, using this method requires some guesses about the variance-covariance matrix of the disturbance statements that the use of the variance-covariance matrix of the estimated OLS model as a starting point and the use of iterative methods can be helpful in this regard.

5. Results

The minimum, maximum, mean, standard deviation, Kurtosis and skewness of the research variables are listed in Table 2.

Table 2. Descriptive indices of the research variables

Variable	Skewness	Kurtosis	Std. Deviation	Mean	Max.	Min.
GDPPC	-0.229	-0.358	28.01	65.42	138.46	8.29
Ta	-0.444	-0.653	14.47	75.16	94.33	41.15
TE	0.001	-0.755	12.60	68.75	96.26	43.09
Ca	-0.073	-0.827	13.63	72.84	100	49.07
TF	-0.550	-0.364	12.81	72.85	94.08	39.51
BA	-0.308	-1.198	15.88	73.30	98.43	41.43
IT	-0.606	-1.115	13.42	74.57	94.52	50.87

Figure 2 shows trend of mean of the research model variables between 2013 and 2018.

In order to analyze the data using the panel data method, a number of tests must be performed in the first step to determine the method of analysis.

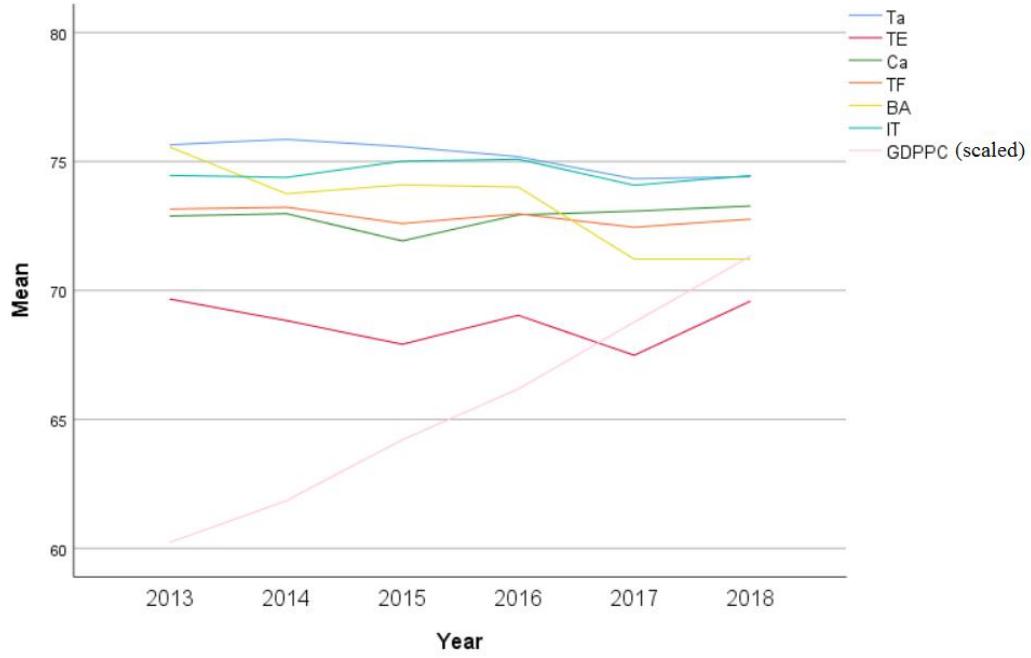

Figure 2. Trend of the mean of the research model variables between 2013-2018

5.1 Research Model Analysis

The purpose of this study is to investigate the effects of talent, training & education, capital, technological framework, business agility and information technology on GDPPC. This model has the following functional form:

$$GDPPC_{i,t} = \alpha_0 + \beta_1 Ta_{i,t} + \beta_2 TE_{i,t} + \beta_3 Ca_{i,t} + \beta_4 TF_{i,t} + \beta_5 BA_{i,t} + \beta_6 IT_{i,t} + \varepsilon$$

Where α_0 is the width of the origin and ε is the estimated error. In order to estimate the above model, the F-Limer test and then the Hausman test for the type of estimation model should be performed. After confirming the results of these tests, the final model is estimated.

5.2 F-Limer Test

In order to investigate the type of model in panel data method, F-Limer test was used. In this test, the null hypothesis of the existence of a pool method is tested against the hypothesis of a panel data method. If the null hypothesis is rejected, the model is panel data type and then fixed and random effects tests should be performed in the next step. If the null hypothesis is confirmed, the pool model should be used. Based on the results in Table 3, the null hypothesis is rejected. Therefore, panel data method should be used to estimate the model.

Table 3. F-Limer fixed effects test for the research model

Prob.	d.f.	Statistic	Test
0.000	(20,99)	41.04	**F**

5.3 Hausman Test

Once the type of data has been determined, it is now clear which model should be used Fixed effects model or random effects model. In this study, the Hausman test was used to determine the type of model. If the null hypothesis of this test is rejected, the fixed effects model should be used, otherwise the random effects model should be used. Based on the results in Table 4, the null hypothesis is rejected. Therefore, the fixed effects model should be used to estimate the model.

Table 4. Hausman test for the research model

Prob.	d.f.	Statistic	Test
0.000	6	15.66	**Chi-square**

5.4 Test of Homoscedastic of Likelihood Ratio

Homoscedastic is a phenomenon in which the variance of disruption components changes over time or between sections. The existence of variance heterogeneity in the model results in estimates that, despite being consistent, are inefficient. Therefore, to ensure that there is no homogeneity variance problem, and homogeneity variance test should be performed. In this study, the likelihood ratio test was used to investigate the presence or absence of heterogeneity variance. The null hypothesis of this test is the homogeneity variance. Therefore, if the null hypothesis is rejected, it means that there is heterogeneity in the research model. In such circumstances, the GLS method should be used (Hawkins, 1981).

Based on the results in Table 5, the null hypothesis of the homogeneity variance test is confirmed, meaning that the research model did not faces the problem of heterogeneity variance.

Table 5. Homoscedastic test for the research model

Prob.	d.f.	Statistic	Test
0.248	6	-2.174	**likelihood ratio**

5.5 Wooldridge Test for Autocorrelation

Another test to be taken in panel models is the autocorrelation test. In this study, Wooldridge autocorrelation test was used. The null hypothesis of this test is the absence of autocorrelation with the disorder. If this assumption is rejected, the research model should estimate the model with AR (1). Based on the results of Table 6, the null hypothesis of the Wooldridge test has been confirmed, this means that the research model did not encounter automatic correlation problem (Wooldridge, 2002).

Table 6. Wooldridge test for research model

Prob.	d.f.	Statistic	Test
0.2415	6	1.230	**Wooldridge**

5.6 Research Model Estimation

According to the results, the estimated coefficient for Ta is 0.188, which is meaningful. The estimated coefficient for TE is -0.048, which is not meaningful. The estimated coefficient for Ca is 0.291 which is significant at 99% level. The estimated coefficient for TF is 0.054 which is significant at 99% level. The estimated coefficient for BA is 0.523 which is significant at 99% level. And the estimated coefficient for IT is 0.432 which is significant at 99% level.

At the end of Table 7, the coefficient of determination, the adjusted coefficient and the Durbin-Watson statistic are presented. The coefficient of determination is 0.981, indicating that the independent variables were able to explain 98.1% of the dependent variable changes. Also the adjusted coefficient of determination is 0.977 which due to the small difference of this coefficient with the coefficient of determination it can be said that there is no surplus variable model and the model is well fitted. Durbin-Watson statistic is also 1.715, so there is no correlation between the residuals.

Table 7. Estimation of Research Model

Prob.	t-Statistic	Std.error	Coefficient	Var.
0.004	20.03	0.0093	0.188821	**Ta**
0.427	-0.034	1.4218	-0.0485	**TE**
0.000	13.95	0.0209	0.2917	**Ca**
0.001	11.73	0.0046	0.0540	**TF**
0.000	23.66	0.0221	0.5231	**BA**
0.000	7.67	0.0563	0.4321	**IT**
0.020	3.46	0.3567	1.2358	**C**
D.W=1.715		$R^2_{adjusted}$ =0.977	**R^2=0.981**	

6. Discussion

Hypothesis 1: The Talent (Ta) Index has a positive relationship with the GDPPC.

Korkmaz and Korkmaz (2017) confirmed that there is a positive relationship between economic growth and labor productivity. According to the results of this study, talent index has a significant positive effect on GDPPC. The estimated coefficient is 0.188, which is significant. Therefore, this hypothesis is confirmed.

Hypothesis 2: The Training and Education (TE) index has a positive relationship with the GDPPC.

Although there is a positive relationship between training and education and per capita income according to the available literature, the results of the present study do not confirm this. According to the results of this study, training and education Index has no significant positive effect on GDPPC. The estimated coefficient is -0.048, which is not significant. Therefore, this hypothesis is rejected.

Hypothesis 3: The Capital (Ca) Index has a positive relationship with GDPPC.

According to the results of this study, capital Index has a positive and significant effect on GDPPC. The estimated coefficient is 0.291, which is significant. Therefore, this hypothesis is confirmed.

Hypothesis 4: The Technological Framework (TF) Index has a positive relationship with GDPPC.

Lee et al. (2012) confirmed that there is a positive relationship between economic growth and technological infrastructure investments. According to the results of this study, technological framework Index has a positive and significant effect on GDPPC. The estimated coefficient is 0.054, which is significant. Therefore, this hypothesis is confirmed.

Hypothesis 5: The Business Agility (BA) Index has a positive relationship with GDPPC.

Cali and Sen (2011) confirmed that there is a positive relationship between economic growth and business conditions. According to the results of this study, business agility Index has a positive and significant effect on GDPPC. The estimated coefficient is 0.523, which is significant. Therefore, this hypothesis is confirmed.

Hypothesis 6: The IT integration (IT) Index has a positive relationship with GDPPC.

Prominent contemporary theories such as neo-Schumpeterian theories (Schumpeter,1934; Pyka and Andersen,2012) and neoclassical growth theory (Solow,1956) have highlighted the existence of a significant positive relationship between Information Technology (IT) and economic growth. According to the results of this study, IT integration Index has a positive and significant effect on GDPPC. The estimated coefficient is 0.432, which is significant. Therefore, this hypothesis is confirmed.

7. Conclusions

The purpose of this study was to investigate the relationship between IMD world digital competitiveness indices with countries' per capita income. These indicators are published annually by international reports and examine the situation of countries on various factors affecting economics and competitiveness. Given that the per capita income of countries is directly related to production, the more appropriate the factors affecting the production and start-up of businesses, the higher the production of products and services, and consequently the higher the per capita income. The results of this study show that IMD world digital competitiveness indicators have a direct impact on countries' per capita income. Improving the digital competitiveness conditions will lead to an increase in the businesses performance and consequently an increase in per capita income.

Data Availability Statement

Datasets analyzed during the current study are available in the https://www.imd.org and https://data.worldbank.org

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