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Examination of the Long-run relationship between Human Capital Development and Economic Growth in Nigeria

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Abstract: ***The study explores existence of long run relationship between human capital development and economic growth in Nigeria using secondary data obtained from CBN statistical bulletin for the period of forty years between 1981-2020. The following independent variables were used as the proxies and areas in which human capital could be enhanced and needed to be developed; Agriculture (AGR), Civil-Service (CIVSER), Education (EDU), Health (HLTH), Manufacturing (MANU) and Transportation (TRANSP) sectors of Nigerian economy from 1981 to 2020 as while Gross Domestic Product (GDP) stands for economic growth. The Augmented Dickey-Fuller (ADF) test statistic for ascertaining whether the variables have unit root and Johanson test of co-integration were employed to examine existence of long run relationship between the variables under examination. It was found that variables are stationary at first difference with the level of significance which is 0.0000 for all the variables. The Co-integration of the variables is shown in Tables 3 and 4 where the Unrestricted Co-integration Rank Test (Trace) and Unrestricted Co-integration Rank Test (Maximum Eigen value), respectively, show that the independent variables (all the proxies of Human Capital Development) are co-integrated to determine the dependent variable (GDP which is proxy for economic growth) adjudging that there is long run relationship between human capital development and economic growth.***
Keywords: Long run relationship, human capital development, economic growth.

I. INTRODUCTION

Todaro (2007) defined the term economic growth as a process by which the productive capacity of the economy is increased over time to bring about raising level of national output and income. It is important to understand that economic growth basically entails a long run process involving a period of time, increase in real per capital income level and volume of production linked with large increase in the productive ability of the economy, urbanization, equitable distribution of income and wealth among the population which result in reduction poverty and unemployment in a country. In the works of Torruam and Abur (2014) human capital development can be seen to mean developing skills, knowledge, productivity and inventiveness of people through the process of human capital formation. Human capital encompasses the production factors embedded in human beings and which they use to create goods and services. These factors include knowledge, social and personal attributes, creativity, skills, habit, experience, intelligence, moral, character and so on. They, mostly, are obtained through education, training and re-training (including on the job training), migration, good quality information, health and many more. These factors are important both for individuals and the nation. For the former, it provides some level necessary to have a certain degree of accomplishment gives opportunity for higher earnings and gives returns on investment. For the latter, there is workforce quality and leads to higher productivity. Human capital is very germane to improvement in personal lives, businesses and nations. It therefore needs to be invested in to acquire it and develop it further. There are varieties of ways that have been employed to measure it so as to make sure that investments are reaping profits and value is added. One general way of measurement is to divide the total profit gained by the total investment on human capital. Human beings (workers/labour) that contribute to the survival of a nation or organization are vital to the productivity and growth of such a system, hence, the great need to improve their human capital capacity. Human capital development is therefore needed as a process of improving employee performance, capabilities and resources. It is converting the knowledge, experience, skill set and everything consciously acquired and passively inherited by socialization of culture and tradition to profitable, tradable goods and services. Human capital development is an important element for success and to be able to do it efficiently, the necessary environment needs to be created. Human capital development involves both the employer and employee. Other factors that contribute to human capital development, apart from an enabling environment, include, coaching, training, proper facilitation and consulting.

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Human capital development is a must do for any organization or nation since human capital is important for economic growth. Human capital can help to develop a system by expanding the knowledge and skills of the people involved in the system. For a nation, the skills provide economic value because a knowledgeable work force can lead to increased productivity (Investopedia, 2019). The Central Bank of Nigeria (2019) while presenting the financial system strategy for 2020 in its discussion on human capital development showed that Nigeria placed 10th overall in financial growth in Africa. Human Capital Development is investment in human capital and this contributes to growth because labour becomes more skilled and healthy while productivity is raised by the full and effective utilization of the capital and other material inputs by labour, therefore, the more the investment in human capital by a nation or an organization, the more the increase in productivity that will yield higher economic growth.

A. Objective

To evaluate the long-run relationship between human capital development and economic growth in Nigeria.

B. Research Hypothesis

There is no long run relationship between human capital development and economic growth in Nigeria.

II. RELATED EMPIRICAL REVIEW

Onyeisi, Eze, and Odo (2016) analysed Human capital development's impact on Nigeria's economic growth in this study. The study's goals are to use co-integration methods to look into the connection between human capital development and GDP growth in Nigeria, to see if spending on education and health has a noticeable impact on GDP growth in the country, and to see if spending on defense has a noticeable impact on GDP growth in the country. Human capital formation has a substantial and lasting effect on economic expansion in Nigeria. Johansen co-integration provides confirmation of this. The VECM also found that an increase of only one percentage point in public spending on education (TEDU) results in a 23.8% jump in GDP. There was a 37.6% drop in GDP for every dollar that the government spent on health care (THEA). There was a substantial correlation between the two variables as a human capital development component and GDP expansion. Yet, budgeting for education has been shown to increase GDP. This suggests that investing more money in education is good for the economy. The findings have three main policy ramifications. First, if we want to maintain the long-run link between GDP and human capital development, we need to work toward harmonizing operations in the health and education sector and pay special attention to finance. The economy as a whole will benefit from the unification of these two fields. Human capital development, which includes public spending on education, has been shown to benefit economies. It is for this reason that governments should provide a proportion of their annual budgets on education that is commensurate with international norms. To that end, the economy will benefit. Moreover, it was shown that health care spending by the government dampens economic growth.

Derviş, Semra, and Zübeyde (2016) used Endogenous growth theories and considered the new technologies created by persons with knowledge, skills, and experience utilizing this technology to be the human capital investments of countries because of the endogeneity of technology and its inclusion in the model. Human capital's impact on GDP growth became a major area of study in the empirical literature later on. The theoretical foundations of human capital were explored at the outset of this study. Finally, co-integration and causality tests were run on data from 1961-2011 for Turkey to examine the links between human capital and economic growth. Our research showed that human capital and economic growth factors are both caused and affected by one another.

Rob and Geoff's (2004) comprehensive review of worldwide studies on the correlation between educational attainment and national income is invaluable. It is difficult to establish a direct causal link between investment in human resources and GDP growth, although preliminary study of aggregate statistics for all EU Member States does reveal a correlation. Research shows that putting more money into a person's education leads to increased production and income, and that doing the same for a society yields large societal rates of return. It's trickier to prove a positive ROI for vocational education. Several growth models that try to pin down and quantify the link between GDP and people power are surveyed here. Model parameters, data input quality, and resulting predictions vary greatly. The literature on human resource management, corporate market value, firm size, and industry structure are only few of the topics used to examine further connections between investment in human capital and economic success. Within the framework of technical, geographical, and environmental advantages to society, we also investigate the indirect influence of education on non-economic benefits. Overall, the results show that education and training expenditures have a positive and sizable effect on GDP expansion at the national level. Several policy-related inferences are made, and suggestions for further study are made.

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Chika, Nnachi, and Benjamin (2022) worked on Human capital development and its effect on Nigeria's economic growth. The study method used was retrospective, meaning it was conducted after the incident. The study used multiple regression analysis, with the co-integration test and the Vector Error Correction Model (VECM) model serving as the analytical tools of choice. Long-term equilibrium relationships were studied using the co-integration test, and both long-term and short-term interactions were analyzed using the VECM. Life expectancy, total government expenditure on education, total government expenditure on health, primary school enrolment, external debt, and private domestic investment were used as independent variables, with GDP as the dependent variable. Statistical evidence was found that supported the existence of a long-term equilibrium connection between the variables. A positive and statistically significant relationship was found between increases in life expectancy and total government expenditure on health and GDP in Nigeria. Total government spending on education and primary school enrolment were both found to have a negative and substantial effect on GDP. The estimation findings also showed that private domestic investment and external debt both positively and insignificantly impacted GDP. Thus, the government of Nigeria should create and execute human capital empowerment programs that guarantee an increase in the standard of living for the country's citizens, since increased life expectancy has a positive and substantial effect on economic growth there. In this way, the quality of life for the populace would improve, resulting to a longer average lifespan, and the inhabitants' newly acquired knowledge and abilities would be put to use in economically beneficial ways. Results show that a rise of 1 year in life expectancy increases GDP by 12.97% in Nigeria.

Law-Biaduo (2022) (2022) Human capital growth and economic expansion in Nigeria are the focus of this research. The time series data spans from 1981 to 2020 and was gathered from the World Bank database and the Statistical Bulletin published by the Central Bank of Nigeria. Total government spending on education and health, gross capital creation, and life expectancy were modeled as functions of human capital development to GDP. The time series stationarity was examined with the use of the Augmented Dickey Fuller Test. The Autoregressive Distributed Lag (ARDL) bounds testing study confirmed the existence of co-integration between economic growth and human capital development measures. Total government spending on schools was shown to have a positive and statistically inconsequential connection with GDP over the long term. Overall health spending was also shown to have a positive but statistically insignificant connection with GDP over the long term. In a similar vein, it was shown that, in the long term, gross capital creation had a positive but statistically negligible association with GDP. Life expectancy, on the other hand, was shown to have a negative and statistically negligible long-run relationship with GDP. As a result, the research suggests that both the federal and state governments increase their funding for the education and health sectors. The research also suggests that governments at all levels be encouraged to use development templates such as Public-Private-Partnership (PPP) to expedite progress in key areas like education and healthcare.

Sarah, Adam, Obi, and Yelwa (2015) studied the influence of human capital development on economic growth in Nigeria by using time series data that spans from 1981 to 2010. Results from the research using an ARDL (Autoregressive with distributed Lag) model showed Co-integration between economic growth and human capital development using bounds testing. Results also demonstrate that human capital development indices positively influenced Nigeria's GDP growth over the examined time spans, albeit to a smaller (and statistically insignificant) degree.

In their study, Adeyemi and Ogunsola (2016) used time-series data from 1980 to 2013 to examine the impact of human capital development on Nigeria's economic growth. The ARDL model was used to determine the strength of association between the study's variables. Research showed that human capital had no noticeable effect on GDP growth.

The authors, Babatunde M.A. and Adefabi R.A. (2005) also used the Johansen Cointegration method and the Vector Error Correction Methodology to examine the correlation between schooling and GDP expansion in Nigeria from 1970 to 2003. There are two ways that human capital can impact Nigeria's long-term economic growth, and this article explores both of them. Human capital can influence production in two ways: directly, as an input to the production function, and indirectly, via an effect on the technology parameter. A long-term connection between schooling and GDP expansion has been proven by the Johansen Cointegration finding. There is mounting evidence that total factor productivity and the production function benefit from a highly educated labor force's contribution to economic expansion.

The "components of human capital development of having good influence on economic growth" were discovered by Attahir, Ahmad, and Abdullahi (2020). Life expectancy and primary school enrollment were shown to have "negative and minor influence on economic growth of Nigeria" However, this could be because there is no consensus on the best metrics for gauging Human Capital Development.

Imandojemu and Babatunde (2020) investigated Human capital development in Nigeria between 1990 and 2018. An Autoregressive Distributed Lagged Model (ADRL) was developed to analyze the data.

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Human capital development in Nigeria was positively related to governmental spending on education, health care, and life expectancy, and negatively related to the country's fertility rate. Conclusions from the study called for a greater financial commitment to Nigeria's public schools and hospitals.

Obialor (2017) compared the economic growth of Nigeria, South Africa, and Ghana to determine the impact of government human capital investment on SSA economic growth From 1980 to 2013. Co-integration and the Vector Error Correction mechanism (VECM) were employed in the research. Only in Nigeria were health and education spending (GIH and GIE) shown to have a positive and substantial effect on economic development, whereas the literacy rate (LR) was found to have a positive and negligible effect on economic growth in all three SSA nations.

Human capital development (proxied by capital expenditures on education and health) was studied by Olure-Bank and Usman (2018), who looked at its effect on economic growth in Nigeria between 1986 and 2016. In this investigation, the ordinary least square (OLS) method was used. A favorable and statistically significant correlation was found between health care spending and GDP expansion. Contrarily, research indicated that money spent on schools was inversely related to economic expansion.

III. METHODOLOGY

The area of study was Nigeria and Unit Root Test and Co-integration analysis were employed to evaluate the long-run effect of human capital development on economic growth in Nigeria. Government recurrent expenditure on each of the Agriculture (AGR), Civil-Service (CIVSER), Education (EDU), Health (HLTH), Manufacturing (MANU) and Transportation (TRANSP) sectors was used as proxy for the independent variable which is human capital development while the dependent variable which is economic growth has the Gross Domestic Product (GDP) as proxy.

IV. SOURCE OF DATA

The period of the study covered forty (40) years from 1981 to 2020 and being a time series research, data was collected majorly from the Central Bank of Nigeria (CBN) statistical bulletin. Some pieces of information were further obtained from the records and reports of the Nigerian Bureau of Statistics and the World Bank

A. The Model for the study

$GDP = f\ (AGR, CIVSER, EDU, HLTH, MANU, TRANSP + u\ )$

Where

GDP = Gross Domestic Product= Economic Growth (EG)
AGR=Agriculture
CIVSER=Civil Service
EDU=Education
HLTH=Health
MANU=Manufacturing
TRANSP=Transportation

$$GDP_t = \alpha_0 + \sum_{t=1}^{n} \beta_{1i}\, AGR_{t-1} + \sum_{t=1}^{n} \beta_{2i}\, CIVSER_{t=1} + \sum_{t=1}^{n} \beta_{3i}\, EDU_{t=i} + \sum_{t=1}^{n} \beta_{4i} HLTH_{t-1} + \sum_{t=1}^{n} \beta_{5i} MANU_{t-1} + \sum_{t=1}^{n} \beta_{6i} TRANSP_{t-1} + V_t$$

V. RESULTS AND DISCUSSION

A. Test for Unit Root

The variables also have no unit root as shown in Table 2 (Unit Root Test). The p-values for all the variables are < 1 which is very significant and also showed that the variables are stationery at the first difference. Further, the Augmented Dickey-Fuller (ADF) test statistic (t-statistic) for all the variables are all negative and < 1 as shown in Table 2. This further confirms that the variables are stationary, along with the level of significance which is 0.0000 for all the variables – all significant at the first difference.

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Table 1: Unit Root Test

Variable	Coefficient	Standard error	t-statistic	Probability
D{LAGR(-1)}	-1.354734	0.156046	-8.681654	0.0000
D{LCIVSER(-1)}	-1.770548	0.272897	-6.487978	0.0000
D{LEDU(-1)}	-1.328971	0.157589	-8.433162	0.0000
D{LHLTN(-1)}	-1.492307	0.145350	-10.26701	0.0000
D{LMANU(-1)}	-2.134142	0.344068	-6.202670	0.0000
D{TRANSP(-1)}	-1.303268	0.158968	-8.198311	0.0000
D{LGDP(-1)}	-0.463467	0.140895	-3.289451	0.0023

Source: E-views 9, 2022

Table2: Complimentary Unit Root

Variable	ADF t-statistic	Test critical values			Order of integration	p-value
		1%	5%	10%		
L AGR	-8.681654	-3.615588	-2.941145	-2.609066	1(1)	0.0000
L CIVSER	-6.487978	-3.621023	-2.943427	-2.610263	1(1)	0.0000
L EDU	-8.433162	-3.615588	-2.941145	-2.609066	1(1)	0.0000
L HLTH	-10.26701	-3.615588	-2.941145	-2.609066	1(1)	0.0000
L MANU	-6.202670	-3.626784	-2.945842	-2.611531	1(1)	0.0000
L TRANSP	-8.198311	-3.615588	-2.941145	-2.609066	1(1)	0.0000
L GDP	-3.289451	-3.615588	-2.941145	-2.609066	1(1)	0.0224

Source: E-views 9, 2022

B. Johansen Co-integration Test

The Co-integration of the variables is shown in Tables 3 and 4 where the Unrestricted Co-integration Rank Test (Trace) and Unrestricted Co-integration Rank Test (Maximum Eigen value), respectively, show that the independent variables (all the proxies of Human Capital Development) are co-integrated to determine the dependent variable (GDP which is proxy for economic growth) adjudging that there is long run relationship between human capital development and economic growth. The variables are co-integrated with Eigen p-values: 0.0000, 0.0000, 0.0000, 0.0013 and 0.0351 at 5% level of significance and the complimentary (Max-Eigen) co-integration p-values: 0.0000, 0.0015, 0.0103, 0.0163 and 0.0413 with the same level of significance. A long-run relationship therefore exists between the independent and dependent variables. Therefore, as long there is relationship between the dependent and independent variables, Nigerian government should relate well with the entire sectors under consideration so that consistency in the relationship is sustained to perpetually have lasting impacts on the Nigerian economy.

Table 3: Co-integration

Hypothesized No. of CE(s)	Eigen value	Trace statistic	0.05 Critical value	Probability
None	0.864607	229.4892	125.6154	0.0000
At most 1	0.744826	153.5054	95.75366	0.0000
At most 2	0.644312	101.6047	69.81889	0.0000
At most 3	0.560153	62.32403	47.85613	0.0013
At most 4	0.435352	31.11355	29.79707	0.0351
At most 5	0.209516	9.394562	15.49471	0.3301
At most 6	0.012042	0.460376	3.841466	0.4974

Source: E-views 9, 2022

Table 4: Complimentary Co-integration (Unrestricted Co-integration Rank Test)

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical value	Probability
None	0.864607	75.98372	46.23142	0.0000
At most 1	0.744826	51.90079	40.07757	0.0015
At most 2	0.644312	39.28064	33.87687	0.0103
At most 3	0.560153	31.21048	27.58434	0.0163
At most 4	0.435352	21.71898	21.13162	0.0413
At most 5	0.209516	8.934186	14.26460	0.2917
At most 6	0.012042	0.460376	3.841466	0.4974

Source: E-views 9, 2022

C. Null Hypothesis

There is no relationship between human capital development and economic growth in Nigeria.

Table 3 and Table 4 showed co-integration tests, including the complimentary test and the unit root test (Table 2) deployed to test the hypothesis. Various levels of co-integration were shown hence, the tests showed that there is long run relationship between the independent and dependent variables. The null hypothesis is therefore rejected.

VI. CONCLUSION

This paper investigates the long run relationship between human capital development and economic growth in Nigeria through the application of the Johansen co-integration technique after carrying out unit root test using the Augmented Dickey-Fuller (ADF) test statistic. The human capital development investment by the government on Agriculture (AGR), Civil-Service (CIVSER), Education (EDU), Health (HLTH), Manufacturing (MANU) and Transportation (TRANSP) sectors depict how they will arrogate into economic growth. The results of the co-integrating technique show that there is long run relationship between human capital development and economic growth in Nigeria. As it was established in the study that there is long run relationship between the dependent and independent variables, it pertinent to submit and suggest that government should concentrate adequate finance on those vital economic variable that will make the human capital better, which will invariably enhance economic growth in Nigeria. Also, human capital is seen as vital factor for productivity as an economic axiom that will yield unto increasing growth in the country's economy. A good performance of an economy in terms of per capita growth may therefore be attributed to a well-developed human capital base. A major policy implication of our result is that concerted effort from the government in all tiers should be made by policy makers to increase the level of human capital in Nigeria by investing into it adequately. Our study therefore supports the human capital as a source of economic growth hypothesis that must not be eschewed and underrated.

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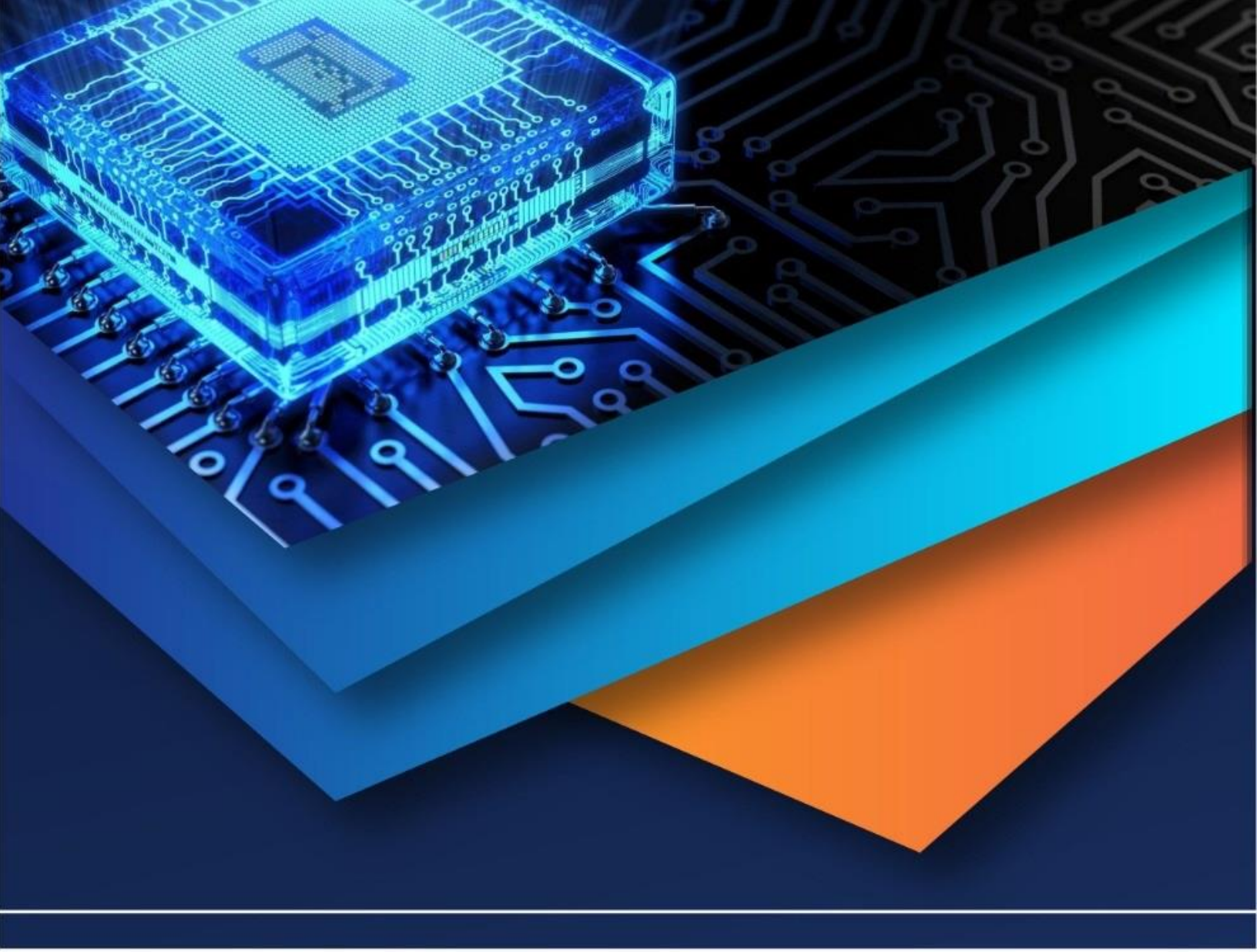
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