ROLE OF HUMAN CAPITAL, INFORMATION COMMUNICATION TECHNOLOGY AND FINANCIAL DEVELOPMENT IN DETERMINING ECONOMIC GROWTH OF SELECTED ASIAN ECONOMIES

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ABSTRACT

Our research makes an effort to highlight the role of human capital, information communication and technology and financial development in increasing economic growth of Asian economies based on panel data of eight Asian nations. We have used GDP per capita as the dependent variable. The authors have used the random effect technique to check how human capital and information communication technology with other factors lead to enhanced growth. The study results point out that human capital, information communication and technology, and financial development increase economic growth in the concerned nations. Moreover, the urban population is also significantly increasing economic growth. It is suggested that Asian countries must improve their educational and financial systems for more growth and development. Moreover, there is a need to provide more financial services to make better the financial system for high growth.

INTRODUCTION

Trade openness and human capital are very significant in influencing economic growth (Cohen & Soto, 2007). It contains the purchasing and trading of commodities and services, the development of modern technologies, and the flow of novel ideas and knowledge. The notion of trade openness and trade liberalization are for the most part deliberated subjects for all nations. If a nation follows trade openness, this country is more likely to develop. The word openness indicates the absence of boundaries or an elastic behavior for trading actions. Therefore, trade openness shows the degree to which a home country allows for trade with other nations. Trading actions normally comprise exports, imports, foreign direct investment, lending, purchasing, and repatriation of finances from overseas (Goldberg et al., 2009).

Information communication enhances capital formulation and enlarges markets by increasing investments in information communication technology (Miller, 2000; Sulaiman et al., 2015). It provides advantages to the nation's industrial sectors by making modern production techniques enhance job levels by creating additional job chances, and results in poverty reduction (Pernia & Quising, 2005). Human capital is in addition seen as a basic way for high economic growth. It leads to an enhanced entire output level and possible retribution of the workforce (Robeyens, 2006). Human capital is also approximated by skills, aptitude, capability for novel products, and worker's experience (De Oliveira, et al., 2000).

A country may increase human capital through specialization and labor division, development in fundamental education, vocational training, support to self-employment, and creation of trading chances. It is also well thought-out as a major reason for a nation and it assists in providing a very skillful and innovative workforce that can make use of restricted possessions with competence, which leads to an increase in per capita income (Stiglitz, 2000; Brown, 2003). Endogenous growth theory shows growth as an initial and most important cause of internal forces. Additionally, the theory confirms the pre-eminence of information, innovation, and human capital and their involvement in economic growth. This theory is concerted too on the positive and spillover influences of knowledge, which eventually enhances development in an economy (Köhler et al., 2006). It has been well-thought-out that the urban population increases the demands for new production and also involves producing more goods for the general public. In this way, it promotes economic growth and development and the welfare of the economy (OECD definition).

Financial development significantly increases economic growth. Along with economic theory, it happens by an ordered monetary set-up. A prepared monetary mechanism assigns economic resources to industrialized areas in this way they add to growth, physical capital accumulation, and monetary competence. In this research, we emphasize the influence of human capital, information communication technology with other major factors on economic growth in selected Asian economies. Our research work will make provision of policy for additional development and major implementations. Much of the work has been done concerning the impact of inflation, government expenditures, trade openness and financial inclusion on economic growth in all nations of the world. However, our research highlights how human capital, information communication and technology, financial development and urban population determine economic growth in concerned Asian states.

Hanushek and Kimko (2000) found that direct events of workforce quality were associated with growth. It was also found that direct spending on schools hardly affected student performance differences. Moreover, home-country quality differences of immigrants improved US earnings for educated immigrants. Levine (2005) focused on factors affecting economic growth. It was found that the financial sector improved economic growth. This sector also enhanced savings and lessened transaction costs. Imports and exports are very important for economic growth in economies. Considering this, Awokuse (2007) used panel data and investigated that analyzed that imports and exports led to enhanced growth in Bulgaria, the Czech Republic, and Poland. Trade openness also may affect the growth of emerging nations. Considering its significance, Dufrenot et al. (2010) also indicated that openness enhanced economic growth by using a regression technique.

Kim et al. (2011) revealed the significant influence of trade openness on growth of the nations. The authors used a regression technique and collected panel data in high-income nations. Findings resulted in a positive relationship between trade openness and economic growth. Fetahi-Vehapi et al. (2015) also found that trade openness had increased economic growth of economies. Moreover, foreign direct investment also led to enhanced economic growth and trade openness in rich nations of the world. Masoud and Hardaker (2012) used panel data and focused on how stock market development growth and lengthy links. The regression results showed that the banking sector made the stock market in making easy for clients to approach their predictable financial services.

Kooray et al. (2017) focused on the role of trade liberalization. They used data from forty-eight Sub-Saharan African economies from 1985–2012. It was found that trade openness on labor force participation rates improved growth. Moreover, better quality political institutions improved the growth and development of the concerned nations. Qayyum and Zaman (2019) examined the relationship between trade, gross fixed capital formation, total labor force and economic growth in Pakistan. By using the Johansen cointegration and Granger causality test. It was found that trade participation had increased economic growth. Gross fixed capital formation also enhanced growth.

Asmare and Haiyum (2020) focused on how trade openness affected human capital accumulation and economic growth. The authors have used the ARDL technique. It was found that trade openness had increased growth and human capital accumulation in Ethiopia. Rehman et al. (2022) investigated how foreign direct investment and information and communication technology affected growth in Pakistan by using data from 1976 to 2019. Findings showed that foreign direct investment led to enhanced growth of the economy. Ali et al. (2022) also focused on how trade openness, human capital, and institutional performance may result in improved growth of OIC countries. The study results indicated that trade openness, human capital, and public expenditure led to improved growth of higher-income and overall OIC countries. However trade openness led to decreased growth in lower-income OIC nations. Ole in determining the high growth of economies.

Trade openness and human capital were significant factors for growth. Considering this importance, Kurteš et al. (2023) examined the association of trade openness and human capital as and growth of eight Balkan economies. They used data from 2000 to 2019. The fixed and random effects method was used by the authors. Findings showed that trade openness and human capital increased economic growth. Ogbuabor et al. (2023) analyzed how industrialization, trade openness, and labor force participation influenced Africa's productive capacity by using data from 2000 to 2018. GMM results indicated that industrialization, trade openness, and labor force participation had enhanced the growth of Africa. It was also found that human capital development, foreign direct investment inflow, and institutional quality also led to an increase the productive capacity.

Research Questions

1. How does human capital enhance the economic growth of Asian countries?

2. What is the impact of information communication and technology in fostering the growth potential of Asian nations?

3. Does financial development boost up growth of Asian countries?

4. What is the impact of increasing urban population on economic growth in concerned Asian economies?

Significance of the Study

It has been analyzed how trade openness, foreign direct investment, education, inflation, population growth along other factors influence the economic growth of the nations of the world. While, our study highlights how human capital with information communication and technology, financial development, and urban population improve growth in selected Asian economies which is awfully essential for further growth of nations in Asia.

Research Hypothesis

The main hypotheses of this study are shown as:

H1: There is a positive relationship between human capital and economic growth.

H 2: The higher the information communication and technology, the higher the economic growth.

H 3: There is a positive association between financial development and economic growth.

H 4: Urban population is positively linked to economic growth.

METHODOLOGY

By using data from 2011 to 2018, we have investigated how human capital, information communication and technology with financial development and urban population affect the economic growth of selected Asian economies such as Bangladesh, India, Indonesia, Iran, Jordan, Malaysia, Pakistan, Philippines and Sri

Lanka. We have taken data for the dependent and explanatory factors from World Development Indicators. We have used GDP per capita ($ US) as the dependent factor and explanatory variables are human capital (secondary and primary school enrollment, information communication and technology (i.e., fixed telephone subscriptions (per 100 people plus mobile cellular subscriptions (per 100 people), financial development and urban population are utilized in this work.

Model Specifications

The econometric model for our work is shown as

The equation is:

LGDPPC = β0 + β1 INDEXEDUit + β 2URBNPOPit + β 3 INDEXICTit + β 4 DCRDTPit+ uit   (1)

INDEXEDU= Human capital (secondary and primary school enrolment % of GDP)

LGDPPC= Log economic growth (GDP per capita)

URBNPOP= Urban population % of the total population

INDEXICT= Index of (fixed telephone subscriptions per 100 people plus Mobile cellular subscriptions (per 100 people)

DCRDTP= Domestic credit to private sector % of GDP

it = (time trend)

uit= (error term)

RESULTS AND DISCUSSION

Descriptive statistics of major variables have been displayed. Here, we point out how human capital, information communication technology financial development and urban population influence economic growth in some selected Asian economies.

Table 1. Summary statistics of factors influencing economic growth.

Variables	Observations	Mean	Standard deviation	Minimum	Maximum
LGDPPC	112	3.4151	0.3549	2.7907	4.0831
INDEXEDU	112	170.4538	24.1878	106.9143	200.102
URBNPOP	112	53.1271	19.9630	26.809	90.979
INDEXICT	112	0.2745	0.8584	1.4632	2.2436
DCRDTP	112	52.3372	28.6347	15.3861	125.0618

Findings in Table 1 highlight that on average, human capital (INDEXEDU) is 170.45 percent. This index ranges from 106.9143 to 200.102 in the concerned nation. On average, INDEXICT across selected Asian economies 0.2745 percent. Similarly, variations have been seen in CRDTP from 15.3861 to 125.0618 percent with other factors. On average, URBNPOP is 53.1271 percent in Asian countries.

Empirical Estimations

Table 2 points out results from using the random effect method. In analysis, the value of Chi2 is 2.47 and the probability value is 0.6498 which suggests random affect outcomes. It highlights human capital with information communication and technology and other factors that may increase or improve economic growth in Asian economies.

The study findings from random effect methods have been explained in Table 2. Human capital is a very important factor in enhancing economic growth. Highly educated and skilled people may produce more with their increased efficiency and potential. Our study result shows that a unit increase in human capital (i.e., educational index) will lead to enhanced economic growth by 0.0029 units. The reason may be that

highly qualified human capital increases the production of goods and fulfills the demand. Our result is supported by Ali et al. (2022).

Table 2. Random effect results, dependent variable is economic growth.

Variables	Coefficients, Standard Errors and Z-values
INDEXEDU	0.0029*
	0.0004
	(6.96)
URBNPOP	0.0066 *
	0.0020
	(3.36)
INDEXICT	0.0241*
	0.0086
	(2.81)
DCRDTP	0.0014 * *
	0.0006
	(2.39)
C	2.4980
	0.1538
	(16.24)
Wald chi2	373.92
Probability	0.000
R2 Within	0.78
R2 Between	0.84
R2 Overall	0.83

z-values are in parentheses; ** $p<0.05$, * $p<0.1$ and ***$p< 0.01$.

Urban population leads to enhanced economic growth and development in Asian countries. Much of the urban population is absorbed in industries in urban areas. Income and investment look increasing which resultantly enhances economic growth and development. Skilled labour having much potential is working in industries in urban areas which contributes towards much growth. The result points out that a one percent increase in urban population leads to an increase the economic growth by 0.006 percent.

Information communication technology also influences the economic growth of selected Asian nations. Much use of the internet and net services results in enhanced employment, growth and development in the concerned countries. It is found that one one-unit increase in information communication and technology will cause increased growth by 0.0241 percent in these economies. Our result is consistent with Rehman et al. (2022).

Financial development may also lead to enhanced growth in Asian countries. The result shows that a one percent increase in domestic credit to the private sector has tended to increase growth by 0.0014 percent in Asian countries. Domestic credit to the private sector will cause more investments and increased employment chances which eventually lead to an improved growth path for the concerned Asian economies. Our finding is supported by Masoud and Hardaker (2012).

CONCLUSIONS

This research work attempts to highlight the effect of human capital, information communication and technology, urban population, and financial development on the economic growth of selected Asian nations. The authors have utilized a panel data set of 9 Asian countries. We have used GDP per capita as the dependent variable and information communication and technology, human capital, urban population and financial development have been seen as independent variables affecting the economic growth of the concerned economies. Random effect results indicate that human capital with information communication and technology is boosting economic growth in selected Asian countries. Moreover, financial development

and urban population are also contributing to enhancing the economic growth of Asian countries. Our research concludes that higher education and more usage of the internet and mobile phones may be helpful in increasing growth in poor economies. Along with financial development, the urban population enhances productivity. Considering the findings, it is recommended that free-of-cost educational facilities and higher education must be provided by the government. As it will increase and improve the economic growth of economies. There should be more usage of information communication and technology to increase investment and employment opportunities. This will reduce poverty and increase economic growth in the concerned areas. There is also a dire need to improve the financial system to further improve employment and growth. The role of the urban population should be more positive in absorbing the the skilled population in industries and improving the growth and welfare of the nations.

REFERENCES

Ali, S., Yusop, Z., Kaliappan, S. R., Chin, L., & Nazar, R. (2022). Impact of trade openness, human capital, and institutional performance on economic growth: Evidence from Organization of Islamic Cooperation countries. Journal of Public Affairs, 22(4), e2654.

Asmare, A. G., & Haiyun, L. (2020). The impact of trade openness on human capital development and economic growth in Ethiopia. Management and Human Resource Research Journal, 9, 2.

Awokuse, T. O. (2007). Causality between exports, imports, and economic growth: Evidence from transition economies, 94, 389–395.

Brown, P. (2003). The opportunity trap: Education and employment in a global economy. European Educational Research Journal, 2(1), 141-179.

Cohen, D., & Soto, M. (2007). Growth and human capital: good data, good results. Journal of Economic Growth, 12, 51-76.

De Oliveira, M. M., Santos, M. C., & Kiker, B. F. (2000). The role of human capital and technological change in overeducation. Economics of Education Review, 19(2), 199-206.

Dufrenot, G., Mignon, V., & Tsangarides, C. (2010). The trade-growth nexus in the developing countries: A quantile regression approach. Review of World Economics, 146, 731-761.

Fetahi-Vehapi, M., Sadiku, L., & Petkovski, M. (2015). Empirical analysis of the effects of trade openness on economic growth: An evidence for South East European countries. Procedia Economics and Finance, 19, 17-26.

Goldberg, P., Khandelwal, A., Pavcnik, N., Topalova, P. (2009). Trade liberalization and new imported inputs. American Economic Review, 99, 494–500.

Hanushek, E., Dennis, A., & Kimko, D. (2000). Schooling, Labor-Force Quality, and the Growth of Nations." American Economic Review, 90 (5), 1184–1208.

Kim, D.-W., Yu, J.-S., & Hassan, M. K. (2018). Financial inclusion and economic growth in OIC countries. Research in International Business and Finance, 43, 1–14.

Köhler, J., Grubb, M., Popp, D., & Edenhofer, O. (2006). The transition to endogenous technical change in climate-economy models: A technical overview to the innovation modeling comparison project. Energy Journal, 6, 17–55.

Kooray, A., Dutta, N., & Mallick, S. (2017). Trade openness and labor force participation in Africa: the role of political institutions. Industrial Relations: A Journal of Economy and Society, 56(2), 319-350.

Kurteš, S., Amidžić, S., & Kurušić, D. (2023). Impact of trade openness, human capital through innovations on economic growth: case of the Balkan Countries. Economic Innovative and Economics Research Journal, 11(2), 199-208.

Levine, R. (2004). Finance and Growth: Theory and Evidence. NBER Working Paper No. 10766. Cambridge, MA: National Bureau of Economic Research. https://www.nber.org/papers/ w10766.

Masoud, N., & Hardaker, G. (2012). The Impact of Financial Development on Economic Growth: Empirical Analysis of Emerging Market Countries. Studies in Economics and Finance, 29(3), 148-173.

Miller, S.M., & Upadhyay, M.P. (200).The effects of openness, trade orientation, and human capital on total factor productivity. Journal of Development Economics, 63, 399–423.

Ogbuabor, J. E., Emeka, E. T., & Iheonu, C. O. (2023). Do industrialization, trade openness, and labor force participation enhance Africa's productive capacity?. Innovation and Development, 1-26.

Pernia, E.M., & Quising, P.F. (2005). Trade openness and regional development in a developing country. In Globalization and Urban Development; Springer: Berlin/Heidelberg, Germany, pp. 79–94.

Qayyum, A., & Zaman, K. (2019). Dynamic linkages between international trade, gross fixed capital formation, total labor force and economic growth: empirical evidence from Pakistan. Acta Universitatis Danubius. Œconomica, 15(1).

Rehman, A; Radulescu, M; Ahmad,F; Khan,M. K and Iacob,S.E& Cismas, L.M. (2022). Investigating the asymmetrical influence of foreign direct investment, remittances, reserves, and information and communication technology on Pakistan's economic development. Economic Research-Ekonomska Istraživanja, 1-22.

Stiglitz, J.E. (2000). Making Natural Resources into a Blessing rather than a Curse. In Covering Oil: A Report. Guide Energy Development; Open Society Institute: New York, NY, USA, 2005.

Sulaiman, C., Bala, U., Tijani, B. A., Waziri, S.I., & Maji, I.K. (2015). Human capital, technology, and economic growth: Evidence from Nigeria. SAGE Open, 5, 2158244015615166.