

UNIVERSITATEA BABEȘ-BOLYAI
BABEȘ-BOLYAI TUDOMÁNYEGYETEM
BABEȘ-BOLYAI UNIVERSITÄT
BABEȘ-BOLYAI UNIVERSITY
TRADITIO ET EXCELLENTIA



STUDIA UNIVERSITATIS
BABEȘ-BOLYAI



OECONOMICA

1/2024

STUDIA
UNIVERSITATIS BABEŞ-BOLYAI
OECONOMICA

1/2024

April

EDITORIAL OFFICE OF OECONOMICA: Teodor Mihali str. no. 58-60, s. 251, 418655 Cluj-Napoca,
Phone: 0040-264-41.86.52, oeconomica@econ.ubbcluj.ro, <http://studiaoconomica.reviste.ubbcluj.ro/>

EDITORS:

Levente Szász, Babeş-Bolyai University, ROMANIA
Miruna Pochea, Babeş-Bolyai University, ROMANIA
Cristina Ştefănescu, Babeş-Bolyai University, ROMANIA
Monica Zaharie, Babeş-Bolyai University, ROMANIA

EDITORIAL BOARD

Allen D. Engle
Eastern Kentucky University, USA
Nikos Bozionelos
Audencia Business School, FRANCE
József Poór
Szent István University, HUNGARY
Daniel Glaser-Segura
San Antonio University, USA
Krisztina Demeter
Corvinus University of Budapest, HUNGARY
Adrian Pop
University of Nantes, FRANCE
Ahmed Mohammed Sayed Mostafa
University of Leeds, UK
Bernhard Swoboda
University of Trier, GERMANY
Aida Sy
Manhattan College, USA
Simona Mutu
Babeş-Bolyai University, ROMANIA
Hugh Scullion
University of Hull, UK
Aditya Simha
University of Wisconsin, USA
Nemanja Berber
University of Novi Sad, SERBIA
Irina Ban
Babeş-Bolyai University, ROMANIA
Dávid Losonci
Corvinus University of Budapest, HUNGARY
Marzena Stor
Wroclaw University of Economics, POLAND
Amitabh Anand
SKEMA Business School, FRANCE

LOCAL ADVISORY BOARD

Carmen Bonaci, Babeş-Bolyai University, ROMANIA
Mihaela Drăgan, Babeş-Bolyai University, ROMANIA
Dorina Lazăr, Babeş-Bolyai University, ROMANIA
Cristian Litan, Babeş-Bolyai University, ROMANIA
Codruţa Mare, Babeş-Bolyai University, ROMANIA
Alexandru Todea, Babeş-Bolyai University, ROMANIA

EDITORIAL ASISTANTS

Dan Sitar-Taut, Babeş-Bolyai University, Cluj-Napoca, ROMANIA
Gabriela Brendea, Babeş-Bolyai University, Cluj-Napoca, ROMANIA

YEAR

(Volume 69) 2024

MONTH

April

ISSUE

1

Studia Universitatis Babeş-Bolyai Oeconomica

1

EDITORIAL OFFICE of **Studia Universitatis Babeş-Bolyai Oeconomica**

Teodor Mihali str. no. 58-60, s. 251, 400591 Cluj-Napoca,

Phone: 0040-264-41.86.52, studiaoeconomica@econ.ubbcluj.ro,

<http://studiaoeconomica.reviste.ubbcluj.ro/>

SUMAR – SOMMAIRE – CONTENTS – INHALT

E.N. OGBEIDE-OSARETIN, I. SHEDRACK, T. ALIU HUMAN CAPITAL DEVELOPMENT, INCOME INEQUALITY AND PUBLIC SECTOR INVESTMENT IN NIGERIA	1
T.S. AKINTUNDE, I.A. OLADIMEJI, A. ARIBATISE EFFECTS OF FINANCIAL INCLUSION AND OUT OF POCKETS COST ON HUMAN HEALTH (1990 - 2020)	21
G. TELILANI, D. BOUTEDJA THE IMPACT OF INBOUND MARKETING ON DIGITAL CONSUMER BEHAVIOR IN ALGERIA	37
A. DEACONU, G. PUŞCAŞ, C. S. NISTOR, C. I. FILIP WOMEN IN ACCOUNTING IN COMMUNIST AND POST-COMMUNIST ROMANIA: ACADEMIA CASE STUDY	54
O. OMITOGUN, O.S. OMOYELE, L.B. AWOMAILO, W.D. OLANIPEKUN, T.A. ADEREMI DYNAMIC STOCHASTIC PANEL ANALYSIS OF FDI INFLOWS, EMPLOYMENT GENERATION AND POVERTY REDUCTION IN SOME SELECTED ECOWAS COUNTRIES	75

HUMAN CAPITAL DEVELOPMENT, INCOME INEQUALITY AND PUBLIC SECTOR INVESTMENT IN NIGERIA

Evelyn Nwamaka OGBEIDE-OSARETIN* 
Edo State University, Nigeria

Ifeanyi SHEDRACK
University of Delta, Nigeria

Timothy ALIU 
Edo State University, Nigeria

Abstract. Human capital development of any country is believed to be the bedrock for sustainable economic development which seems to be linked to the level of income inequality. But there seems not to be an implied acceptance of flow of the linkage as evident from the high level of income inequality and low level of human capital development. Suspected among the causes of this is the role of the public sector. Thus, the objective of this study is to determine if there exists a dynamic feedback impact between human capital development and income inequality given public sector investment in Nigeria. The study employed the ARDL and NLARDL estimation method using data on human capital development index, income inequality, government expenditure in health and educational sector, among other variables for the period 1991-2022. Human capital development and income inequality were found to have feedback impacts. Public sector investment was found to be crucial while the existence of Kuznet's hypothesis was established. Hence, the study strongly advocates for policy measures of pro-poor growth, reduction of unemployment, population growth and the degree of trade openness for the effective reduction in the country's inequality gap and the development of human capital.

JEL Code: C22, D63, H51, H52

Keywords: Generalized Method of Moment, human capital development, income inequality, public sector

1. Introduction

There seems to be a general agreement that human capital development is a major requirement for the achievement of economic development. The level of development of human capital is strongly linked to the productivity of the individual,

* Corresponding author. Address: Department of Economics, Edo State University, Uzairue, Auchi, Edo State Nigeria. Email: iyokoevelyn@gmail.com

resulting in economic growth and development (Keji, 2021, Eicher). However, there seems to be a link between the level of development of human capital and the level of income inequality in that society. As noted by Lee and Lee (2018), the level of educational attainment and health status of a worker, often indicate the earnings of the individual, and income level. Lee and Lee (2018) further observed that an increase in human capital, contributes to the reduction of income inequality. Many developing countries have been characterized with high level of income inequality and low level of human capital development. Suspected among causes is the role of the public sector.

The case of Nigeria in Africa reveals a paradoxical situation. Irrespective of the high amount of human and physical resources, Nigeria is still ranked in the poorest countries of the world with many challenges of high rate of unemployment, all forms of inequality, low health system and lack of skilled labour among others. This may be attributed to a low level of human capital investment. Although several policies have been put in place (Education for All" in 2000, look or recent human capital development policies) towards enhancing the development of human capital, the outcome in Nigeria is still far beyond expectation. On education, Nigeria has one of the lowest school enrolments. Tertiary gross enrolment was 12 (for 2018) as compared to 20 for Ghana; secondary gross enrolment was 44 as compared to 77 for Ghana and 141 for Rwanda; while primary school gross enrolment was 86 (2019 data) as compared to 103 for Ghana, and 141 for Rwanda (World Bank, 2022). National adult literacy rate is as low as 77.62% compared to other developing countries; Kenya (82.62%) and Lesotho (f 81.02%) in 2021 (GlobalData, 2023). About 40% of school age children of age 6-11 do not attend primary school, while about 30% are primary school dropout (World Bank, 2021).

The health sector, on the other hand is not left out. United Nation in Macrotrends (2023) reported that 56 deaths per 1000 live birth are recorded for Nigeria which was the third highest in the world and a child is more likely to die than attend school. Nigeria's health system was ranked 144 out of 167 countries by WHO in 2020 (World Population Review, 2023). Only about 63% of the Nigerian population have access to safe health, 60% of under 5 and the maternal mortality rate is recorded due to mal-nutrition rate, and life expectancy rate is as low as 54years as compared to 80 years found in most developed counties. The medical doctors and nurses per 1,000 people stood at 0.4 and 1.5 respectively which is less than World Health's 10% recommendation of (Macrotrends, 2023^a; World Bank, 2023). All these tends to reflect the low level of human capital development in Nigeria.

According to World Bank (2023a), on human capital index, Nigeria ranks 163 in 2022 out of 191 countries that was ranked and also among the countries in the world with the highest level of income inequality. Nigeria Gini index was found to be 44% in 2019 which is the highest in SSA countries and the world. Nigeria was ranked the last of Africa 45 countries and 157th globally ranked assessment of government's obligation to the reduction of income inequality (Seery, Okanda and Lawson, 2019; World Bank, 2020).

While being concerned with the above challenges, government's role in terms of public sector investment in the human capital development is of a greater concern. As against the 20% level of investment in educational sector and 15% of budgetary allocation on health as recommended for developing countries by the

United Nations and World Health Organisation respectively, Nigeria is still far below this minimum standard (Onuigbo, 2021). For instance, in 2023, N923.79 bn out of 17.13 trn (5.4%) was allocated to the educational sector (Central Bank Statistical Bulletin, 2023) and budgetary allocation of education has been on the average of about 3% for the past three decades. This is in comparison to some other countries in Sub-Saharan Africa like Ghana with 20%, and Botswana with 21% (Onuigbo, 2021). Per capita spending on health in Nigeria was \$66 in 2018 and \$70 in 2020 far below the recommended \$3, 400, while as a percentage of total expenditure in budget allocation, the sector received 2%, 1.2%, 3.3%, 7% and 5.8% in 1981, 1990, 2000, 2016 and 2023 respectively (Macrotrends, 2023^b; Central Bank of Nigeria, 2023).

The connectivity between human capital development and income inequality has not been theoretically and empirically clear and becoming a debate in recent decade that human capital development and income can be inextricably linked. Gaps in income level is suspected to exacerbate the existing low level of development in human capital as many are denied good health and the opportunity of going to school. Also, the inability or denial of access to education and good health of some group of individuals can hamper the employment opportunities of these groups of individual especially in high earning employment. This increases their poor economic situation, increasing the income inequality gap which in the long run affects the general development of human capital. The cycle continues which may result in “generational income inequality gap”.

However, while we may argue that low level of human capital development is a foremost contributor to the wider income inequality gap, it may also be argued that the high level of income inequality is contributing to the low level of human capital development. Hence, income inequality may be a root or a corollary of the level of human capital development. Income inequality and level of human capital also seems to observe the dynasty syndrome where the income inequality gap/level of human capital development of previous years may affect the current level of income inequality/level of human capital development. These are gaps that have not been covered particularly in Nigeria. It is also not out of place to begin to question the role public sector investment in human capital development and the reduction of income inequality gaps in Nigeria. Hence, the current study is out to fill this gap and wishes to address these major research questions:

- (i) is there a dynamic feedback impact between human capital development and income inequality in Nigeria?
- (ii) how significant is the roles of public sector investment in the reduction of income inequality and the development of human capital?

Therefore, the objectives of this study are to determine if there exists a dynamic feedback impact between human capital development and income inequality in Nigeria. Also, to determine the impact to public sector investment reduction of income inequality and the development human capital. This study, therefore, contributes to current literature in the following ways: first, it evaluates the possibility of a feedback impact between human capital development and income inequality which has not been considered in Nigeria Studies. Second, it made use of the efficient measures of human capital development (human capital development index).

2. Literature review

Human capital development is a core topic in the development of an economy. The endogenous growth theory recognizing the role of human capital development noted that output grows in proportion to capital because of the effect of knowledge creation. In Romer's endogenous growth model, he acknowledges human capital as the main driver of technical advancement and, consequently, economic growth. Romer sees researchers as the creators of novel ideas and sources of income (Aghion, Akcigit and Hewitt, 2013). Thus, public investment in human capital is a source of increasing income. Human capital has been noted to be the major causal factor of income inequality.

A quantitative analysis of how related human capital is to income distribution was explored by Lee and Lee (2018) in a data set of East Asian economies for the period 1980 to 2015. Educational attainment was used as a measure of human capital, and it was revealed that equitable distribution of educational expansion substantially reduces income inequality. The study further advocates for public policies and investment that improves social benefits and brings about price stability for the effective reduction of income inequality. On the other hand, the higher the per capita income, the more open the economy is, and the faster the technological progress is, the higher the income and education inequality.

Suhendra, et al. (2020) examined the impact of human capital and other variables on inequality in Indonesia. They employed a 34 provinces panel data over the time 2013 to 2019 which was estimated using the fixed effect method. Education indexes was used for human capital and the result showed a negative and significant impact of human capital on the level of inequality in income. Increasing human capital results in an enhancement of knowledge and competence as a result of longer average number of years in school year and expectations. This increases the individual's opportunity of acceptability into higher income job hence, lowering income inequality. Inflation was found to increase the income inequality gap

Adan, Muriithi, and Mbaabu, (2023) employing the OLS estimation method investigated on the impact of investment in human capital on Kenya's income inequality over the period 1990 and 2019. This was to explore the validity of widely believed non-compatibility of investment in human capital and inequality in income. Expenditure in health impacted negatively and substantially, while investment in education had a resentful and non-substantial impact on inequality in income. The index of human capital development showed a resentful and substantial consequence on inequality in income. The Kuznets's inverted U was affirmed.

Analyzing the impact of income inequality in an economy, Delbianco, Dabius, and Caraballo (2014) examined the relationship between income disparity and economic development of 20 Caribbean and Latin American nations over the time 1980–2010. They found that there is a level-dependent link between income disparity and economic growth and that income disparity negatively impacts on economic growth.

Batuo, Kararach, Malki (2022) explored the income inequality dynamics in Africa with the intent of examining the institutional factors of inequality in income' They employed the Kuznets's curve framework in a panel data of 52 countries in Africa over the time 1980 to 2017. It was revealed that there is a surge in inequality for countries with high income and otherwise for developing countries with and those with low income. Institutions were also found to have slight importance in spelling

out income inequality while policy measures (monetary, fiscal and employment) played prominent roles in the reduction of inequality in countries with high income but failed for countries with low income.

For studies on Nigeria Olowookere, Olanipekun, Sokunbi and Aderemi (2022) investigated on the impact of the development of human capital on poverty reduction in Nigeria. They made use of Fully Modified Least Squares method of estimation on investment in health and capital formation as proxies for human capital development for the period 1981 to 2019. The outcome of the study revealed that human capital development significantly contributes to the poverty reduction in Nigeria. Expenditure in health and capital formation were found to have trickledown effect on poverty reduction in Nigeria.

2.2. Limitation from previous studies and contribution of the study to knowledge

While there exists some strand of literature around the investment in human capital, development of human capital as well as inequality in income, but results have been inconclusive. This may be as a result of the coverage, country specific factors and methodology used. But, the possibility of feedback connectivity between inequality in income and the development of human capital seems to be neglected especially for developing countries having high level of inequality as well as low human capital development. The contribution of income inequality on the level of educational attainment have not been clearly examined. In addition, while some policies on the reduction of inequality in income have been carried out by majority of the developing nations, Nigeria inclusive, the use of investment of the public sector have not been noted to be a major key that can be used.

In addition to the above, the role of the highly recommended international trade for development (through income inequality reduction) which has received little or no attention in Nigeria was also examined. Of important is that while many developing countries are carried away with the recent growths recorded, the impact of the growth weather pro poor or obeying the Kuznets law has not been a major concerned. These are major policy areas that need to be analyzed for effective reduction of income inequality. Hence, this study filled these lacunas in the previous studies.

3. Methodology

3.1. Empirical modeling and estimation technique

The study adopted the framework of Sen’s capability following the work of Binder and Georgiadis (2011), Shuaibu and Oladayo (2016), and Suhendra, Istikomah, and Ginanjar (2020) in exploring the interconnectivity between the inequality in the distribution of income and human capital development. But inequality is prone to be hereditary with spillover effects. Thus, we employed the ARDL model. This current study differs from the above studies as it is based on a dynamic model. The model is specified as:

$$Ineq_t = \beta_0 + \beta_1 Ineq_{t-1} + \beta_2 HCD + \beta_3 GEE_t + \beta_4 GEH_t + \beta_5 X_t + \mu_t \dots \dots \dots 1$$

$$HCD_t = \lambda_0 + \lambda_1 HCD_{t-1} + \lambda_2 Ineq_t + \lambda_3 GEE_t + \lambda_4 GEH_t + \lambda_5 Z_t + e_t \dots\dots\dots 2$$

The term X_t and Z_t are the matrix of other relevant environmental and policy variables of income inequality (unemployment rate, inflation, per capita income measure by RGDP per capita) and relevant control variables of the human capital development (unemployment rate, population growth). From the above, equation 1 and 2, introducing the control variables are transformed to:

$$Ineq_t = \beta_0 + \beta_1 Ineq_{t-1} + \beta_2 HCD_t + \beta_3 GEE_t + \beta_4 GEH_t + \beta_5 UNMP_t + \beta_6 INF_t + \beta_7 RGDPpc^2_t + \beta_8 TOP_t + \mu_t \dots\dots\dots 3$$

$$HCD_t = \lambda_0 + \lambda_1 HCD_{t-1} + \lambda_2 Ineq_t + \lambda_3 GEE_t + \lambda_4 GEH_t + \lambda_5 UNMP_t + \lambda_6 POPGrt + \lambda_7 INF_t + \epsilon_t \dots\dots\dots 4$$

Where:

$Ineq_t$ is Income inequality and it is proxied by Gini index which is between 0 and 1 showing the level of income distribution of people in Nigeria. The choice of Gini measure of income inequality was determined by convenience given the data problem in Nigeria since other measures can as well be chosen, although each measure may contain information not contained in the other.

$ineq_{t-1}$ = one-year lag of income inequality

HCD_t = Human capital development measured by the human development index (HDI). The HDI provides a summary of the welfare human capital of a country by measuring three dimensions of the country; longevity (health status), access to knowledge (educational status) good standard of living.

HCD_{t-1} = one-year lag of human capital development index

GEE = government's expenditure in educational sector as a proxy for public investment

GEH = government's expenditure in health sector as a proxy for public investment. Government expenditure in the provision of basic educational and health facilities for the people is expected to reduce inequality in income and increase the development of human capital (Benabou 2000; Baah-Bonteng, 2013).

$UNMP$ = unemployment rate. Theoretically, unemployment is positively related to the inequality level in the distribution of income and negatively to the development of human capital. In the face of unemployment, the individual will not be able to meet up to earn income thereby the gap between the haves and have not will increase. Also, in the face of unemployment there is low amount of money in the hands of some members of the society to be able to send their children to school as well as acquire good health thereby reducing the development of human capital.

Inf = inflation.

$RGDPpc^2$ = per capita income which comes into the model in its square form. This is following the Kuznets inverted-U curve on the relationship between the level of income (economic growth) and the distribution of income (Kuznets 1955, in Lee and Lee, 2018).

TOP is trade openness measured by the exports-imports ratio to GDP. International trade is expected to impact negatively or positively on the level of income inequality depending on the strata of skills of the labour force and the nature of trade as shown by theoretical and empirical studies. In line with the Heckscher–Ohlin trade model, a country with open trade policy and has abundant of low-skilled

labour as obtainable in Nigeria, will have an expanded relative wage of unskilled workers, which will reduce inequality in wage. However, if trade results in the transfer of skill-biased technological variation to developing countries, a boost in trade openness will result in higher inequality in wage. As the demand for labour will be shifted to more of skilled labour, there will increase in the wage of skilled labour which will increase the wage inequality and increase the income inequality gap (Bourguignon, Ferreira, and Lustig 2004; Lee and Wie 2015).

Inf= inflation. This is expected to increase inequality. Inflation gravitates to reduction of real wage as well as redistributing income to profit takers from wage earners. It also dwindles the bottom quintile's share of income through the reduction in their real minimum wage, thereby boosting the inequality in income. According to Albanesi (2007) inflation is a tax on cash balances, thus, immensely hurting the poor households, who often hold their wealth in ready money and currency.

POPgr = population growth rate. A very high growth rate of population can hinder the effective human capital development given the large number of people that government will provide social facilities given the available fund.

A Priori, $\beta_1, \beta_5, \beta_6, > 0$ $\beta_2, \beta_3, \beta_4, \beta_7 < 0, \beta_8 < > 0$; $\lambda_1, \lambda_3, \lambda_4, > 0, \lambda_2, \lambda_5, \lambda_6 < 0$ □

3.2. Method of estimation and Data

The variables for the study were subjected to pre-estimation tests. The ARDL bound was used in testing for the existence of long run relationship when the variables when they were found stationary at order one and zero. Equation 3 was estimated using the non-linear autoregressive distributed lag mode (NARDL) while equation 4 was estimated using the ARDL. Secondary data spanning from 1991 to 2021 was used. Data for GINI, HCD, GDpc, TOP, POPgr and UNMPR were collected from the World Bank (2023) world development indicator and National Bureau of Statistics. The data for government expenditure in education and health sector and inflation were gotten from Central Bank of Nigeria Statistical Bulletin, (2022). The E-views 10 econometric package was used for the analysis.

4. Observational system

4.1. Descriptive Statistics

Table 4.1. Descriptive Statistics

Statistics	HCD	INEQ	GEE	GEH	UNMP	INF	TOP	RGDPpc ²	POPGr
Mean	0.31500	43.5022	207.802	126.597	14.4217	18.5245	35.1938	53484.7	2.57625
Median	0.47500	43.0000	128.067	72.0815	13.5500	12.9418	36.5402	32191.3	2.58000
Maximum	0.54000	69.0000	646.748	423.329	33.3000	72.8355	53.2779	192068	2.68000
Minimum	0.00000	35.1000	0.29129	0.15016	3.60000	5.38801	0.00000	584.249	2.48000
Std. Dev.	0.24902	6.56835	209.439	135.693	7.84402	16.2621	11.3392	57129.2	0.06676
Skewness	-0.48890	1.76904	0.78407	0.86391	0.95822	2.13452	-0.88863	0.94596	0.08085
Kurtosis	1.27551	8.41540	2.28882	2.43559	3.76705	6.54456	4.25056	2.72089	1.56475
Jarque-Bera	5.23995	55.7928	3.95315	4.40518	5.68147	41.0515	6.29673	4.87631	2.78146
Probability	0.07281	0.00000	0.13854	0.11052	0.05838	0.00000	0.04292	0.08732	0.24889
Observations	32	32	32	32	32	32	32	32	32

Source: Extracted from E-views Print-out

The measure of central tendency of each series in table 4.1 above shown a high level of stability as depicted with their values falling in between the Maximum and Minimum values. Almost all the variables had level spreads and quite distributed evenly given their low values of standard deviation. With the exception of trade openness and human capital development, all data exhibit positive skewness. They were also normally distributed at 5% substantial level according to Jarque Bera and their accompanying probabilities, with the exception of government expenditure on health, real GDP per capita, and population growth.

4.2. Test of stationarity

Table 4.2. Stationarity Test Result

Variables	ADF statistics At Level	ADF statistics At 1 st Diff.	Critical value	Order of integration
HCD	-1.115318	-5.430187	-2.963972	1(1)
INEQ	-3.788242	-	-2.960411	1(0)
GEE	0.423018	-4.025524	-2.963972	1(1)
GEH	0.133724	-5.692395	-2.963972	1(0)
UNMP	-0.732978	-7.227481	-2.963972	1(1)
INF	-2.078814	-5.357102	-2.963972	1(1)
TOP	-1.648794	-6.539676	-2.963972	1(1)
RGDPpc ²	3.029973	-	-2.991878	1(0)
POPGr	-1.322899	-5.060581	-2.963972	1(1)

Source: Compiled from E-views 10; Significance at 0.05 levels

As revealed from Table 4.2, the ADF statistics was stationary at levels for (INEQ, GEH and RGDPpc²). However, HCD, GEE, UNEMP, INF, TOP and POPGr, were found stationary at first difference. Thus, the variables are integrated of mixed order, level 1(0) and order one I(1). This shown just cause for the ARDL Bounds Test.

4.3. Model valuation

4.3.1. Valuation of the income inequality Equation

4.3.1.1. Result of Long-Run ARDL formation

First in resolving the reliability of the results, the R² of 0.809942 showed that the model is well fitted with independent variables explaining about 80% of the deviation in the contingent variable. DW result revealed that there is no presence of autocorrelation in the result given a statistic of 1.927147 which is lower than 2 rules of thumb.

Analyzing the estimates, Table 4.3 of the long-run estimate showed that while first year lag of income inequality showed a positive relationship and insignificant impact on current level of income inequality in agreement with the dynastic rule of income inequality, the second-year lag showed a negative significant impact on current level of income inequality at 10% level of significance. Both current and lag of levels of the development of human capital has a positive relationship with the level of income inequality with only the previous level having a significant impact at 5% level of significance. Thus, 1% increase in current and previous levels of the

development of human capital leads to 6% and 33% increase in the level of Nigeria's income inequality for the time under review. This is contrary to our exception and to the study of Suhendra, et al., (2020) and Adan, et al., (2023) who found a negative influence of the level of human capital development on income inequality. This positive and substantial association between the level of development of human capital and income inequality can be attributed to the low level of Nigeria human capital development index (low health status, standard of living and educational status). For instance, World Health Statistics showed that Nigeria's life expectancy rate at birth of 54.4 is about the 190th positions, while maternal mortality of 1047 is second to the highest out of 203 countries that were assessed (World Health Organization, 2022). Thus, much need to be done on the development of human capital in Nigeria to effectively reduce income inequality.

The result further showed that the present value of government expenditure on education had negative insignificant impact on income inequality while the first lag with a positive coefficient (6.036019) is statistically substantial at 5 %, indicating that percentage increase in GEE increases the level of income inequality by 6.03 % contrary to the study of Ali (2022) but in support with the Adan, et al. (2023) that found a negative and non-substantial impact of expenditure in education on inequality in income. Lee and Lee (2018) however, found that equal distribution as well as expansion in education significantly reduces income inequality. This also strengthens the outcome of the level of human capital development on inequality in income. The negative sign of government expenditure on health (GEH) with (-12.18237) and non-substantial at 5%, revealed that a 1% decrease in GEH reduces Nigeria's inequality level by 12% which agrees to the studies of (Ali, 2022) but in variance with Adan, et al. (2023). These portrays the low impact of public sector investment and conforms to the fact that the level of development of human capital has not been a priority in Nigeria.

Analyzing the Kuzent's law in Nigeria, the outcome of the analysis revealed the obedience of the law as the square of real gross domestic product per capita revealed a positive connectivity with income inequality in the second lag and at the fist lag showed a negative significant relationship. Showing that income inequality increases with a rise in growth and then falls as growth increase. This was supported by the study of Adan, et. al (2023) but in a variance with the study of Batuo, et. al (2022). In conformity to theory, unemployment showed a positive relationship and insignificant impact on income inequality while previous level of inflation in conformity to the study of Suhendra, et. al (2020) showed a positive significant impact on income inequality. Trade openness exhibited a positive significant impact on the levels of inequality in income distribution indicating that international trade in Nigeria is based on skill-based technology which is resulting in higher wage inequality and hence, increasing the income inequality gap in Nigeria (Lee and Wie 2015).

Table 4.3. Long-run Estimate for income inequality equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
INEQ(-1)	0.082442	0.250481	0.329133	0.7482
INEQ(-2)	-0.390692	0.208177	-1.876731	0.0873
HCD	6.373913	15.05914	0.423259	0.6803
HCD(-1)	33.35065	15.69513	2.124905	0.0571
LGEE	-0.821229	8.736767	-0.093997	0.9268

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGEE(-1)	-0.384011	1.837817	-0.208949	0.8383
LGEE(-2)	6.036019	2.384637	2.531211	0.0279
LGEH	-12.18237	8.472483	-1.437875	0.1783
UNMP	0.176668	0.225089	0.784879	0.4491
INF	-0.094936	0.137374	-0.691077	0.5038
INF(-1)	0.303691	0.142061	2.137741	0.0558
INF(-2)	-0.278416	0.125225	-2.223321	0.0481
LRGDPPC	2.228201	1.882225	1.183812	0.2614
LRGDPPC(-1)	-26.14990	10.15645	-2.574708	0.0258
LRGDPPC(-2)	26.42343	8.265319	3.196903	0.0085
TOP	0.578775	0.193547	2.990363	0.0123
TOP(-1)	0.065093	0.168065	0.387305	0.7059
TOP(-2)	0.150677	0.145732	1.033931	0.3234
C	26.62475	29.39947	0.905620	0.3845
R-squared = 0.809942				
Adjusted R-squared = 0.749894				
F-statistic= 2.80428				
Durbin-Watson stat= 1.927147				
Prob(F-statistic)= 0.044329				

Computed by the Author using Eviews 10

4.3.1.2. Result of Short-Run ARDL formation

Given the different orders of integration of the variables at 5% significance level, an ARDL Bounds Test analysis of the PSS method of co-integration test was carried out to determine the existence of co-integration among the variables

Table 4.4. ARDL PSS Bond Test for Model 1

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	4.926858	7
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.92	2.89
5%	2.17	3.21
2.5%	2.43	3.51
1%	2.73	3.9

Source: Extracted from E-view result

The result as shown in Table 4.4 establishes the existence of co-integration among the variables. Hence, we conclude that we fail not to reject the null hypothesis and thus in accordance with the presumption of the ARDL-ECM and in this case a NLARDL-ECM.

The estimation of the NLARDL-ECM of the income inequality equation presented in table 4.5, showed that human capital development (HCD) had positive but insignificant impact on Nigeria's level of income inequality. This suggests that

increasing the level of development of human capital has the possibility of increasing Nigeria's level of income inequality but with unsubstantial impact. It was also noticed from this study that inflation (INF) in the first lag, RGDP per capital (RGDPpc²) and Trade openness (TOP) had positive and substantial impacts on income inequality. Statistically, a 1% surge in inflation, RGDP per capita and Trade openness is likely to increase rate of inequality in income by 0.27%, 2.22% and 0.57 % in the short-run. In line with the findings of Nwosa (2019), the substantial impact of GEE on inequality in income can be ascribed to the low yearly budgetary to the sector which have not shown result on the poor relating to the provision of the basic education and health requirements needed in making the poor employable, improving their standard of living and closing the wide income inequality gaps.

The outcome of this study further revealed that openness had an adverse insignificant impact on the level of inequality in income in the first lag, implying that a 1% increase in trade openness will hopefully reduce the inequality in income distribution by 0.15 %. This is in contrary to Nwosa (2019) who found that trade openness had significant impact. Given the Structural Adjustment Programme of the mid-80s that liberalized Nigeria economy resulting in increase in to international trade, they may have been a short run fall in the inequality in income distribution. However, in the long run with the expansion of trading activities, the low skill workers were discarded for higher skilled worker and as such leading to a surge in income gap in the long run as revealed in the result of the long run estimation (Table 4.3).

It was also realized from this study that income per capita showed an optimistic substantial impact on the inequality of income in Nigeria in the current year and a negative significant impact in the previous years. Lee and Lee (2018) found in their study that the higher the per capita income, the more open the economy is, and the faster the technological progress is, the higher the income and education inequality.

The short run estimation divulged that the error correction coefficient (*CointEq(-1)*) came out with anticipated sign (-1.30) with substantial impact. This thus insinuate that about 30% disequilibrium in the short-run is corrected in the long-run.

Table 4.5. NLARDL-ECM for income inequality equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INEQ(-1))	0.390692	0.126433	3.090110	0.0103
D(HCD)	6.373913	9.211621	0.691943	0.5033
D(LGEE)	-0.821229	1.141018	-0.719733	0.4867
D(LGEE(-1))	-6.036019	1.115454	-5.411268	0.0002
D(INF)	-0.094936	0.072013	-1.318314	0.2142
D(INF(-1))	0.278416	0.069483	4.006956	0.0021
D(LRGDPPC ²)	2.228201	0.947990	2.350449	0.0385
D(LRGDPPC ² (-1))	-26.42343	5.015895	-5.267938	0.0003
D(TOP)	0.578775	0.107160	5.401040	0.0002
D(TOP(-1))	-0.150677	0.085182	-1.768877	0.1046
CointEq(-1)*	-1.308250	0.149487	-8.751585	0.0000

Computed by the Author using Eviews 10

4.3.2. Valuation of the Human Capital Development Equation

4.3.2.1. Result of Long-Run ARDL formation

Table 4.6 showed that the diagnostic test is of a good standard, indicating a good fitness of the model and robustness of the result. This was revealed with R^2 output showing that 89% of the changes in the contingent variable were accounted for by explanatory variables. Also, the F-stat of 38.899 revealed that the independent variables jointly have a significant impact on the dependent variable while the Durbin-Watson stat of 2.066171 although marginally higher than 2 portrays the absence of autocorrelation in the model.

The output of the result portrays that the preceding lag of human capital development do not have substantial impact on present level. 1% increase in previous levels of human capital development leads to 0.23% increase in current level of human capital development. In line with our expectation, although marginally, current and previous lag of income inequality showed a negative significant impact on human capital development while the second and third lags showed a positive substantial effect on the level of development of human capital. 1% increase in income inequality showed a marginal fall of 0.01% in the level of development of human capital in the current year and a 0.014% drop in the very long preceding years. This reveals that closing the income inequality gap, will push up the development of human capital and hence development of the economy.

The current and preceding levels of government's expenditure on education were found to have a negative significant impact on human capital development contrary to expectation. Specifically, 1% increase in current and previous years leads to 0.01%, 0.02% and 0.004% fall in the level of development of human capital in Nigeria respectively. These marginal falls in human capital development given government expenditure in educational sector could be attributed to the recent effort that is being put into the educational sector as it was expected to have a great negative impact on human capital development. For instance, government allocation increased from 4.83% of total national budget in 2010 to 5.4% in 2023 while primary gross enrolment increases from 26.7% in 2000 to 85.73% in 2019. However, current level of inflation was found to significantly reduce the level of development of human capital as predicted while the previous levels of increased rate of inflation is were found to have a positive unsubstantial impact on the development of human capital.

Further analysis of the result showed that both the present and preceding levels of government's expenditure on health, unemployment and population growth substantially and positively impacted on the development of human capital development in the long run. As suggested by the result, 1% increase in government expenditure on health, unemployment and population growth increased the development of human capital by 0.01% & 0.005%, 0.02% & 0.0049% and 3.75% & 1.796% for the variables current and previous period respectively in the long run.

The positive impact of unemployment on human capital development is contradictory to expectation as unemployment is a major challenge to Nigeria economy especially youth unemployment. This may nevertheless be accounted for by the high number of disguised unemployment in Nigeria which tend to cover the true picture of the unemployment statuses. This disguised unemployment tends to affect the level of development of human capital hence total unemployment level. The results show consistency with the previous ones which were obtained by Rougoor and van-Marrewijk, (2015).

Table 4.6. Long-run Estimate for Human Capital Development Equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
HCD(-1)	0.232861	0.190451	1.222682	0.3087
HCD(-2)	-0.401449	0.617596	-0.650018	0.5620
INEQ	-0.010947	0.005652	-1.936982	0.1481
INEQ(-1)	-0.028902	0.007563	-3.821404	0.0315
INEQ(-2)	0.003108	0.003396	0.915247	0.4276
INEQ(-3)	0.014796	0.005731	2.581839	0.0816
GEE	-0.006013	0.002366	-2.541753	0.0845
GEE(-1)	-0.002063	0.001298	-1.589259	0.2102
GEE(-2)	-0.004463	0.001087	-4.104123	0.0262
GEH	0.010373	0.004077	2.543973	0.0844
GEH(-1)	-0.000879	0.001328	-0.662200	0.5552
GEH(-2)	0.003173	0.001653	1.919962	0.1506
GEH(-3)	0.005318	0.001609	3.304407	0.0456
UNMP	0.020882	0.006334	3.296681	0.0458
UNMP(-1)	0.011839	0.004990	2.372556	0.0983
UNMP(-2)	-0.015179	0.013519	-1.122767	0.3433
UNMP(-3)	0.049040	0.012743	3.848511	0.0310
POPGR	3.755684	2.798450	1.342059	0.2721
POPGR(-1)	-1.845386	1.007666	-1.831346	0.1644
POPGR(-2)	-0.636304	0.928874	-0.685027	0.5425
POPGR(-3)	1.796446	0.532407	3.374196	0.0433
INF	-0.002366	0.001128	-2.097452	0.1269
INF(-1)	-0.001886	0.001497	-1.259752	0.2968
INF(-2)	0.003526	0.001189	2.965998	0.0593
INF(-3)	0.001614	0.001757	0.918511	0.4261
C	-7.066471	6.416785	-1.101248	0.3512
R-squared = 0.896925				
Adjusted R-squared = 0.871297				
F-statistic= 38.89974				
Durbin-Watson stat= 2.066171				

Computed by the Author using Eviews 10

4.3.2.2. Result of Short-Run ARDL formation

The outcome of the stationarity test provided the ground upon which we carried out a Bounds Test analysis for co-integration.

Table 4.7. ARDL Bounds Test

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	13.09394	6
Critical Value Bounds		

Significance	I0 Bound	I1 Bound
10%	1.99	2.94
5%	2.27	3.28
2.5%	2.55	3.61
1%	2.88	3.99

Source: Extracted from E-view result

The result of the PSS method of co-integration for the HCD model (Table 4.7) revealed that there is co-integration among the variables. Hence, we conclude that there is a unique long-run relationship among the variables. From the above, ARDL-ECM was carried out on the equation.

The estimation of the ARDL-ECM of the level of development of human capital equation presented in Table 4.8, revealed that preceding level of development of human capital (HCD) had positive and significant impact on the current level of human capital development. Specifically, 1% increase in last year's level of the development of human capital will lead to 0.4% increase in the current level of human capital development. Of importance is the outcome of the relationship and impact of the income inequality on the level of development of human capital. It was revealed that both current and two years lag of the income inequality showed a negative and substantial impact on the levels of development of human capital. 1% increase in income inequality significantly reduces human capital development by 0.01% and 0.14% in the current and previous periods respectively. This in line with some studies (Omojimite, 2011; Dae-Bong, 2010).

The estimate revealed that while present level of government's expenditure on education (GEE) had a negative relationship on the level of development of human capital, previous level of GEE showed a positive relationship on the level of development of human capital although both present and preceding levels had a significant impact on the level of development of human capital. This result of the impact of the current levels of government expenditure on education reveals the situation of Nigeria. Given a situation where allocation of national budget to education which is a major component of human capital development having almost the lowest share of allocation average of 3% for the past three decades which is fall below the recommendation of United Nations Educational Scientific and Cultural Organization is definitely worrisome and hence, the low performance and outcome of the human capital development.

Further analysis of the result showed that current levels of government's expenditure on health (GEH), unemployment and population growth showed a positive and substantial impact on human capital development at 5% significant level. This showed that a 1% increase in the variables above will increase the level of human capital development in Nigeria by 0.01%, 0.020%, and 3.755% respectively. While it was observed that a fall in the previous levels of government's expenditure on health will significantly increase the level of development of human capital. The positive outcome of unemployment is totally contrary to perception while the positive outcome of population growth depends on the use of population. This finding is in consensus with the study of Khayria & Feki, (2015) but however contrary to the study of Ogunleye, Owolabi, Sanyaolu, and Lawal (2017).

Regarding population growth, a surge in population without a matching surge in the level of income and welfare will really lead to a surge in poverty level thereby affecting the level of development of human capital as well as income inequality in the country. Ogbeide-Osaretin and Orhewere (2022) also found that population growth significantly impacts on economic development of Nigeria negatively and one of the channels of the impact is through low human capital development. On the other hand, previous levels of unemployment and population growth showed a negative and significant impact on human capital development at 5% level of significance as expected and in line with theory.

In line with perception and theory, current and previous inflation rates were found to have a negative significant impact on human capital development at 5% level of significance. Table 4.8 showed the value of the short-run ARDL, *CointEq* (-1) (-1.168588) which was substantial at even 1% revealing the model adjust to equilibrium position in the long-run with about 1.2% of this disequilibrium being corrected annually.

Table 4.8. Short-Run ARDL estimation of human capital development

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HCD(-1))	0.401449	0.061615	6.515434	0.0073
D(INEQ)	-0.010947	0.001174	-9.321709	0.0026
D(INEQ(-1))	-0.017905	0.001485	-12.05624	0.0012
D(INEQ(-2))	-0.014796	0.001354	-10.92873	0.0016
D(GEE)	-0.006013	0.000383	-15.70846	0.0006
D(GEE(-1))	0.004463	0.000283	15.78183	0.0006
D(GEH)	0.010373	0.000678	15.30503	0.0006
D(GEH(-1))	-0.008491	0.000542	-15.67069	0.0006
D(GEH(-2))	-0.005318	0.000350	-15.17469	0.0006
D(UNMP)	0.020882	0.001850	11.28643	0.0015
D(UNMP(-1))	-0.033861	0.002171	-15.59859	0.0006
D(UNMP(-2))	-0.049040	0.003318	-14.78189	0.0007
D(POPGR)	3.755684	0.316563	11.86392	0.0013
D(POPGR(-1))	-1.160142	0.235010	-4.936564	0.0159
D(POPGR(-2))	-1.796446	0.219162	-8.196872	0.0038
D(INF)	-0.002366	0.000463	-5.113843	0.0145
D(INF(-1))	-0.005140	0.000485	-10.59189	0.0018
D(INF(-2))	-0.001614	0.000426	-3.792532	0.0322
CointEq(-1)*	-1.168588	0.062538	-18.68614	0.0003

Computed by the Author using Eviews 10

5. Policy recommendation and Inference.

5.1. Strategy inferences

We explored the reality of the human capital development and the income inequality two-ways linkage as well as the role of public sector investment in the reduction of income inequality and the development of Nigeria's human capital. Annual data on human capital development index as a measure of the level of development of human capital, government's expenditure on education and health as well as income inequality measured by Gini coefficient among other variables were used. Below are the inference and recommendations made:

1. In the long-run previous income inequality showed a positive insignificant impact on the present income inequality. However, in the short run, previous levels of inequality in income showed a positive significant impact on current level of inequality in income which is in agreement with the dynastic rule of income inequality. Inequality in Income also had a substantial negative effect on the level of development of human capital. Hence, the study advocates for the serious implementation of strategies for the reduction of income inequality such as investment in higher education, provision of health services, social insurance progressive tax, inheritance taxation among others which should be both in the short term and the long term to correct the dynastic impact of income inequality.

2. As divulged from the result the level of development of human capital had a positive substantial impact on inequality in income in the long run while previous level of human capital development was found to have a positive significant impact on current levels in the short run. The inference here is that there is a serious need for the improvement in the level of development of human capital through increasing access to education and health. The study also recommends government's provision of the requirements for quality education and health such as building of schools and hospitals, books and drugs needed as well as providing the room for in services training for teachers and health officer for quality service provision. Thus, while, it is important for the increase in the level of human capital development, it is also important that the reduction in the level of income inequality to be pursued so that even with low amount of public sector investment, families can at least afford basic education and health needs thereby increasing the level of national human capital development.

3. Public sector investment (government's expenditure in education and health) was revealed by the outcome of the study as vital factors in enhancing the level of development of human capital, and hence the reduction of inequality in income. As diverged by the result, public sector's investment positively and substantially impacts on income inequality (both long-run and short-run) while they negatively and substantially impact on human capital development. We therefore advocate for an increase in government's expenditure (education and health), especially in the budget allocation and provision of infrastructures for the development of the level of human capital and as such reduce inequality in income.

4. Nigeria's government should step up initiatives and programs such as birth control measures and maximum number of children per household aimed at slowing the rate of population growth in the nation as it was found to significantly impact on the level of human capital development. To close the gap in the inequality in income, there is need for the improvement of social services. Consciously carrying out these tasks will lessen the prevalence of income inequality in the nation.

5. The Nigerian government must also moderate its trade liberalization policies since the country's economy appears to be too fragile to withstand the adverse shocks from foreign trade. Particularly as revealed by the study, openness in trade substantially brings about surge in inequality in income in the distant future and the present time. The most essential thing is to implement proper fiscal and monetary strategies to counteract the inevitable adverse impacts of opening the economy to outside pressures.

6. Rate of inflation should highly be controlled and stabilized by government price control measures. It was found to be among the contributors to the high-income inequality gap as well as low level of development of human capital especially in the

short run as evident from the result with inflation having a negative substantial impact on the level of development of human capital and inequality in income.

7. There is also a dying need for the reduction in the unemployment. We thus advocate for the encouragement of vocational training/skill acquisition as well promoting agricultural activities. Such encouragement policies like the support for start-up capital and machines needed for mechanized agriculture is strongly recommended

8. The result supported the reality of Kuznet's hypothesis. However, the study strongly recommends for policy measures of pro-poor growth for the effective reduction in the country's inequality gap.

5.2. Conclusion

The level of development of human capital is assumed to be linked with the level of inequality in income in the society, where human capital development may impact on the level of income inequality and vice versa. However, for the effectual advancement of the level of human capital, the public sector is believed to be imminent. It is in the view of the above that this study examined the connectivity between the level of human capital advancement and inequality in income given the role of public sector investment in this connectivity.

This study divulged a substantial two-ways impact amidst human capital development and Nigeria's inequality in income. Public sector investment was found to play vital role in the linkage and was found to be a contributor to the challenge of low human capital development and the effective reduction of income inequality. Findings from the study also revealed that there is the existence of Kuznet's hypothesis in Nigeria income and inequality while unemployment, population growth and the high degree of trade openness are crucial areas to control. Hence, the study strongly advocates for policy measures of government active investment in human capital development, pro-poor growth, reduction of population growth and unemployment for the effective reduction in the country's inequality gap and the development of human capital.

Availability of data and materials

This research paper obtained data for use from the World Development indicator (World Bank): <https://data.worldbank.org/products/wdi>

Central Bank of Nigeria Statistical Bulletin, 2022, 30, December. Available from: <https://www.cbn.gov.ng/documents/statbulletin.asp>

Acknowledgments

The authors are grateful to friends for their various suggestions and valuable comments regarding this paper.

Funding

There is currently no financial aid received from any source for this research paper.

References

- Adan, M. A., Muriithi, D. K., Mbaabu, O. (2023). Effect of Human Capital Investment on Income Inequality in Kenya. *European Journal of Development Studies*, 3(4), 30–40. <https://doi.org/10.24018/ejdevelop.2023.3.4.288>.
- Aghion, P, Akcigit, U., Howitt, P. (2013): What do we learn from Schumpeterian Growth Theory. *Working paper series in economics and institute of innovation 298, Royal Institute of Technology, CESIS - Centre of Excellence for Science and Innovation Studies*.
- Albanesi, S, 2007. Inflation and inequality. *Journal of Monetary Economics, Elsevier*, 54(4): 1088-1114, May. <https://doi.org/10.1016/j.jmoneco.2006.02.009>
- Baah-Bonteng, W. B. (2013). Human Capital Development: The Case of Education as a Vehicle for Africa's economic Transformation. *Legion Journal of International Affairs and Diplomacy*, 7(1): 31-55.
- Batuo M. E., Kararach, G, Malki. I (2022): The dynamics of Income Inequality in Africa: An Empirical Investigation on The Role of Macroeconomic and Institutional Forces. *World Development* 157, September, 105939 <https://doi.org/10.1016/j.worlddev.2022.105939>
- Benabou, R. (2000). Unequal Societies: Income Distribution and the Social Contract. *American Economic Review*, 90 (1): 96-129. DOI: 10.1257/aer.90.1.96
- Binder, M. Georgiadis, G. (2011). Determinants of Human Development: Capturing the Role of Institutions. CESIFO Working Paper No. 3397, SSRN: <https://ssrn.com/abstract=2031500> or <http://dx.doi.org/10.2139/ssrn.2031500>
- Bourguignon, F., F., Ferreira, H.G., Lustig, N. (eds). (2004). *The Microeconomics of Income Distribution Dynamics in East Asia and Latin America*. Washington, DC: The World Bank.
- Central Bank of Nigeria (2023). Quarterly Statistical Bulletin. <https://www.cbn.gov.ng/documents/QuarterlyStatbulletin.asp>
- Dae-bong, K (2010). Human Capital and its Measurement. Being a paper presented on the 3rd OECD World Forum on “Statistics, Knowledge and Policy” Charting Progress, Building Visions, Improving Life Busan, Korea - 27-30 October 2009. <https://www.oecd.org/site/progresskorea/44109779.pdf>
- Delbianco, F., Dabius, C., Caraballo, M.A. (2014). Income Inequality and Economic Growth: New Evidence from Latin America. *Cuadernos de Economia*, 33 (63): 381-398.
- EDUCELEB (2018). Primary school enrolment rate (state by state) in Nigeria. <https://educelzeb.com/primary-school-enrolment-rate-in-nigeria/>
- Eicher, T. S., Garcia-Penalosa, C. (2001). Inequality and Growth: The Dual Role of Human Capital in Development. *Journal of Development Economics*, 66(1), 173-197. [https://doi.org/10.1016/S0304-3878\(01\)00160-2](https://doi.org/10.1016/S0304-3878(01)00160-2)
- Globaldata (2023). Literacy Rate in Nigeria (2010-2021, %). <https://www.globaldata.com/data-insights/macroeconomic/literacy-rate-in-nigeria/>
- Gregorio, J. D., Lee, J. (2002) Education and Income Inequality: New Evidence from Cross-Country Data. *Review of Income and Wealth*, 48 (3), 395-416. <http://dx.doi.org/10.1111/1475-4991.00060>

- Imandojemu, K., Ekperiware, C., M., Babatunde, J. A., (2020). The Nexus between Human Capital Development and Economic Growth in Nigeria: A VAR Methodology. *East African Scholars Journal of Economics, Business and Management*. 3(10) DOI: 10.36349/easjebm.2020.v03i10.005. = <https://www.easpublisher.com/easjebm>
- Keji, S. A. (2021). Human Capital and Economic Growth in Nigeria. *Future Business Journal*, 7(1):49 <https://doi.org/10.1186/s43093-021-00095-4>
- Khayria, K., Feki R (2015): Gender Inequality and Economic Development, *Business and Economics Journal*, 6 (4)
- Lee, J., Lee, H (2018). Human Capital and Income Inequality. *Asian Development Bank Institute Working Paper No. 810 February*.
- Lee, J. W., Wie, D. (2015). Technological Change, Skill Demand, and Wage Inequality: Evidence from Indonesia. *World Development* 67: 238–50.
- Macrotrends (2023^a). Nigeria Infant Mortality Rate 1950-2023. <https://www.macrotrends.net/countries/NGA/nigeria/infant-mortality-rate>>Nigeria Infant Mortality Rate 1950-2023. www.macrotrends.net. Retrieved 2023-02-18.
- Macrotrends (2023^b). <https://www.macrotrends.net/countries/NGA/nigeria/healthcare-spending>' www.macrotrends.net. Retrieved 2023-11-13.
- Nwosa, P.I (2019). Income Inequality and Economic Growth in Nigeria: Implication for Economic Development, *OECONOMICA* 15 (1):107-115
- Ogbeide-Osaretin, E. N., Orhewere, B. (2022): An Empirical Evidence of Energy Consumption and Economic Development Dynamics in Nigeria: What is the Role of Population? *Energy Economics Letters*. 9(1), 27–43. <https://doi.org/10.55493/5049.v9i1.4510> www.aessweb.com
- Ogunleye, O. O., Owolabi, O. A. Sanyaolu, O. A., Lawal, O.O. (2017) The Human Capital Development and Economic Growth in Nigeria, *Journal of Business Management*, 3(8),17-37.
- Olowookere, J. K, Olanipekun, D., Sokunbi, G. M., Aderemi, T. A. (2022). Human Capital Development and Sustainable Development: Evidence from Nigeria. *Studia Universitatis Babeş-Bolyai Oeconomica* 67(1): 63-76. DOI: 10.2478/subboec-2022-0005
- Omojimiti, B (2011). Building Human Capital for Sustainable Economic Development in Nigeria. *Journal of sustainable Development*, 4(4):183-189
- Onuigbo, F. N (2021). Human capital development and economic development in Nigeria- an analysis of the role of government. *International Journal of Innovative Social Sciences & Humanities Research* 9(4):181-190, Oct.-Dec.
- Rougoor, W., van-Marrewijk, C, (2015). Demography, Growth and Global Income Inequality. *World Development*, Elsevier, 74(C): 220-232. Handle: *RePEc:eee:wdevel:v:74:y:2015:i:c:p:220-232* DOI: 10.1016/j.worlddev.2015.05.013
- Seery. E, Okanda, J., Lawson, M (2019): A Tale of Two Continents Fighting Inequality in Africa. *OXFAM Briefing paper – September*. Oxfam GB for Oxfam International
- Shuaibu, M., Oladayo, P. T. (2016). determinants of human capital development in Africa: a panel data analysis. *Oeconomia Copernicana*, 7(4), 523-549. DOI: <http://dx.doi.org/10.12775/OeC.2016.030>)

- Suhendra, I., Istikomah, N., Ginanjar, R. A. F., Anwar, C. J. (2020). Human capital, income inequality and economic variables: a panel data estimation from a region in Indonesia. *Journal of Asian Finance, Economics and Business*; 7(10): 571–579. doi:10.13106/jafeb.2020.vol7.no10.571
- United Nations Educational Scientific and Cultural Organization (2019). Literacy rate, adult total (% of people age 15 and above) country ranking. Institute for Statistics. <http://uis.unesco.org/>
- United Nations Educational Scientific and Cultural Organization (UNESCO) (2023). Data for sustainable development goals. <https://uis.unesco.org/>
- World Bank (2022). School enrollment, tertiary (%gross). <https://data.worldbank.org/indicator/SE.TER.ENRR>
- World Bank (2023). World Population Review. <https://worldpopulationreview.com/country-rankings/best-healthcare-in-the-world>
- World Bank (2023). Nurses and midwives (per 1,000 people)-Nigeria. <https://data.worldbank.org/indicator/SH.MED.NUMW.P3?locations=NG>
- World Bank (2023) Human capital index (HCI) (scale 0-1). <https://data.worldbank.org/indicator/HD.HCI.OVRL>
- World Bank (2023a): Human development: insights. human development report. <https://hdr.undp.org/data-center/country-insights#/ranks>
- World Health Organisation (2022). World health statistics, 2022. <https://www.who.int/news/item/20-05-2022-world-health-statistics-2022>

EFFECTS OF FINANCIAL INCLUSION AND OUT OF POCKETS COST ON HUMAN HEALTH (1990 - 2020)

Temitope Sade AKINTUNDE 
Osun State University, Nigeria

Ifeade Adetutu OLADIMEJI
Osun State University, Nigeria

Adekunle ARIBATISE* 
Wesley University Ondo, Nigeria

Abstract: This study examined the dynamic relationship amongst financial inclusion, out of pocket expenditure and health outcome proxied by life expectancy. This was with the view to investigate the effects of financial inclusion and out-of-pocket medical expenses on health outcomes as well as the causal connections between various variables in Nigeria. Time series data from 1990 through 2020 were analysed using Autoregressive Distributed Lag (ARDL) and pairwise granger causality as the estimation technique. The study found a positive relationship between financial inclusion and health outcomes and there was a bidirectional causal relationship between financial inclusion and life expectancy and a unidirectional causal relationship running from out-of-pocket expenditure to life expectancy at 5% significance level and vice versa. The study also revealed that financial inclusion had a positive and significant effect on life expectancy in Nigeria. Also, out of pocket expenditure had revealed not to be statistically significant on life expectancy in the long-run.

JEL classification: G21, H51, I31

Keywords: Financial inclusion, Out-of-pocket expenditure, life expectancy, ARDL, pairwise granger causality

1. Introduction

A basic requirement of existence is health, and the capacity to enjoy excellent health and longer life is crucial for human development (United Nations, 2012). The advantages of excellent health and long life extend beyond the person to the entire society, as a longer life expectancy boosts economic growth (Mahyar,

* Corresponding author. Address: Department of Economics, Wesley University, P.M.B 507, Ondo-Ife Road, Ondo, Nigeria. E-mail: kundun95@gmail.com

2016). As one scenario of individuals having a longer lifespan is the foundation for enhanced economic resource productivity, and the choice of individuals and economic players to engage in long-term investment expenditure is greatly influenced by the anticipated average lifespan of such private investors (Adediyani, 2021).

Economies that value longer life expectancies tend to concentrate on programs that would promote lifelong health and in spite of modest improvements with increase in government health expenditure in the year 2019 with N1, 190.71bn (Statista, 2023), the health indicators for Nigeria are still too high with life expectancy very low as well as increase in infant mortality rate in relation to other African countries (Akintunde and Olaniran, 2022). In 2021 for instance, life expectancy rate (at birth) in Nigeria was 60.87 years which is quite below some African countries such as Ghana (64.42), Kenya (66.95), Togo (61.48) and Cape Verde (73.23) (World Bank, 2021). Also, Infant and child mortality rates are 70 and 104 per 1000 live births, respectively, while the rate for maternal mortality is 814 per 100,000 births.

Out-of-pocket health expenditure (OOPHE) primarily explains why households are forced into poverty, especially when faced with high medical costs (Bredenkamp, Mendola, and Gragnolati, 2010). In contrast to developed nations, government expenditure on health as a percentage of GDP is generally very low in developing nations. For instance, as of 2015, US and UK average health spending to GDP ratios were 17.07% and 9.76%, respectively, while it was 3.76% and 5.14%, respectively, for Nigeria and sub-Saharan Africa (World Bank, 2017). Another estimate places the number of people who experience financial ruin due to household spending on health care at 150 million. Consequently, reduced out-of-pocket medical costs are a significant prerequisite for enhancing better health outcome through financial inclusion or government health expenditure.

Access to financial services is made possible and equally available through financial inclusion. It refers to a procedure that ensures that all economic participants can easily access, utilize, and benefit from the products and services offered by the established financial system i.e., “financial inclusion aims to remove the barriers that prevent people from engaging with the financial system. (Akintunde and Aribatise, 2022)”. Improved financial inclusion is crucial, according to Duvendack and Mader (2019), and can be a key strategy for fostering improved health outcomes or a decent quality of life. It is expected that individuals who have access to some services, such as loans from banks, equity and insurance products may benefit from prompt medical care and be in better health than those without access to microcredits.

Although the Nigerian healthcare system has improved over time, it is still unreliable, unfair, and broken. Private hospitals operate in a free market, while public hospitals are run under government authority, making the health system a complex mixed system. About 60% of healthcare services are delivered by the private health sector, with 40% by the public health sector (NSHDP, 2010). For example, out-of-pocket cost was about 71.52 as of 2019. In the previous 19 years, the value peaked in 2017 at 77.27 and peaked at 60.16. in 2000. This further increased to a level of 74.7 % in 2020, up from 71.5 % previous year.

Consequently, World Health Statistics claims that out-of-pocket medical costs can put people putting them in a precarious financial position by forcing them to decide between paying for their personal care and other essentials. When out-of-pocket health costs reach a specific percentage of a household's income or consumption, studies have labeled them as catastrophic (Sirag and Mohamed,

2021). With all these it is pertinent to raise these questions; how has financial access influenced out of pocket expenditure in Nigeria? Do both inclusive financing and out of pocket cost contributed to the health outcomes in Nigeria? In light of this, this study aims to contribute to the existing knowledge by determining the association between financial inclusion and out-of-pocket cost in Nigeria and to look into the contributions of financial inclusion and out-of-pocket cost on health outcomes as well determining the causal relation amongst the variables in Nigeria from 1990 to 2020. This study is structured in sections; section one, two and three are introduction, literature review and methodology respectively, followed which analysis and discussion of results in section four and conclusions in the last session.

2. Literature review

In the literature, the health capital theory has been linked to works of Schultz (1961), Becker (1964) and Grossman (1972). Becker introduced health as a form of human capital that can be invested on. Grossman linked human capital with the demand for health. His model explained health demand and medical care as it relates with people's wealth constraints, preferences and consumption expenditure over people's lifetime. (Galama, 2011). It showed that individuals can spend on their health and stock up their health capital by adding up medical care, food, education, etc. to get better health outcomes. Furthermore, Neo-Materialist theory asserts that a society with a large percentage of people in poor health will also have significant income disparities. The high percentage of the impoverished in society accounts for the general lack of health among the populace. Therefore, income disparity is a result of a number of "neo-material" conditions can have an effect on people's health. (Lynch et al., 2000).

Some studies have tried to link financial inclusion, out-of-pocket cost and health outcomes. **For instance**, Ajefu et al. (2020) looked at how financial inclusion affected the mental health of Nigerian household heads. They used geo-referenced financial services data along with data from the Nigerian General Household Survey (GHS) conducted in 2015 and 2016 to create their analysis. To identify financial institutions, they used a household's proximity to the closest financial institution. Financial inclusion has been demonstrated to significantly improve mental health. Similarly, using bank account ownership to examine how financial inclusion affects health. Aguila et al. (2016) in their study concentrated on Hispanic residents of the US who were between the ages of fifty-one (51) and ninety (90). This more mature age group was more inclined to have problems obtaining essential financial services as a result of their cultural heritage or absence of acculturation. In older Hispanics, having a bank account was significantly correlated with better mental health, according to panel data studies. Furthermore, Finkelstein et al. (2012) and Gyasi et al. (2020) proven that a variety of additional measures of financial inclusion, such as having access to health insurance, are crucial for giving people and communities financial security. Additionally, these protective services have a higher likelihood of lowering cognitive stress, enhancing mental health, and enhancing general wellbeing same as Gyasi et al. (2019), Allmark & Machaczek, 2015; Manor, Matthews, & Power, 2000 have all linked financial inclusion to health and finding out that access to finance improves health both mentally and physically. However, Moffat et al. (2006) gave contrary evidence from their study and concluded that poor health was attributed to factors other than access to money.

There are evidences of the link between health outcomes and out-of-pocket expenditure. According to a study conducted in Agincourt, South Africa, households with sick members spend roughly 5% of their total family income on direct medical expenses (Goudge et al., 2009). In Pelotas, Brazil, cohort research indicated that many families spent more than 15% of their disposable income on health services for their children (de Silva et al., 2015). In a separate study, Mohammad and Rasheda (2015) looked at the correlation between healthcare spending and the region's three primary health status indicators (life expectancy at birth, and infant mortality rate). An analysis of panel data using the 20-year (1995-2014) World Bank data collection in 15 nations in the region showed that total spending on health, public and private health spending all have a significant impact on lowering infant mortality rates, with the impact of private health expenditure being more noticeable than that of government expenditure. The reduction in the overall death rate is significantly aided by private health spending. However, the research found no evidence of a substantial relationship between health spending and birth weight. Some studies examined expenditure on healthcare and health outcomes. For instance, in the case of Sri Lanka, Russia, and Nigeria, research by Anand and Ravallion (1993), Patricio (2008), and Imoughele et al. (2013) all found a correlation between public healthcare expenditure and performance in the health system. However, no correlation was discovered between these variables by Filmer and Pritchett (1997), Musgrove (1996), or Kim and Moody (1992). According to Filmer and Pritchett (1997), the key determinants of child mortality are not public health spending but rather the degree of poverty, income disparity, female education, and other socioeconomic factors. Additionally, a study on Indian states by World Bank from 1980 to 1999 employed panel data and found identical results to those of Burnside and Dollar (1998) found no connection between healthcare costs and newborn death rates. Additionally, Mckec (2004) and Young (2001) found no conclusive evidence of a connection between health expenditure and health outcomes.

In another study, Anyanwu and Erhijakpor (2007) found that overall healthcare spending affects health outcomes as expected in a study of 47 African countries between 1999 and 2004. A 1% increase in total expenditure on health per person results in reductions of 2.1% in the rates of infant and 2.2% under-five mortality. Similar to this, Akinkugbe and Mohanoe (2009) discovered that healthcare spending, together with other variables, had a significant impact on health outcomes. Gupta et al. (2001) identified stronger impacts for the underprivileged from the national data on the association between public health spending and health status. Gupta et al. (1999) found that health spending decreased child death rates in 1994 in a study they conducted on 50 developing and transitional nations. In a panel study of 160 nations where they divided health expenditure into public and private spending, Issa and Ouattara (2005) discovered a negative association between health expenditure and newborn death rates.

Furthermore, using quantitative and qualitative analyses, Onah and Govender (2014) investigated the gendered effects of out-of-pocket payments (OOPs) on healthcare consumption in south-eastern part of Nigeria. Six conversations in single-sex focus groups and a survey of 411 households were undertaken. Their findings confirmed that female-headed households (FHHs) are socioeconomically and demographically vulnerable, which influenced gender-based variations in healthcare access, financial burden, provider preferences, and coping mechanisms between

households. Also, Appleton (1995); Dercon (1996); Lavy and Germain (1994) also discover that in Kenya, Ethiopia, and Ghana, that the selection of medical facilities and the uptake of the sick are affected by the distance to health services. Better access to medical facilities was discovered by Turner (1991) to be the main factor influencing household health care consumption in Nicaragua. Families that must travel farther to access medical care are prone to developing evasion techniques, such as using self-medication, quack pharmacies, and traditional native healers. However, Collier and Mackinnon (1997) discovered that quality is far more sensitive to household use of health facilities than distance. Similar to this, Nakovics et al. (2020) looked into the factors that influence out-of-pocket spending (OOPE) on curative healthcare services in rural Malawi. It was discovered that there is a substantial positive correlation between age 15–39 years, household head, having a chronic disease, how long the illness lasts, being hospitalized, the number of accompanying people, wealth quartiles, and being a city resident and the size of OOPE.

According to the aforementioned, the study reviewed so far has either examined at the relationship between financial inclusion and health outcomes or the relationship between out-of-pocket medical expenses and health outcomes. The trio's complex association has not received enough attention in the literature as there is still a glaring void in the literature about the effects of financial inclusion and out-of-pocket expenses on human health. This gap this study intends to fill.

3. Methodology

The Grossman (1972) model of health production function's findings serve as the foundation for this study's theoretical framework. To examine the effect of financial inclusion and out of pocket expenditure on health outcomes in Nigeria, this paper is guided by the model specified by Ofeh, Tii and Ofeh, (2021), Brown et al., (2015) and Koomson, Abdul-Mumuni and Abbam, (2021). The model's functional form is specified as:

$$HO = f (FI, OOPHE, GDP, GEH, DCPS, EDU) \dots\dots\dots 1$$

In a simple linear equation and log form, model (2) becomes

$$HO = \alpha_0 + \alpha_1 FI + \alpha_2 OOPHE + \alpha_3 GDP + \alpha_4 GEH + \alpha_5 DCPS + \alpha_6 EDU + \upsilon \dots\dots 2$$

Where:

HO is life expectancy at birth; FI is Financial Inclusion; OOPHE is Out-of-Pocket Health Expenditure; GDP is Gross Domestic Product per capita; GEH is Government Expenditure on Health; DCPS is Domestic Credit to the Private Sector which is a proxy of financial development; EDU is Education; υ is the error term, α_0 is the intercept, and $\alpha_1, \alpha_2 \dots \alpha_6$ represent the parameter estimates. The apriori expectation is expressed mathematically as $\alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0, \alpha_4 > 0, \alpha_5 > 0$ and, $\alpha_6 > 0$.

This study employed the ARDL (Autoregressive Distributed Lag) model to determine how out-of-pocket expenses and financial inclusion affect health outcomes. This model is fundamentally important because it allows us to examine

long-run and short-run relationships simultaneously inside the same framework, irrespective of "whether all variables are I(1), I(0), or a combination of I(1) and I(0) variables," i.e., in the same sequence. The ARDL model is derived as follows from equation 2:

$$\Delta HO_t = \beta_0 + \sum_{j=1}^n \theta_j \Delta FI_{t-1} + \sum_{j=1}^p \alpha_j \Delta OOPHE_{t-1} + \sum_{j=1}^p \varphi_j \Delta GDP_{t-1} + \sum_{j=1}^p \Phi_j \Delta GEH_{t-1} + \sum_{j=1}^p \theta_j \Delta DCPS_{t-1} + \sum_{j=1}^p Y_j \Delta EDU_{t-1} + \beta_1 HI_{t-1} + \beta_2 OOPHE_{t-1} + \beta_3 GDP_{t-1} + \beta_4 GEH_{t-1} + \beta_5 DPSC_{t-1} + \beta_6 EDU_{t-1} + \mu_t \dots\dots\dots 3$$

To examine the influence of financial inclusion and out of pocket expenditure on health outcomes both in the short and long run, and to explain how quickly poverty adjusts to changes in health outcomes in the long run, the ECM form is specified by reparametrizing eqtn 3.

$$\Delta HO_t = \beta_0 + \sum_{j=1}^n \theta_j \Delta FI_{t-1} + \sum_{j=1}^p \alpha_j \Delta OOPHE_{t-1} + \sum_{j=1}^p \varphi_j \Delta GDP_{t-1} + \sum_{j=1}^p \Phi_j \Delta GEH_{t-1} + \sum_{j=1}^p \theta_j \Delta DCPS_{t-1} + \sum_{j=1}^p Y_j \Delta EDU_{t-1} + \beta_1 HI_{t-1} + \beta_2 OOPHE_{t-1} + \beta_3 GDP_{t-1} + \beta_4 GEH_{t-1} + \beta_5 DPSC_{t-1} + \beta_6 EDU_{t-1} + \tau ECM_{t-1} + \mu_t \dots\dots\dots 4$$

In Equation (4) β_{1-6} represent the convergence of short-run dynamic coefficients to long-run equilibrium while τ is the error correction model and speed of adjustment parameter derived from the predicted equilibrium relationship. The aforementioned ECM could be considered as including both short-term transient effects and long-term consequences.

To establish the direction of causation among the variables, the pairwise Granger causality test created by Granger (1988) was also used. The Granger equations for the model, however, are laid down as follows:

$$HO_t = \sum_{i=1}^n \beta_i HO_{t-1} + \sum_{j=1}^n \delta_i FI_{t-j} + \mu_t \dots\dots\dots 5$$

$$FI_t = \sum_{i=1}^n \beta_i FI_{t-1} + \sum_{j=1}^n \delta_i HO_{t-j} + \mu_t \dots\dots\dots 6$$

$$HO_t = \sum_{i=1}^n \beta_i HO_{t-1} + \sum_{j=1}^n \delta_i OOPHE_{t-j} + \mu_t \dots\dots\dots 7$$

$$OOPHE_t = \sum_{i=1}^n \beta_i OOPHE_{t-1} + \sum_{j=1}^n \delta_i HO_{t-j} + \mu_t \dots\dots\dots 8$$

The decisions on the acceptance or rejection of the hypothesis depends highly on the value of the *F*-statistics and the probability.

Definitions and Measurement of variables

Based on the literature, the measurements of the different variables of the model for the study are described briefly and stated as follows.

Variable	Descriptions	Symbol	Data source
Life Expectancy Rate	This is total life expectancy for both male and female. It is used as the proxy for health status. It serves as a gauge of how long a person's life expectancy is at birth.	HO	WDI
Financial inclusion	Financial inclusion is the provision of transactions, payments, savings, credit, insurance, and other financial goods and services in a responsible and sustainable manner, to both individuals and enterprises.	FI	CBN
Out-of-Pocket Expenditure	Proportion of out-of-pocket expenses to total current medical costs. Households directly pay for their own health care through out-of-pocket expenses.	OOPHE	WDI/CBN
GDP Per Capita	GDP per capita is gross domestic product divided by population. a proxy for economic growth	GDP	WDI
Gross primary school enrolment	Gross enrollment ratio (GER) is the ratio of total enrollment, regardless of age, to the population in the age range deemed to formally correspond to the stated education level.	EDU	WDI
Government Expenditure on health	All costs associated with providing healthcare, family planning, nutrition, and emergency medical assistance fall under the category of health expenditure.	GEH	CBN
Domestic credit to private sector	Domestic credit refers to financial resources given by financial institutions to the private sector. lending, purchasing non-equity securities, etc.	DCPS	WDI

Source: Author's Compilation, 2023

4. Results and Discussion

4.1. Descriptive Statistics

In order to observe the distribution and variability of variables, descriptive statistics is usually employed, prior to analyzing time series data. It establishes information about sample statistics. The result of the descriptive statistics employed in the study is presented in Table 4.1. The outcome of the descriptive statistics demonstrates a high degree of consistency across all study variables. This is seen in the mean and median values, which lies between the maximum and minimum values of the series. Almost all series have standard deviations that are reasonably small which shows small deviations of actual data from their respective mean values.

Table 4.1. Descriptive Statistics

	HO	FI	OOPEH	GEH	GDP	EDU
Mean	49.16	10.11	71.59	104.44	3.40	88.53
Median	48.25	8.91	72.76	55.70	3.33	89.70
Maximum	55.04	19.63	77.22	388.37	12.46	102.11
Ste. Dev.	3.27	3.53	4.67	117.46	2.58	9.68
Skewness	0.45	0.97	-0.94	0.99	1.53	-1.153
Kurtosis	1.68	3.66	3.06	2.81	6.44	4.97
Jarque-Bera	3.29	5.39	4.56	5.11	27.51	11.87
Probability	0.19	0.07	0.10	0.08	0.00	0.00
Sum	1524.01	313.44	2219.37	3237.76	105.52	2744.47

Source: Authors computation 2023

The result from Table 4.1, HO has a mean value of 49.16, which is higher than the median value of 48.25 for the study period. This denotes that HO is somewhat skewed to the right, with the consequence that some of the data series' variables have medians that are smaller than their means. Also, Kurtosis, a measure of the variables' degree of peakness revealed that HO and GEH are platykurtic while FI, OOPHE, GDP, CCPS, and EDU are leptokurtic. The Jarque-Bera (JB) statistics significantly reject the normal distribution for FI, GDP, GEH, DCPS, and EDU indicating non-normality and except for HO and OOPHE also indicating normality of their conditional distributions.

Before proceeding with the analysis, the stationary status of all variables (health outcomes, financial inclusion, out of pocket expenditure on health, government expenditure on health, GDP per capita, and gross primary school enrolment) were tested to determine their stationarity. This is to ensure that the variables are not integrated of order two i.e. I(2) in order to avoid spurious results for the ARDL results.

4.2. Preliminary test

4.2.1. Unit Root Tests

To better understand the nature of variables used in this study, and as well determine the stationarity status of each variable, the unit root test is employed. The stationarity property of a variable helps to explain the consistency of data estimates. The ADF (Augmented Dickey-Fuller) and PP (Phillips-Perron) unit root tests were used in the study to determine whether all variables were stationary. It was differenced when a variable was discovered not to be stationary at level. The unit root test's conclusion is reported in table 4.2 and 4.3 below.

From the result obtained using ADF unit root test in table 4.2; HO and GDP found to be stationary at levels I(0), indicating that on the incidence of shock, this variable does not drift away from its mean value, while other variables; FI, OOPHE, GEH and EDU became stationary at first difference I(1).

Thus, the study reported I(0) and I(1) series, which is also confirmed by the Phillips-Perron unit root test in table 4.3. In order to determine whether there is a chance of a long-term link between the variables, a co-integration test must be conducted because most of the series have unit roots.

Table 4.2. Unit Root Tests Results using Augmented Dickey Fuller (ADF) Technique

Variables	Statistics at level		Statistics at first difference		Order of Integration
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
HO	-3.69*	-6.92	-3.34	-4.22	I(0)
FI	-2.65	-3.50	-4.10*	-4.05	I(1)
OOPHE	-2.51	-2.65	-4.52*	-4.44	I(1)
GEH	1.29	-1.90	-6.31*	-6.08	I(1)
GDP	-4.67*	-4.51	-8.18	-6.02	I(0)
EDU	-2.93	-2.88	-4.83*	-4.78	I(1)
Critical Values					
1%	-3.68	-4.31	-3.68	-4.31	
5%	-2.97	-3.57	-2.97	-3.57	
10%	-2.62	-3.22	-2.62	-3.22	

Table 4.3. Unit Root Tests Results using Phillips-Perron (PP) Technique

Variables	Statistics at level		Statistics at first difference		Order of Integration
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
HO	-3.31*	-3.47	-3.25	-3.81	I(0)
FI	-1.93	-1.92	-5.14*	-5.93	I(1)
OOPHE	-2.29	-2.37	-5.02*	-4.94	I(1)
GEH	-2.28	-1.52*	-6.47	-10.55	I(1)
GDP	-4.70*	-4.56	-10.52	-10.21	I(0)
EDU	-2.39	-2.35	-5.81*	-6.25	I(1)
Critical Values					
1%	-3.68	-4.31	-3.68	-4.31	
5%	-2.97	-3.57	-2.97	-3.57	
10%	-2.62	-3.22	-2.62	-3.22	

Note: * implies 5% level of significance

Source: Author's computation 2023

4.2.2. Lag Order Selection

Table 4.4 present the lag length of the model. It is evident that the various lag selection criteria produced different results. FPE, AIC and SIC revealed two (2) lag length, HQ and LR chooses one (1) lag length. The lag length for the independent variables in this study is two, as suggested by the AIC, and is utilized to estimate the VAR, drawing on the rationale for AIC.

Table 4.4. VAR Lag Order Selection Criteria: Endogenous variables: LEX FI OPEH GEH GDP EDU

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-526.4354	NA	22380485	36.78865	37.11868	36.89201
1	-315.6835	305.2269*	354.5685	25.63334	28.27364	26.46025*
2	26.46025	131.7164	1.671534*	19.60433*	24.55489*	21.15479

* Indicates lag order selected by the criterion

4.2.3. Correlation Analysis

Correlation matrix is needed to watch how strongly the explanatory variables in a model are associated with the dependent variable(s). Table 4.5 presents the correlation matrix between the dependent and explanatory variables of the model used in the study.

Table 4.5. Correlation matrix

Correlation Probability	HO	FI	OPEH
HO	1.000000		
FI	0.632280	1.000000	
OPEH	0.453374	0.282459	1.000000

Source: Author's Computation 2023

Table 4.5 specifically showed that the degree of association between dependent variable (HO) and independent variable (FI) is high. The result shows that HO has a moderate and positive correlation with FI, while a weak and positive correlation between OH and OOPEH. This implies that financial inclusion (FI) and out of pocket expenditure (OOPEH) has a positive impact on health outcomes (HO). However, the likely multicollinearity problem that could have occurred as a result of high association is taken care off.

4.2.4. Co-integration Test: Bound Testing Approach

The study therefore chooses a maximum lag length of two for both the dependent variable(s) and regressors in the conditional ARDL model. The result of the bound test as provided by Pesaran et al. (2001) is presented in table 4.6, where the F-statistics is compared with the critical bounds at 5% level of significance.

Table 4.6. Bounds Approach to Co-integration Test (ARDL)

F-Statistics	Value	
	116.20	
DF	6	
Critical Values for F-statistics	Lower Bound I(0)	Upper Bound I(1)
10%	1.99	2.94
5%	2.27	3.28
1%	2.88	3.99

Source: Author's Computation, 2023.

The result reveals the lower and upper bounds to be 2.27 and 3.28 respectively at 5%, and 1.99 and 2.94 respectively at 10%, which are obviously below the F-statistic value of all the model. Accordingly, Table 4.6 demonstrates that at the 5% and 10% level of significance, the computed F-statistic (116.20) exceeds the upper bound critical value. This implies the existence of a long-run relationship between financial inclusions, out of pocket expenditure and health outcomes in Nigeria. Thus, the null hypothesis of no co-integration is rejected.

4.3. The relationship between Financial Inclusion and Out of Pocket Expenditure on Health Outcomes in Nigeria.

Based on short-run analysis in Table 4.7, FI, OOPEH, OOPEH (-2), GEH, GEH (-1), GDP (-1), EDU (-1) and EDU (-2) have positive significant impact in determining HO, while FI (-1), OOPEH and (-1), GDP, GDP (-2), EDU are not significant at 0.05% level. Thus, these are in consonance with the a-priori expectation among the variables. This implies that in Nigeria as financial inclusion, out of pocket expenditure on health, and government expenditure increases, health outcome also increases in short run, this result can further be explained that as GDP per capita and gross primary school enrolment increases, life expectancy increases too, this is line with Finkelstein et al. (2012), Ajefu et al. (2020) and Gyasi et al. (2020)

Table 4.7. ARDL Short Run Dynamic

Variables	Coefficient	Std. Error	t-Statistic	Prob.*
HO(-1)	1.935385	0.026490	73.06077	0.0000**
HO(-2)	-0.930806	0.028982	-32.11658	0.0000**
FI	0.003393	0.000871	3.893789	0.0025**
FI(-1)	-0.001252	0.000971	-1.289538	0.2237
OOPEH	0.005165	0.000700	7.378968	0.0000**
OOPEH(-1)	0.000379	0.000728	0.520858	0.6128
OOPEH(-2)	0.001446	0.000607	2.382858	0.0363**
GEH	0.000201	5.07E-05	3.964306	0.0022**
GEH(-1)	0.000158	6.44E-05	2.450080	0.0322**
GDP	0.000858	0.000902	0.951014	0.3620
GDP(-1)	0.005320	0.000799	6.653860	0.0000**
GDP(-2)	-0.000754	0.000792	-0.952584	0.3613
EDU	-0.000323	0.000247	-1.306884	0.2179
EDU(-1)	0.000745	0.000215	3.462600	0.0053**
EDU(-2)	0.000880	0.000257	3.420214	0.0057**
CointEq(-1)*	-0.045795	0.000117	39.00204	0.0030

Source: Author's Computation, 2023.

Also from Table 4.7, the short run dynamic amongst the variables is significant at 1% level and negatively signed ECM has a significant estimated value of -0.0457 and a probability value of 0.0030; it is also appropriately signed. This indicates that the current year has corrected for about 4% of the disparity from the prior year. The economy will recover 4% after a year following disequilibrium because the adjustment process is poor.

From Table 4.8, it is evident that financial inclusion (FI), government expenditure on health (GEH), and GDP per capita (GDP), whose coefficients are 1.014545, 0.00940 and -1.18433 respectively are significant at 5% level thus have a long-run relationship with health outcome (HO) this is in line with Houeninvo *et al.*, (2023). While out of pocket expenditure (OOPEH), gross primary school enrolment (EDU) do not exhibit long-run relationship. With the coefficients of 1.360914, 0.041172 and -5.402243 respectively and insignificant at 5% level.

Table 4.8. ARDL long-run Dynamic

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FI	1.014545	0.810193	1.252227	0.0365**
OOPEH	1.360914	1.204724	1.129648	0.0827
GEH	0.009433	0.011233	0.839707	0.0189**
GDP	-1.184352	0.886205	-1.336431	0.0084**
EDU	0.041172	0.089987	0.457530	0.6562
C	219.2580	129.1435	1.697786	0.0076**

Source: Author's Computation, 2023.

4.4. Causality between Financial Inclusion, Out of Pocket Expenditure and Health outcomes

Table 4.9. Pairwise Granger Causality Tests

Null Hypothesis:	Obs.	F-Statistic	Prob.
FI does not Granger Cause HO	29	3.23133	0.0542
HO does not Granger Cause FI		5.37586	0.0118
OOPEH does not Granger Cause HO	29	10.0826	0.0007
HO does not Granger Cause OOPEH		1.29361	0.2927

Source: Author's Computation, 2023.

Considering the result in Table 4.9, the hypothesis that FI does not Granger cause HO, the null hypothesis of no causal relationship running from FI to HO is rejected with the p-value of 0.05 at 5% significance level. Also, in the hypothesis of HO does not Granger Cause FI, null hypothesis is rejected at 5% significance level with p-value of 0.0118. Thus, we found a bi-directional causality that runs from FI to HO vice-versa. This result obtained suggests that financial inclusion is influenced by health outcomes; this implies that a rise in the level of financial inclusion in Nigeria also results to a rise in health outcomes. Thus, creation of more commercial banks, ATM machines, means to borrow money from the banks and access to assets and countrywide income played a significant role in the health outcomes in Nigeria.

Table 4.9 also shows p-value of 0.0007 which is significant at 5%, revealed a causality running from OOPHE to HO. Therefore, the null hypothesis that OOPEH does not Granger cause HO is rejected and the alternative hypothesis accepted. Also with the p-value of 0.2927 at 5% significance level, revealed a no causal relationship running from HO to OOPHE i.e. no causality exists from HO to OOPEH. According to this finding, the level of out-of-pocket health spending is affected by the rise in health outcomes, but the level of health outcomes in Nigeria is unaffected by out-of-pocket health spending. This suggests that out-of-pocket medical expenses in Nigeria have little long-term influence on health outcomes this also is in tandem with Nakovics et al. (2020).

4.5. Discussion of findings

The estimated result showed that there was a correlation between financial inclusion and out of pocket in Nigeria which is in accordance with the a priori expectation. This implies a positive relationship between the variables. The estimated result on the influence of financial inclusion and out of expenditure on life expectancy in Nigeria also demonstrated that in Nigeria, there was a positive correlation between financial inclusion and out-of-pocket spending on health outcomes across all factors. These outcomes validate Grossman (1972) health investment framework. The study revealed existence of a long-run relationship among financial inclusions, out of pocket

expenditure and health outcomes. Financial inclusion, out-of-pocket expenditure, government expenditure on health, gross domestic product per capita all have positive short run significant impact on health outcomes, meaning that all the variables have a bigger association and influences good health in the short run, while financial inclusion, government expenditure on health, and GDP per capita had a long run significant impact on health outcomes and out-of-pocket expenditure and education do not significantly impacted on health outcomes in the long run this may be that in the long run, an increase in out-of-pocket expenditure may raise the financial risk and thus act as obstacles to healthcare services..

Also, the result indicated that there is a bidirectional causality relationship running from financial inclusion to life expectancy at 5% level of significance and vice-versa. This result revealed that life expectancy is affected by the increase in financial inclusion indicating synergy and complementarity, meaning that life expectancy is influenced by the level of financial inclusion in Nigeria. In the case of out-of-pocket expenditure, the result indicates a unidirectional causality running from out-of-pocket expenditure to life expectancy. This result revealed that life expectancy is influenced by the rate of change in out-of-pocket expenditure on health in Nigeria.

Conclusion

This bound test results revealed the existence of long-run relationship among financial inclusions, out of pocket expenditure and health outcomes in Nigeria. ARDL long run dynamics showed that FI, GEH, and GDP had a long run relationship and OOPEH and EDU do not exhibit long-run relationship. The short-run analysis also revealed a positive significant impact of the variables on HO. The study further revealed a unidirectional causality from out-of-pocket expenditure to life expectancy and a bidirectional causality from financial inclusion to life expectancy and vice-versa. To this end, the study recommends that financial structure be integrated into Nigeria's health policies and strategies and that financial institutions be held accountable for their actions. This will help people better understand the complex relationships between financial structure and health outcomes, thus leading to an enhancement of the financial structure's quality.

References

- Abbott, S., Hobby, L. (2005). Poverty and health: 'Primary care patients living at the interface'. *Health Education Journal*. 1(2), 17-31.
- Adediyin, A. R. (2021). Is financial inclusion a determinant of life expectancy? Evidence from West African region. *Studies in Business and Economics*, 23(1).
- Aguila, E., Angrisani, M., Blanco, L. (2016). Ownership of a bank account and health of older Hispanics. *Economics Letters*. 3(4), 1-21.
- Akinkugbe, O., Mohanoe, M. (2009). Public health expenditure as a determinant of health status in Lesotho. *Social Work in Public Health*. 1(2), 1- 18.
- Akintunde, T.S., Aribatise, A. (2022). Institutional quality, financial inclusion and shadow economy in Nigeria: An ARDL Approach. *Farabi Journal of Social Science*, 8(2).

- Akintunde, T.S., Olaniran, O.D. (2022). Financial Development, Public Health Expenditure and Health Outcomes: Evidence from Nigeria. *Journal of Economics and Allied Research*, 7(1), 25-34.
- Allmark, P., Machaczek, K. (2015). Financial capability, health and disability. *BMC Public Health*.
- Anand, S., Ravallion, M. (1993). Human Development in Poor Countries: On the Role of Public Services, *Journal of Economic Perspectives*, 2(2), 21- 37.
- Andinet, W., Daniel, Z. G., Abebe, S. (2016). Community-Based Health Insurance and Out-of-Pocket Healthcare Spending in Africa: Evidence from Rwanda. *Economics Letters*, 8(5), 19-31.
- Anyanwu, C. J., Erhijakpor, E. O. A. (2007). Health expenditures and health outcomes in Africa. *African Development Bank Economic Research Working Paper No 91*.
- Appleton, S., (1995). The Interaction between Poverty and Gender in Human Capital Accumulation: The Case of Primary Leaving Exams in Cote d'Ivoire. *Journal of African Economic*, 2(2), 21- 37
- Baird, S., Hoop, J., Ozler, B. (2013). Income shocks and adolescent mental health. *Journal of Human Resources*, 48, 370-403.
- Bradford Evaluation Report, Bradford: Bradford City Primary Care Trust.
- Brown, M., Guin, B., Kirschenmann K. (2016). Microfinance banks and financial inclusion. *Review of Finance*, 20(3), 907-946.
- Burnside, C., Dollar, D. (1998). Aid, the incentive regime and poverty reduction. *Washington DC: The World Bank*.
- Caiels, J., Thurston, M. (2005). Evaluation of the Warrington District CAB GP Outreach Project; *Centre for Public Health Research University College Chester*.
- Cameron, A. C., Trivedi, P. K. (2009). *Microeconometrics using Stata* (Revised 2010 ed.). College Station, Texas: Stata Corp LP.
- Cole, S.M., Tembo, G. (2011). The effect of food insecurity on mental health: Panel evidence from rural Zambia. *Social Science and Medicine*, 73, 1071-1079.
- Collier, P., S. Dercon, J. Mackinnon (1997). Density versus, Quality in Health Care Provision: The Use of Household Data for Budgetary Choices in Ethiopia. *Discussion Paper Series DPS 97.19, Center for Economic Studies. Leuven*. 2(2), 21- 37
- Constitution of the World Health Organization. Basic Documents, forty-fifth edition.
- Demirgüç-Kunt, A., Klapper L. (2012). Financial inclusion in Africa: an overview. The World Bank.
- Dercon, S. (1996). Risk, Crop Choice and Savings: Evidence from Tanzania, *Economic Development and Cultural Change*, 44(3), 385–514.
- Filmer, D., Pritchett, L. (1997). Child mortality and public spending on health: how much does money matter. *In World Bank Policy Research Working Paper No 1864. Washington DC: World Bank; 1997*.
- Finkelstein, A., Taubman, S., Wright, B., Bernstein, M., Gruber, J., Newhouse, J. P. (2012). The Oregon health insurance experiment: Evidence from the first year. *Quarterly Journal of Economics*, 127(3), 1057–1106.
- Galama, T.J. (2011). A Contribution to Health Capital Theory, RAND Working Paper, WR-831.
- Gillespie M., Dobbie, L., Mulvey, G., Gallacher, Y., Campbell, J. (2007). Money Advice for Vulnerable Groups: *Final Evaluation Report, Edinburgh: Scottish Executive* (Web only publication).

- Greasley, P. (2003). The Health Plus Project: Advice Workers in Primary Care in Inner City.
- Grossman, M. (1972). The demand for health: a theoretical and empirical investigation: New York: *National Bureau of Economic Research*,1(9), 72-87.
- Gupta, S., Verhoeven, M., Tiongson, E. (2001). Public Spending on Health Care and the Poor, IMF Working Paper, Fiscal Affairs Department.
- Gupta, S., Verhoeven, M., Tiongson, E. (1999). Does Higher Government Spending Buy Better Results in Education and Health Care? IMF, Washington D.C, Working paper 99/21.
- Gyasi, R. M., Adam, A. M., Phillips, D. R. (2019). Financial inclusion, health-seeking behavior, and health outcomes among older adults in Ghana. *Research on Aging*, 41 (8), 794–820.
- Gyasi, R. M., Phillips, D. R., Buor, D. (2020). The role of a health protection scheme in health services utilization among community-dwelling older persons in Ghana. *Journal of Gerontology: Series B*, 75(3), 661–673.
- Imoughele, L. E., Ismaila, M. (2013). Determinants of Public Healthcare Expenditure in Nigeria: An Error Correction Mechanism Approach, *International Journal of Business and Social Science*, 4(13), 220-233.
- Issa, H., Ouattara, B. (2012). The Effect of Private and Public Health on Infant Mortality Rates: Does the Level of Development Matters? *Damascus University Journal*. 28(1), 794–820.
- Jones, K. (2009). Outcomes of a Longitudinal Study of Citizens Advice Service Clients in Wales, Bangor University & Citizens Advice Cymru.
- Joseph, B., Ajefu, A., Ayse, D. B., Houra, H. C. (2020). The impact of financial inclusion on mental health. *SSM - Population Health*.11, 1-7. <http://www.elsevier.com/locate/ssmph>.
- Kim, K., Moody, P. M. (1992). More resources, better health? A cross-national perspective, *Social Science and Medicine*, 34(12):837–842.
- Lavy, V., Germain, J. (1994). Quality and Cost in Health Care Choice in Developing Countries” Living Standard Measurement Study. *Working paper No. 105. World Bank*. Washington D.C.
- Mackintosh, J., White, M., Howel, D., Chadwick, T., Moffatt, S., Deverill, M., Sandell, A. (2006). Randomised controlled trial of welfare rights advice accessed via primary health care: pilot study *BMC Public Health*, 6,162.
- Manor, O., Matthews, S., Power, C. (2000). Dichotomous or categorical response? Analysing self-rated health and lifetime social class. *Int Journal of Epidemiol*, 29(5), 149–157.
- Moffatt, S., Scambler, G. (2008). Can welfare-rights advice targeted at older people reduce social exclusion? *Ageing & Society*, 28(9), 875–899.
- Moffatt, S., Mackintosh, J., White, M., Howel, D., Sandell, A. (2006). The acceptability and impact of a randomised controlled trial of welfare rights advice accessed via primary health care: qualitative study', *BMC Public Health*, 6(1),163-171.
- Moffatt, S., White, M., Stacy, R., Downey, D., Hudson, E. (2004). The impact of welfare advice in primary care: a qualitative study', *Critical Public Health*, 14(3), 295-309.
- Mohammad, M.R., Rasheda K. (2015). Health care expenditure and health outcome nexus: new evidence from SAARC-ASEAN region.

- Musgrove, P. (1996). Public and private roles in health. In Technical report 339, Washington DC: World Bank.
- Nakovics, M I., Stephan, B., Grace, B., Jobiba, C, Olivier, K., Gerald, L., Manuela, D. A. (2020). Determinants of healthcare seeking and out-of-pocket expenditures in a “free” healthcare system: evidence from rural Malawi. *Health Economics Review*. 10.
- Nussbaum, M. (2011). *Creating capabilities: The human development approach*. Belknap, TX: Harvard University Press.
- Onah, M.N., Govender, V. (2014). Out-of-Pocket Payments, Health Care Access and Utilisation in South-Eastern Nigeria: A Gender Perspective. *PLoS ONE* 9(4): e93887. doi:10.1371/journal.pone.0093887.
- Patricio, M., Edward, F., Rifat, A., Sevil, K., Salakhutdinova M. (2008). Public Spending in Russia for Healthcare: Issues and Options, Europe and Central Asia Region (ECA)”, Russia Country Management Unit, The World Bank.
- Pleasence, P., Buck, A., Balmer, N., Williams, K. (2006). *A Helping Hand: The Impact of Debt Advice on People’s Lives*, London: LSRC.
- Turner, R. (1991). Better Access to Health Services in Nicaragua Lower Infant Mortality. *International Family Planning Perspective*, 17 (2).
- Sirag, A., Mohamed, N.N. (2021). Out-of-Pocket Health Expenditure and Poverty: Evidence from a Dynamic Panel Threshold Analysis. *Healthcare*, 9, 536.
- Statista (2023). Government’s Health Expenditure in Nigeria Available at: <https://www.statista.com/statistics/1126582/government-s-healthcare-expenditure-in-nigeria/>
- World Bank (2004). *Attaining the Millennium Development Unit, South Asia Region*, World Bank: Washington D.C.

THE IMPACT OF INBOUND MARKETING ON DIGITAL CONSUMER BEHAVIOR IN ALGERIA

Ghozlan TELILANI* 
University of Skikda, Algeria

Djamel BOUTEDJA
University of Skikda, Algeria

Abstract: This research study aims to measure the impact of inbound marketing on digital consumer behavior. The researchers collected data from 126 participants who are customers of the startup Nrecycli. The researcher used structural equation modeling (SEM) through Smart PLS 4 software to analyze the data. The findings of this study indicated that the role played by inbound marketing processes (attraction, conversion, closure, and delight) on digital consumer behavior was strong and influential. The results also indicated a positive relationship between inbound marketing, increased consumer engagement and loyalty to the institution.

JEL classification: M30, M31, M37, M13

Keywords: Inbound Marketing, Consumer Behavior, startups, Loyalty, Digitalization

1. Introduction

In the era of modern digitalization, digital media has become pivotal in marketing operations and customer communication. With the increasing use of information and communication technology, there has been a radical change in the behavior and preferences of digital consumers. In this context, inbound marketing has emerged as the latest form of digital marketing and an effective strategy to reach customers and encourage them to interact with marketing content in a smarter and more targeted manner. However, despite the growing global interest in inbound marketing, research exploring its impact on digital consumer behavior in Algeria remains limited.

This study aims to fill this gap by examining the impact of inbound marketing on digital consumer behavior in Algeria, thereby contributing valuable insights to the academic literature. Firstly, the study analyzes the evolution of digital consumer behavior in light of the increasing reliance on digital technology, providing a deeper understanding

* Corresponding author. Address: University of Skikda - August 20th 1955, Laboratory of ECOFIMA, Algeria, E-mail: gh.telilani@univ-skikda.dz Phone number: +213 540 517 905
<https://orcid.org/0009-0009-8372-0057>

of the changes in consumer preferences and behavior in the Algerian market. Secondly, it offers a comprehensive theoretical framework to understand how inbound marketing strategies influence consumer perceptions and decisions, focusing on the stages of awareness, consideration, purchase, retention, and advocacy. Thirdly, the study presents a detailed case of an Algerian startup, "Nrecycli," offering practical examples that can serve as a reference for other startups in the Algerian market and similar regions.

Furthermore, the study provides practical recommendations for startups based on findings derived from a structured survey method involving 126 responses. This contributes to improving digital marketing strategies and enhancing customer relationships, thus boosting business growth opportunities and increasing revenues. By synthesizing these insights, this research aims to offer new and comprehensive perspectives on the impact of inbound marketing on digital consumer behavior in Algeria, enriching the current literature and providing a robust foundation for future research in this field.

2. Literature review

2.1. Basic Concepts of Inbound Marketing

This term was coined in 2009 by Brian Halligan, owner of the HubSpot company. His approach is based on the development of a series of related actions which aimed to attract users by providing useful information during the entire purchasing cycle. (Thomas J. Steenburgh, 2009) The aim is to exert influence on the buyer from the moment they have a concrete need until a purchase is made, and accompany them throughout the process. (DAKOUAN et al., 2024)

2.1.1. Definition of Inbound Marketing

There are several definitions provided about inbound marketing the most important of which are:

Inbound marketing is a type of marketing that provides valuable and informative content using the internet in general and social media in particular. It is related to the needs of both actual and potential customers. Based on this, it can be said that inbound marketing and content marketing are closely linked. Inbound marketing relies on marketing content, and content marketing requires inbound marketing tools. (Hubspot, 2024).

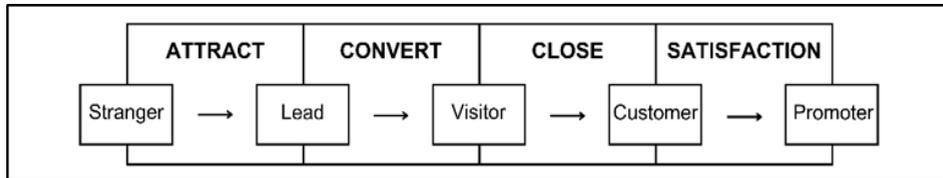
Inbound marketing is defined as content creation and sharing on a wide scale across the internet and social media platforms, which helps potential customers learn more about important information about the company or its brand by the consumer or the suspect in the buying process (stranger). This encourages them to engage with the company or its brand until they reach a customer status for the organization. (Chriswardana et al., 2024)

In addition, inbound marketing has been defined as a methodology that relies on creating great content that can be utilized through appropriate distribution channels such as blogs, search engines, and social media in the right path. This allows consumers or customers to access it smoothly and easily, prompting them to engage with and share this content.

2.1.2. Process of Inbound Marketing

The inbound marketing process consists of four distinct stages: attraction, conversion, closing, and delight, as illustrated in the following figure:

Figure 1. Process of Inbound Marketing



Source: Stéphane Truphème, 2021, page 47

Attraction Phase: The first phase in the inbound marketing methodology is to attract targeted visitors or strangers. This can be done through various methods and techniques. (Alin and Simona, 2015) Unlike traditional marketing, inbound marketing does not require struggling to attract the customer's attention. Instead, optimal content placed on the company's website aims to capture their attention. The goal in this phase is to help potential consumer strangers find the company's website. The most natural way to attract the targeted customer to the company's website is to find it in search engine optimization results. (Patruti-Baltes, 2016) Additionally, the marketing content of the company's website is the key to finding it, thanks to the technique of Search Engine Optimization (SEO). (Brian Halligan, 2009) Furthermore, the company's pages on social media platforms are one of the best ways to increase its appearance in search engine optimization results. To attract the right visitors to the company, it is necessary to create rich and valuable content that makes it an important and trusted source of information about products and marketing offers, as well as a prominent center for solving and addressing customer problems. Among the tools used in this phase to achieve the attraction process include blogging, social media publishing, and SEO techniques. (PATRUTIU-BALTES, 2016) At this stage, the goal is not to convince visitors to make purchases but simply to focus on attracting them by making them aware of the company's services and brand through content tailored for this purpose. Therefore, knowing the buyer persona by the company at this stage is crucial in determining the rest of the following stages, as this is done by collecting specific demographic data about visitors to the company's website, such as the visitor's online path through the site and online behavior. This information is made available to the company through customization technology, whether explicit or implicit. (Høgenhaven, 2023)

The conversion phase: The conversion phase represents the second stage after the attraction process, where the web path of visitors is converted into potential customers. Potential customers can be defined as contacts who have consistently expressed willingness to receive the company's marketing offer by registering on the company's website in the hope of getting satisfactory answers to their questions and problems and then receiving the company's offers if they meet their actual needs. (Aljohani, 2020) The conversion rate from visitors to potential customers increases through discussions and interactions that take place between these visitors and the

company in the cyberspace. Among the tools used in the conversion phase are landing pages, which are standalone web pages created specifically for a marketing or advertising campaign. (Baranchenko et al., 2019) In other words, they are the place where the visitor lands on the company's website after clicking on a link or email message or through Google ads or similar places on the web. This is done through Call-To-Action (CTA) motivators, which act as magnets attracting visitors to the company's website and pages. The matter is not limited to these two tools, but extends to Contact Forms, which allow visitors to be converted into potential customers by instilling a spirit of connection and communication between them and the company. (Yazdanifard and Rashad, 2014)

Closing Phase: The closing phase represents a turning point in the company's efforts on one hand, and in the path of potential customers on the other hand, where they are converted from potential customers capable of making purchases to actual customers who want to make purchases, and here the sales task begins. On this basis, the company resorts to nurturing and strengthening the relationship with both potential customers and actual customers, and building brand awareness of the company by using various marketing tools such as E-mail marketing, Marketing Automation, and Electronic Customer Relationship Management (E-CRM). (Patel and Chugan, 2018).

Satisfaction Phase: If the sales process is completed in the closing phase and things go well, the inbound marketing methodology does not stop at the closing stage but extends to include the satisfaction phase, which works to ensure customer loyalty to the product, service, or brand of the company by providing optimal and attractive marketing content to them, as this allows these customers to continue dealing with the company and acquiring its products and services. (Bezovski and Zlatko, 2015) Among the tools and marketing techniques that the company can use at this stage to ensure customer satisfaction and make them happy in dealing with the company are customer care, which includes providing good customer service and after-sales services, guarantees, and follow-up with customers by email after purchase, in addition to offering exclusive offers and discounts to customers who have previously dealt with the company, with the necessity of including each customer's loyalty programs. (Anett and Ponzoa, 2021) All of these are techniques that work to delight customers and achieve their satisfaction, as this will make them promoters and ambassadors of the company's brand through word of mouth or through recommendations they provide to others, concerning the company's brand. (Salvador et al., 2018)

2.2. Digital Consumer Behavior

2.2.1. Definition of Digital consumer

The digital consumer is an individual who frequently uses digital technology and electronic communication channels in his daily life, whether for online shopping, browsing websites and applications, engaging on social media, or utilizing smart devices such as smartphones and tablets (José et al., 2018). digital consumer is characterized by his inclination towards using digital technologies to meet his needs and achieve his personal and professional goals. (Shafag and Oqtay, 2021)

2.2.2. Characteristics of Digital consumer

Group Dynamics: Researcher Seth Godin emphasizes that digital consumers form groups based on shared values and common elements among them, relying on these groups in their purchasing behavior. (Bidit and al., 2020)

Digital Empowerment: Digital consumers have gained more control over their relationship with brands in terms of expressing their desires and opinions about the products and services they want. This is due to the vast amount of information available and the ease of accessing it. (Ayşegül and Tuğace, 2022)

Communication Medium: Through digital tools, which are considered communication tools, individuals can interact with each other. Consumers can convey and spread their experiences with any brand through personal interactions. (Mónika et al., 2023)

Increased Volatility and Decreased Loyalty: Due to the abundance of available information and the ease of searching for alternatives and comparing goods and services, digital consumers have become more volatile and less loyal to brands. (Heather et al., 2024)

Through these characteristics, it becomes evident that the digital consumer has become more informed in the purchasing process and has more control over their relationship with brands through constant communication and direct interaction with all stakeholders in the purchasing process, including consumers, researchers, and influencers.

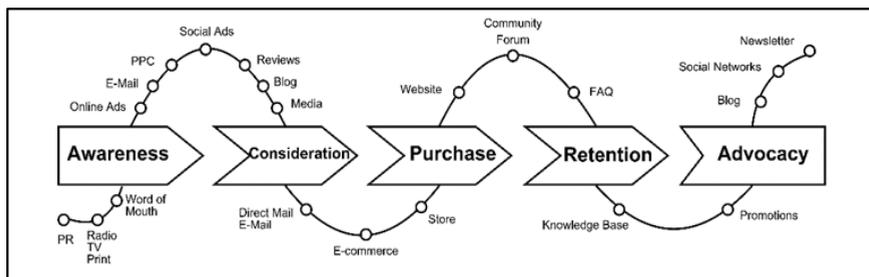
2.2.3. Definition of digital consumer behavior

Digital consumer behavior refers to the patterns and behaviors individuals exhibit when interacting with the digital environment and utilizing digital technology and electronic communication channels. (Yuruk-Kayapinar and Pinar, 2020) This includes how they search for information online, engage with websites and applications, conduct online shopping, interact with social media platforms, and use digital devices such as smartphones and tablets. (Mariana et al., 2021) Digital consumer behavior reflects individuals' preferences and tendencies in the digital world and how they integrate with digital technology in their daily lives. (Petra and Králová, 2021)

2.3. Stages of impact of inbound marketing on digital consumer behavior

The customer journey map is relevant to the inbound marketing process consisting of the four stages (attraction, conversion, closure, delight), where the path of visitors is tracked from the stage of strangers to the stage of becoming promoters. (Pongsiri et al., 2022) We can define the customer journey map as a visual representation of all customer interactions and behaviors with the company starting from their first visit to the company's website to the stage of becoming promoters. The process of inbound marketing's influence on digital consumer behavior passes through five stages, as follows: (Dharmesh and Brian, 2014)

Figure 2. Customer Journey Map



Source: Dharmesh Shah and Brian Halligan, 2014, page 38.

From the preceding outline, we can say that the goal of inbound marketing relies heavily on the customer journey map, which consists of five essential stages that can be elucidated in the following points:

Awareness Stage: In this stage, the company's brand is either unknown to strangers and website visitors or relatively new to them. There is a sense of apprehension about the company's brand, and strangers or website visitors are facing a problem or seeking solutions to an unmet need. Accordingly, the company works on educating website visitors about the solutions it offers to create awareness among customers about its brand and the value they receive by trusting the company. (Mario et al., 2019).

Consideration Stage: In this stage, the customer has a good understanding of the company's brand and has been positively attracted to it, leading them to enter into a communication and interaction relationship with the company. This can be through email, chat rooms, or visiting the company's page on social media platforms to request clarification about the company's products or services and other details such as delivery and warranty. This stage is considered an information-gathering phase. (Gardé, 2018).

Purchase Stage: In the third stage, the customer's decision-making process is complete after conducting research and comparing the offers and prices from different sources. They have settled on the company's offer. Consequently, it is incumbent upon the company to effectively communicate with the customer, welcome them, present its products, and address details to facilitate the purchasing decision-making process with ease, confidence, and to avoid buyer's remorse, which may result in subscription cancellations or reluctance to repurchase the product due to a bad user experience. (Katherine and Peter, 2016).

Retention Stage: In this stage, the company communicates with the customer after the purchase, provides post-sales services, and ensures understanding of their opinion about the service or product, as well as identifying any problems they encounter. (Mosa, 2022) In this critical stage, the role of customer service in retaining and delighting customers through the company's loyalty programs becomes crucial. (Mark et al., 2017).

Advocacy Stage: This stage is the culmination of the company's long effort. When the company successfully implements a robust customer retention program, the customer moves to the next level of advocating and supporting the organization's brand by recommending it to others through electronic word-of-mouth via social media platforms. Ultimately, this leads to acquiring new customers for the company. (Heekyung et al., 2016).

4. Method

4.1. Study Hypotheses

H1: There is a statistically significant impact of the attraction process on the digital consumer behavior of the studied startup company.

H2: There is a statistically significant impact of the conversion process on the digital consumer behavior of the studied startup company.

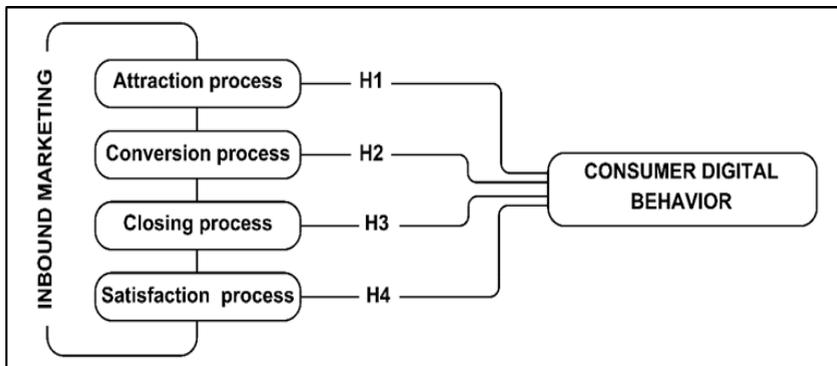
H3: There is a statistically significant impact of the closing process on the digital consumer behavior of the studied startup company.

H4: There is a statistically significant impact of the satisfaction process on the digital consumer behavior of the studied startup company.

4.2. Study Model

The study model that emerged from the theoretical framework is as follows:

Figure 3. Study Model



Source: Prepared by the researchers

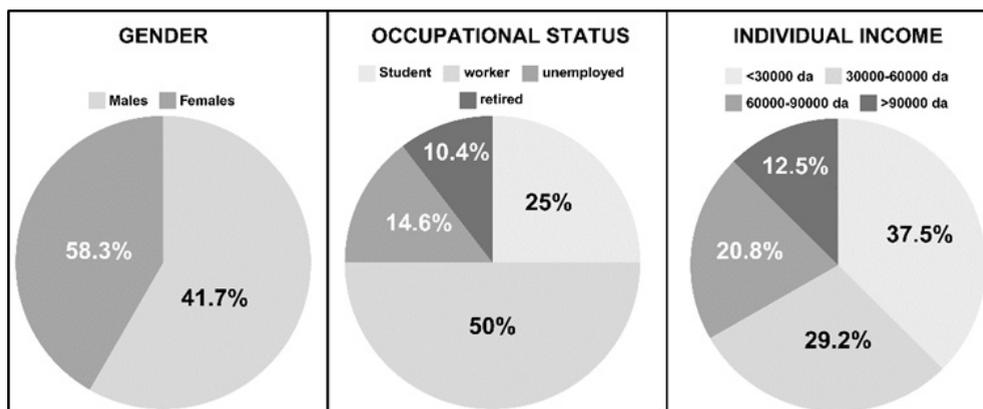
4.3. Study Population, Sample, and Data Collection

The current research community consists of customers of the startup company "Nrecycli," totalling 427 actual customers. This company is engaged in recycling recyclable materials and selective sorting. (Nrecycli, 2024)

To collect the primary data related to this study, a random sampling method was adopted.

The total number of responses was 131, and after examination and removal of invalid responses, the usable answers for statistical analysis were 126. The results of the sample characteristics analysis showed that 58.3% of the respondents were male and 41.7% were female. The sample included 50% workers and 25% university students, followed by 14.6% unemployed individuals and 10.4% retirees. Furthermore, 37.5% of the sample had an income not exceeding 30,000 dinars, 29.2% had an income ranging between 30,000 and 60,000 dinars, 20.8% had an income ranging between 60,000 and 90,000 dinars, and 12.5% had an income exceeding 90,000 dinars.

Figure 4. Personal variables for the study



Source: Prepared by the researchers

4.4. Study Tool

The study tool was designed online using Google Forms and sent via email to the customers of the startup company “Nrecycli”. The study was divided as follows:

Independent variable: In this study, “Inbound Marketing” is considered the independent variable, consisting of 16 statements distributed across 4 dimensions, as follows:

Attraction Dimension: Consisting of 4 statements, for example: “The distinctive design of the digital content of the institution attracts my attention”, it was coded as « TAP ».

Conversion Dimension: Consisting of 4 statements, for example: “Effective responses to my questions and concerns encouraged me to engage with the institution's offerings.”, it was coded as « COP ».

Closure Dimension: Consisting of 4 statements, for example: “Good digital content motivates me to make and repeat purchases.”, it was coded as « CLP ».

Satisfaction Dimension: Consisting of 4 statements, for example: “The digital content of loyalty programs contributes to my happiness and satisfaction with the institution.”, it was coded as « SAP ».

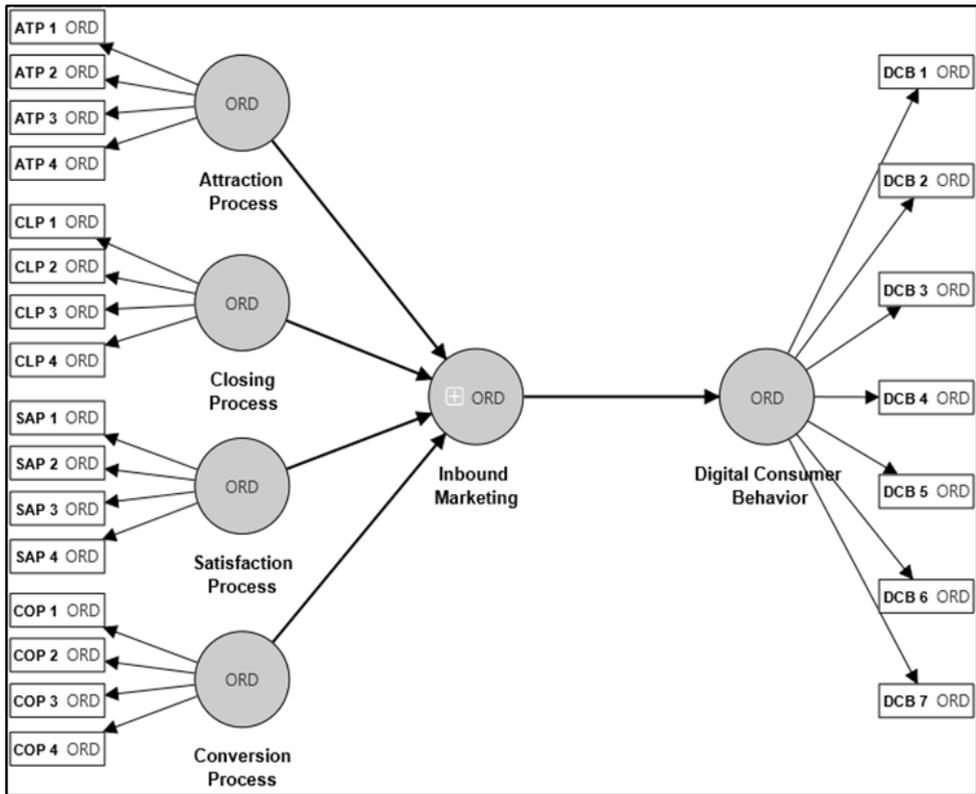
Dependent variable: “Digital consumer behavior”, adopted according to the customer journey map, consists of 7 statements, for example: “The information published on digital platforms about the institution's product increased my desire to purchase.”, it was coded as « DCB ».

All these elements were measured using a Likert pentagon scale.

4.5. Measurement Model

As shown in Figure 5, the measurement model illustrates the relationships between the indicators (items) and the latent variables that these indicators measure, in addition to the expected relationships between these variables. It demonstrates that inbound marketing consists of four processes: awareness, conversion, closing, and satisfaction, along with their measurable elements. It then shows the expected relationship between the independent variable, which is inbound marketing, and the dependent variable, which is digital consumer behavior.

Figure 5. The measurement model



Source: Outputs of statistical analysis using Smart PLS software considering the measurement model

In order to ensure that the indicators represent their latent variables and that the items meet sufficient convergent and discriminant validity, the researchers used factor loadings, composite reliability, and average variance extracted (AVE), as suggested by Hair et al. (Hair et al., 2005). As a result of this test, all items met the required standards. Table 1 lists the converging credibility indicators.

Table 1 indicates that, as proposed by Bagozzi and Yi (Bagozzi and Yi, 1998), all reflective indicator loadings exceeded the minimum required threshold of 0.60. Composite reliability values exceeded the recommended threshold value of 0.70 for all reflective combinations (Hair, 2005) where, as suggested by Fornell and Larcker (Fornell and Larcker, 1981), AVEs are above the recommended value of 0.50 per build. As an embryo, the Cronbach alpha values are acceptable since, as suggested by Taber (Taber, 2018), they are between 0.70-0.85. These indications point to the validation of the affinity.

Table 1. Convergent validity

Item Indicators	Type of Measure	Item Loadings/Weights	Composite Reliability	Cronbach Alpha	AVE
Attraction Process					
ATP 1	Reflective	0.929	0.885	0.826	0.664
ATP 2		0.909			
ATP 3		0.782			
ATP 4		0.703			
Conversion Process					
COP 1	Reflective	0.760	0.850	0.774	0.565
COP 2		0.826			
COP 3		0.891			
COP 4		0.778			
Closing Process					
CLP 1	Reflective	0.782	0.868	0.707	0.574
CLP 2		0.802			
CLP 3		0.867			
CLP 4		0.901			
Satisfaction Process					
SAP 1	Reflective	0.784	0.807	0.817	0.551
SAP 2		0.894			
SAP 3		0.779			
SAP 4		0.719			
Digital Consumer Behavior					
DCB 1	Reflective	0.766	0.835	0.786	0.542
DCB 2		0.886			
DCB 3		0.771			
DCB 4		0.736			
DCB 5		0.700			
DCB 6		0.881			
DCB 7		0.714			

Source: Outputs of statistical analysis using Smart PLS software

For a further validity check, as suggested by Bollen and Lennox (Bollen and Lennox, 1991), Diamantopoulos and Winklhofer (Diamantopoulos and Winklhofer, 2001), MacKenzie et al. (MacKenzie et al., 2005), the researchers conducted discriminant analysis to check the degree of variation between the different compositional

measures. They conducted the discriminant analysis by contrasting structural associations with the square root of the structure's AVE (Fornell, 1981). Table 2 presents the results of the discriminant validity:

Table 2. Discriminant validity

	Attraction Process	Conversion Process	Closing Process	Satisfaction Process	Digital Consumer Behavior
Attraction Process	0.815				
Conversion Process	0.278	0.688			
Closing Process	0.315	0.339	0.604		
Satisfaction Process	0.085	0.374	0.093	0.672	
Digital Consumer Behavior	0.217	0.499	0.365	0.522	0.654

Source: Outputs of statistical analysis using Smart PLS software

Table 2 shows that the values in the diagonals of the matrix representing the square root of AVEs were in all cases greater than the non-diagonal elements in the corresponding row and column. This means that the correlation of each variable with itself is greater than its association with the rest of the research variables. This confirms the fulfilment of the discriminatory validity.

4.6. Structural Model

The structural model involves an analysis of the model's presumed association of exogenous and endogenous variables. Table 3 summarizes the structural model's path coefficient and regression result.

Table 3. Structural model's path coefficient and regression result

Hypo	Relationship	Std. Beta	Std. Error	t-Value	p-Value	Decision
H1	ATP => DCB	0.751	0.048	12.601	0.000	Supported ***
H2	COP => DCB	0.630	0.054	7.451	0.002	Supported **
H3	CLP => DCB	0.628	0.056	7.099	0.003	Supported **
H4	SAP => DCB	0.707	0.046	11.235	0.000	Supported ***

Significant at *** p = <0.001, ** p = <0.01, * p = <0.05

Source: Outputs of statistical analysis using Smart PLS software

Hypothesis 1 (H1): There is a statistically significant impact of the attraction process on the digital consumer behavior of the studied startup company.

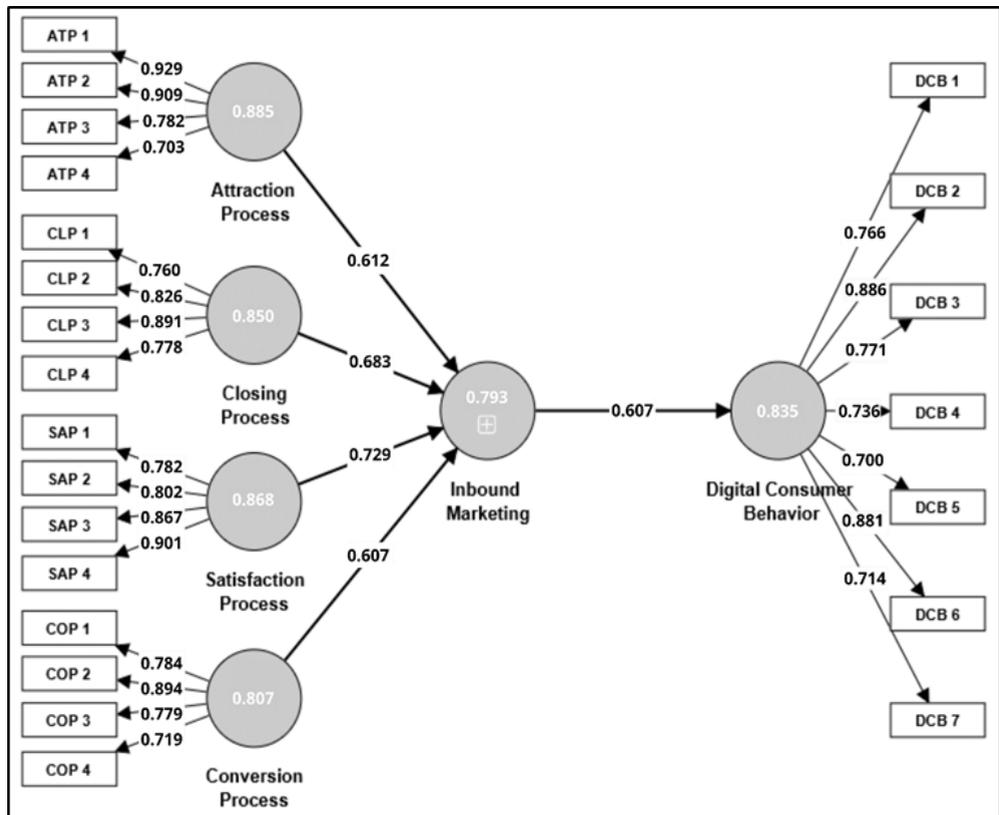
As shown in Table 3, the value of the standard beta (Std. Beta) was (0.751), which is statistically significant, and the p-value was (0.000), which is less than the adopted significance level of 0.05. This means that the first hypothesis is accepted. Thus, there is a positive effect of the attraction process on the digital consumer behavior of the studied startup company.

Hypothesis 2 (H2): There is a statistically significant impact of the conversion process on the digital consumer behavior of the studied startup company.

As shown in Table 3, the value of the standard beta (Std. Beta) was 0.630), which is statistically significant, and the p-value was (0.002), which is less than the adopted significance level of 0.05. This means that the second hypothesis is accepted. Thus, there is a positive impact of the conversion process on the digital consumer behavior of the studied startup enterprise.

Hypothesis 3 (H3): There is a statistically significant impact of the closing process on the digital consumer behavior of the studied startup company.

Fig. 6. This study's final structural model



Source: Outputs of statistical analysis using Smart PLS software considering the measurement model

As shown in Table 3, the value of the standard beta (Std. Beta) was (0.658), which is statistically significant, and the p-value was (0.003), which is less than the adopted significance level of 0.05. This means that the third hypothesis is accepted. Thus, there is a positive impact of the closing process on the digital consumer behavior of the studied startup company.

Hypothesis 4 (H4): There is a statistically significant impact of the satisfaction process on the digital consumer behavior of the studied startup company.

As shown in Table 3, the value of the standard beta (Std. Beta) was (0.707), which is statistically significant, and the p-value was (0.000), which is less than the adopted significance level of 0.05. This means that the fourth hypothesis is accepted. Thus, there is a positive impact of the satisfaction process on the digital consumer behavior of the studied startup company.

5. Discussion of Study Results

The data was gathered and analyzed utilizing the Structural Equation Modeling (SEM) approach with Smart PLS 4 software. The findings revealed that all dimensions of Inbound Marketing positively influenced the digital consumer behavior of the startup company Nrecycli.

The attraction process demonstrated the highest impact (Std.Beta = 0.751, t-value = 12.601, p-value = 0.000), underscoring the importance of attracting consumers and transitioning them from strangers to visitors on the company's website, where they engage with the offered services.

Subsequently, the satisfaction process (Std.Beta = 0.707, t-value = 11.235, p-value = 0.000) emerged, emphasizing the ongoing significance of post-purchase marketing efforts, including customer care, satisfaction assurance, repeat purchases, and bolstering brand loyalty.

Following that, the Conversion process (Std.Beta = 0.630, t-value = 7.451, p-value = 0.002) surfaced, indicating the favorable disposition of the sample towards the company and the impact of its strategies in influencing their digital behavior, leading to potential customer conversions.

Lastly, the closure process (Std.Beta = 0.628, t-value = 7.099, p-value = 0.003), achieved through cultivating strong relationships with potential customers, guarantees the shift in their behavior from digital engagement to actual purchases, thereby, solidifying their status as customers.

6. Conclusions

The primary purpose of this study was to measure the role of inbound marketing in influencing digital consumer behavior by analyzing the inbound marketing methodology according to its four stages: attraction, conversion, closure, and delight. Additionally, the study examined the characteristics and behavior of digital consumers and evaluated the role of inbound marketing in the customer journey map.

The findings of the study indicated that inbound marketing plays a significant role in shaping digital consumer behavior. The researchers found a positive relationship between inbound marketing processes (attraction, conversion, closure, and delight) and increased engagement of digital consumers with the brand and the startup under study. The results also showed that inbound marketing can enhance customer experience and increase loyalty by providing valuable content and an interactive experience.

Based on these findings, the researchers propose the following recommendations:

- Institutions should adopt inbound marketing strategies as a core part of their marketing strategy to achieve success in the digital environment, especially startups, as digital technology is a fundamental characteristic of these institutions.
- Institutions should enhance their knowledge of various aspects of digital marketing through the continuous development of their employees in this field to keep pace with the current digital surge.
- Efforts should be made to improve institutional interaction with customers by providing useful and engaging content and enhancing the user experience across all digital touchpoints.
- Institutions should study the risks associated with the digital environment and work to mitigate them to ensure a safe and enjoyable experience for consumers.
- Institutions should also be transparent in their dealings with customers and strive to build trust through continuous communication and clear information dissemination.

Despite the importance of the findings, this study has some limitations:

- The research was conducted in a specific environment, and the results may vary in different contexts.
- The sample size of the study is relatively small due to the limited size of the studied population.
- The study relied on self-assessment by the participants, which may indicate a degree of social bias.

The researchers recommend that future studies should be conducted in diverse environments and over different periods, using various measures and research methods to enhance our understanding of the impact of inbound marketing on digital consumer behavior.

References

- Aljohani, H. (2020). A Review of Research on Inbound Marketing. *Journal for Research on Business and Social Science*, 3 (4), 312-320.
- Bagozzi, R., Yi, Y. (1998). On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Sciences*, 16, 74–94.
- Baranchenko Y., Aksom, H. (2019). Inbound marketing: practical aspects of promoting goods and services in e-commerce. *Marketing and Management of Innovations*, (4), 308-320.

- Bezovski, Z. (2015). *Inbound Marketing - a new concept in digital business*. 15th International Scientific Conference Society, Economy, Law, Technology and Humanity, 20–21 Nov 2015, (pp. 27–34). Sibiu, Romania.
- Bidit, L.D., Dorothy, Y., Lalnunpuia, S. (2020). Digital consumer culture and digital acculturation. *International Journal of Information Management*, 51.
- Bollen K., Lennox, R. (1991). Conventional Wisdom on Measurement: A Structural Equation Perspective. *Psychological Bulletin*, 110 (2), 305-314.
- Brian, H., Dharmesh S. (2009). *Inbound Marketing: Get Found Using Google, Social Media, and Blogs* 1st Edition. John Wiley & Sons Inc.
- Bueno, S., Juan, S. (2018). Inbound Marketing to improve interest in public postgraduate courses. *Esic Market Economics and Business Journal*, 49 (3), 533-550.
- Chriswardana, B.D., Pradiatiningsyas, D. (2024). Inbound Marketing Based On Content and Customer in The Creative Industry Selling Fresh Meat, Seafood and Vegetables in Yogyakarta: An Experimental Approach. Widya Cipta: *Jurnal Sekretari dan Manajemen*, 8 (1), 1-7.
- D'Arco, M., Presti, L.L., Marino, V. (2019). Embracing AI and Big Data in customer journey mapping: from literature review to a theoretical framework. *Innovative Marketing*, 15(4), 102-115.
- Dakouan, C., Benabdelouahed, R. (2024). Content marketing and inbound marketing practices: Review of theoretical literature. *African Scientific Journal*, 3 (2), 1080-1098.
- Dharmesh, S., Brian, H. (2014). *Inbound Marketing, Revised and Updated: Attract, Engage, and Delight Customers* Online 2nd edition. John Wiley & Sons.
- Diamantopoulos, A., Winklhofer, H.M. (2001). Index construction with formative indicators: An alternative to scale development. *Journal of Marketing Research*, 38 (2), 269–277.
- Erdmann, A., Ponzoa, J.M. (2021). Digital inbound marketing: Measuring the economic performance of grocery e-commerce in Europe and the USA. *Technological Forecasting and Social Change*, 162.
- Fornell, C., David, F.L. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research* 18, 39–50.
- Gardé, V. (2018). Digital audience management: Building and managing a robust data management platform for multi-channel targeting and personalisation throughout the customer journey. *Applied Marketing Analytics*, 4(2), 126-135.
- Garai-Fodor, M., Vasa, L. (2023). Characteristics of consumer segments based on perceptions of the impact of digitalisation. *Decision Making: Applications in Management and Engineering*, 6 (2), 975–993.
- Hair, J., Black, W., Babin, B., Anderson, R., Tatham, R. (2005). *Multivariate Data Analysis* (6th Edition). Prentice Hall.
- Heather, D., Kirmani, A. (2024). Designing Brand Cocreation Activities to Increase Digital Consumer Engagement. *Journal of Interactive Marketing*, 59(2), 151-166.
- Heekyung, M., Han, S.H. (2016). A Design Process for a Customer Journey Map: A Case Study on Mobile Services. *Human Factors and Ergonomics in Manufacturing & Service Industries*, 26 (4), 501-514.
- Høgenhaven, T., Fishkin, R. (2023). *Inbound Marketing and SEO: Insights from the Moz Blog*. United Kingdom: Wiley.

- Hubspot (2024, 02 13). The Inbound Methodology - The best way to turn strangers into customers and promoters of your business. Récupéré sur www.hubspot.com: <http://www.hubspot.com/inbound-marketing>.
- Jílková, P., Králová, P. (2021). Digital Consumer Behaviour and eCommerce Trends during the COVID-19 Crisis. *International Advances in Economic Research*, 27, 83–85.
- José, M.G., Flatten, T., Brettel, M. (2018). Content Strategies for Digital Consumer Engagement in Social Networks: Why Advertising Is an Antecedent of Engagement. *Journal of Advertising*, 47 (1), 4-23.
- Juganaru, M., Andronache, R. (2021). Using Digital Marketing to Study Customer Behavior. "Ovidius" University Annals, *Economic Sciences Series*, 7 (2), 773-778.
- Lemon, K. N., Verhoef, P.C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69-96.
- MacKenzie, S.B., Podsakoff, P.M., Jarvis, C.B. (2005). The Problem of Measurement Model Misspecification in Behavioral and Organizational Research and Some Recommended Solutions. *Journal of Applied Psychology*, 90(4), 710–730.
- Nrecycli. (2024, 02 19). <https://nrecycli.com/>. Récupéré sur [www.nrecycli.com](https://nrecycli.com/): <https://nrecycli.com/>.
- Opreana, A., Vinerea, S. (2015). A New Development in Online Marketing: Introducing Digital Inbound Marketing. *Expert Journal of Marketing*, 3 (1), 29-34.
- Patel, C.P., Pawan, K.C. (2018). Digital Inbound Marketing to Drive the Success of Startups. *International Journal of Family Business and Management*, 2(1), 1-6.
- Patrutiu-Baltes, L. (2016). Inbound Marketing - the most important digital marketing strategy. *Bulletin of the Transilvania University of Brasov. Series V: Economic Sciences*, 58 (2), 278-286.
- Pongsiri, K., Suteera, S., Jatupron, W., Vachiraporn, P., Surakit, K. (2022). Reconsidering the Mystery of Digital Marketing Strategy in the Technological Environment: Opportunities and Challenges in Digital Consumer Behavior. *International Journal of Sociologies and Anthropologies Science Reviews*, 2 (4), 43-60.
- Raafat, A.M. (2022). The effect of inbound marketing on online customer engagement: An empirical study in retail stores of Basrah. *International Journal of Business, Economics & Management*, 5(1), 51-66.
- Rosenbaum, M.S., Otálora, M.L. (2017). How to create a realistic customer journey map. *Business Horizons*, 60 (1), 143-150.
- Sağkaya, G.A., Ozansoy, Ç.T. (2022). Understanding digital consumer: A review, synthesis, and future research agenda. *The International Journal of Consumer Studies*, 46 (5), 1829-1858.
- Shafag, M., Quliyev, O. (2021). The Digital Consumer Profile in 5.0 Societs In Strategic Marketing Management. *European Proceedings of Social and Behavioural Sciences*, 121, 45-53.
- Steenburgh, J.T., Avery, J. (2009). *Hubspot: Inbound Marketing and Web 2.0*. Harvard Business School Marketing Unit.
- Taber, K.S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48, 1273–1296.

- Truphème, S. (2021). *Inbound Marketing: Attracting, Winning, and Delighting the Customer in the Digital Age*. Paris: Dunod.
- Yazdanifard, R. (2014). How Google's New Algorithm, Hummingbird, Promotes Content and Inbound Marketing. *American Journal of Industrial and Business Management*, 4 (1), 51-57.
- Yuruk-Kayapinar, P. (2020). *Managing Customer Experiences in an Omnichannel World: Melody of Online and Offline Environments in the Customer Journey*. Emerald Publishing Limited, 55-73.

WOMEN IN ACCOUNTING IN COMMUNIST AND POST-COMMUNIST ROMANIA: ACADEMIA CASE STUDY

Adela DEACONU* 

Babes-Bolyai University, Romania

Georgiana PUȘCAȘ

Babes-Bolyai University, Romania

Cristina Silvia NISTOR 

Babes-Bolyai University, Romania

Crina Ioana FILIP 

Babes-Bolyai University, Romania

Abstract: We investigated whether there are differences in women's progress in Romanian accounting academia between the communist and post-communist periods, and compared to the international context; and whether the legal framework in Romania influenced women's accounting careers in academia. For the communist period, we found that for our topic training for the exercise of the profession, the evolution of women's academics, although it did not exceed that of men, outperformed that of women in other contexts, especially in Anglo-Saxon countries. Then, our findings were similar to the international context for teaching and leadership in academia. For the post-communist period, we observed Romanian academics' similitude in teaching and bachelor studies and superiority in scientific publications and doctoral studies compared to their international counterparts. Also, the complexity of provisions assuring general or women's rights, as well as the pace of their issuance aligned with women's experiences in accounting academia.

JEL classification: A23, M41, B54

Keywords: gender, academia, accounting, communist and post-communist periods, Romania

* Corresponding author. Address: Department of Accounting, Faculty of Economics and Business Administration, Babes-Bolyai University, Teodor Mihali str, Cluj Napoca Email: adela.deaconu@econ.ubbcluj.ro

1. Introduction

Cooper (2010, quoted in *The Accountant* 1915, 128), argues that social roles in society and organizations do not derive from biological differences, but from social constructions; 'man and woman are interdependent ... They must have equal opportunities to assist the other without fear and favour'.

Researchers have come to regard gender as an invaluable tool for analyzing accounting beyond its technical dimension (Hopwood 1987), accounting is seen as a gendering institution (Haynes 2017). Studies on gender and accounting can promote an understanding of how gender inequality perpetuates and affects women's careers in the accounting profession, in organizations, and in educational institutions.

Even though some researchers investigated women's accounting practices in different social and cultural contexts (e.g. Czarniawska 2008, Lupu 2012, Komori 2012, Haynes 2017), there is still a gap that should be addressed (Komori 2016, Hardies and Khalifa 2018), as a lot of the research was conducted in the Anglo-Saxon countries. Moreover, the research on gender in accounting has been limited in the higher education area, as academia is slow to address gender issues (Carolfi et al. 2010, Bay et al. 2015, Baldarelli et al. 2016). One other critical attitude relates to the inefficient legislative measures regarding gender equality in the accounting profession (Žalėnienė et al. 2016).

The study we propose aims to fill a gap in gender and accounting history in a non-English, European emergent context, observing a scarcity of writings on emergent regions, such as the Central Eastern European (CEE) Region, where communist influence has left its mark on the accounting profession and on education. Even fewer studies address the communist period and the Romanian context (e.g. Metcalfe and Afanassieva 2005, Czarniawska 2008, Christian 2020). Moreover, for the post-communist period, there are some studies in the international literature that debate the gender dilemma in the Romanian accounting profession, but most of them only reveals a high presence of women in the field without deeply analyzing how the feminization process occurred (e.g. Curșeu and Boroș 2011, Ilie 2013), specifically in academia.

Our research invites a richer view of a particular professional, period, and place: the woman accountant in academia in the communist and post-communist periods in Romania. We also investigate, as an external factor, whether the legal framework has influenced women's academic accounting careers. To respond to these inquiries, one component of the study is an investigation that illustrates women's involvement in accounting academia as teachers, researchers, and leaders, as well as their access to education at the bachelor's and doctoral levels. Another part of the study uses an interpretive comparative approach, identifying and commenting on the differences and similarities between Romanian women academics in the accounting field in a temporal dimension, then comparing them to other peers internationally.

These findings could fill the existing research gap, urging authorities, accounting scholars, the management in public universities, and students to take part in contemporary debates regarding the gender dilemma of accounting academia, especially leadership. Furthermore, we extend the existing writings on the history of accounting, offering new insights into a period (communist) and a place (Romania) that are insufficiently discussed.

2. Literature review on women in accounting academia worldwide

We investigate accounting education in terms of women's various activities in accounting academia, and women's access to education for training in the profession. Therefore, we address the following analytical themes: (1) the exercise of the profession in academia (teaching in academia, research and publications in international refereed journals, leadership in academia), (2) training for the exercise of the profession (university education, as in bachelor's degrees and doctoral studies). To anchor the evolution of Romanian women academics in a larger context, we briefly describe the role of women in accounting academia in an international setting. By doing so, we focus on the analytical themes and sub-themes proposed in our framework.

Theme 1: The exercise of the profession in academia

Teaching in academia

From 1948–to 1989, the literature indicates that women's participation as a percentage of university staff increased from 10% to 21% (Omundson and Mann 1994, Carolfi et al. 1996, McKeen and Richardson 1998). For the period after 1989, we observe growth from 20% in 1993 to between 28% and 34% in 2002–2007 (Carolfi et al. 1996, Jordan et al. 2006, Haynes and Fearfull 2008, Hukai and Li 2009). Particularly in US universities, at least until 1966, women were disadvantaged in terms of hiring, tenure and promotion, rank, salary, and access (Omundson and Mann 1994, Carolfi et al. 1996). In the European context (Galizzi and Siboni 2016), nowadays the number of women in academia varies between member countries, showing higher rates in Estonia (43.7%) and the Slovak Republic (42.6%) and lower rates in countries such as France (25.6%) and Luxembourg (24%).

Publications in international refereed journals

Numbers to support this sub-theme were difficult to obtain due to the volume of the international data. We only mention that the number of US publications in international journals by women was smaller than the number by men during a timeframe that overlaps the last part of the communist period in our study (Omundson et al. 1994). Additionally, Haynes and Fearfull (2008) suggest that men express a higher interest than women in research, publications, and networking. The statistics of Carnegie et al. (2003), from the analysis of three internationally refereed accounting history journals for the period 1974–2000, note that women authors contributed 12.18% of academic journal articles (cumulative percentage in 2000), with a growth of 22% in the years from 1998 to 2000. Fowler and Keeper (2016), in their analysis of the writings by female authors in the journal 'Accounting History' for the interval 1996–2015, found growth in those contributions from 17.6% in the 1996–2000 period to 24.5%, 45.8%, and 38.4 % in the next three quinquennials, respectively.

Leadership in academia

Carolfi et al. (1996) analyzed leadership in business universities, asserting that in the 1990s, 69% of US institutions had none or only one highly ranked and qualified female faculty member in their accounting department. For the same

context, Jordan et al. (2006) assert that in 1994, the number of female deans and accounting directors represented 7.1% and 2.6%, respectively, while in 2004, the representation data was 16.7% and 14.6%.

Theme 2: Training for the exercise of the profession

Bachelor education

For the college and university level in business and accounting, McKeen and Richardson (1998) have indicated that in Canada, the percentage of female students was 9.7% in 1950, increasing to 43.2% by 1986. Citing the US Department of Education and the National Center for Education Statistics, Eaton and DiFilippo (2016) indicate that the percentage of women graduates in the US with a bachelor's degree was just under 10% for the year 1970, 55% for 1991, and over 50% in 2012, with growth expectations for the period from 2013–2024 set at 15%. For Taiwan, Hsu et al. (2016) attest that the number of women receiving an accounting bachelor's degree is double that of men. In China, the percentage of women postgraduates is around 50% (Zhao and Lord 2016).

Doctoral education

At the doctoral studies level, citing the US Department of Education and the National Center for Education Statistics, Eaton and DiFilippo (2016, 11) noted that the proportion of women graduates with doctoral degrees constituted approximately 5% for the year 1970 (which corresponds to the communist period studied by us), and 20% for 1991, and 45% for 2012 (our post-communist period). Also, we found that in the US, in the period from 1990–1996, women collected 30% of the total degrees awarded in accounting (Carolfi et al. 1996); after 1993, the number of female doctoral graduates was trending upward, according to Jordan et al. (2006).

3. Methodology

We integrate our research into the literature on gender and accounting history. As Komori (2008) and Zhao and Lord (2016) illustrate for Japan and China, respectively, and as Carrera et al. (2001) and Lupu (2012) do for Spain and France, we argue that the experiences of women accountants in CEE countries may differ from those of women in Western countries because of the different context. We discuss accounting 'in the traditional way' (Broadbent 2016), inserting within it the broader sense of women working in the accounting profession, as accountants entering academia in the economic (accounting) field. Then we link this academic career to the education that preceded and influenced the academic route.

Like in other career paths, individuals who pursue accounting in academia face multiple career-influencing factors. As some authors suggest (Haynes 2008, Komori 2008, Walker 2008), we focus on the external influencing factors, emphasizing the legal one. The explanation comes from our timeframe that spans a rich series of political, economic, legislative, and social changes that left their mark on the accounting profession, as well as on the academic environment.

In our belief, political and economic change influence each other and combine with new legislation that impacts society and its habits. Society must constantly adapt to these changes and integrate them into both personal and professional life. Therefore, our proxy for societal changes is the legislative factor.

As for our study's intervals, we investigate two different periods. The first period is related to the presence of the Communist Party, from 1948 until 1989, which dictated Romanian public life through the government. Unlike in democratic countries, the equality of women and men enshrined in the constitutions of socialist countries was a strength of communist regimes. Around 1973, the education sector was occupied by a predominantly female workforce, but only at the primary and secondary levels, not in higher education. As soon as Elena Ceaușescu (the wife of the Romanian communist dictator Nicolae Ceaușescu) became the second most powerful person in Romanian politics, a wave of oppressive activity was unleashed against academics: their possibilities for promotion were blocked, research scholarships were denied and canceled, and doctoral schools were closed (Betea 2021).

The second period under our inquiry starts in 1990 and finishes in 2020, and is termed the post-communist era. After the fall of communism, the slow transition from a centralized to a market economy system, the preparations for entry into the European Union (EU), and the sequelae left after the communist period on the image of the female leader or the woman with doctoral studies are some factors that began to influence women's careers in accounting public universities. Some women were perceived as an incarnation of Elena Ceaușescu¹, alongside a negative opinion of academic distinctions, while they were simultaneously accused of having a lack of training in the fields where they worked (Jinga 2015). After 2007, when Romania joined the EU, the Romanian public universities assigned special importance to improving research quality, as the opening to the international research world took place. This period also included the implementation of the UE gender legislation containing measures to reduce the time women spent on unpaid work, to reduce or even eliminate the gender pay gap, and to ensure a better work-life balance. The EU social legislation also encouraged more rights for employees and promoted measures to fight against undeclared work.

The research methodology consists in an analysis based on frequencies (the presence of women versus men for the issues investigated), supplemented by a narrative and interpretive approach. In this vein, for the interval from 1948–2020, we employed historiography and documentary research. Following our analytical themes, we collected information from monographs, journal articles, specialized periodicals, library catalogs, databases, websites, specialized portals, university archives, and statistical data those specific institutions provided, including censuses. In addition

¹ The coming to power as leader of the communist party of Nicolae Ceaușescu and his family intensified women's promotion in leadership positions within the party. Elena, the wife of Nicolae Ceaușescu, masked her forced political ascent by bringing a large number of women into power structures (1970s); then, the presence of women became an issue of political strategy. That one-third of management positions be occupied by women was mandatory (1980s)

to online data, we performed on-site investigations at several libraries and statistical institutes. For the international context, we performed a literature review, which had a dual role: to provide statistics on women's evolution worldwide for the periods under investigation and to depict women's progress in accounting. To analyze the legislative influential factor in the Romanian context, we studied the labor codes, the constitutions, some of the decrees from the communist period, and the educational legislative regulations.

4. Women in Romanian accounting academia

4.1. The context of the Romanian communist regime

In Romania, the path towards a diversified labor market began tentatively during the Second World War, when women transitioned away from solely domestic roles, finding employment primarily in agriculture (Jinga 2015). Following the war, under the communist regime, the trajectory of female workforce participation was largely shaped by the economic and social priorities of the Romanian state. For instance, from the 1960s to the 1980s, women were predominantly engaged in the food and consumer goods industries, followed by what were considered "non-productive" sectors such as healthcare and education, reflecting the ongoing expansion of healthcare and educational infrastructure (Jinga, 2015). While prior to Second World War, women comprised no more than 40% of the total teaching staff, primarily in schools exclusively for girls, by 1956, female teaching staff outnumbered men in preschool and general education (Jinga, 2015).

The legislative framework introduced and constantly adapted to the requirements of Romanian socialist society, on the other hand, opened new opportunities for women. The communist propaganda often emphasized that a woman's fulfillment comes from her work and her role as a mother. The first communist constitution² introduced the initial measure pertaining to gender equality: equal pay for equal work, seen as an inclusive step aimed at establishing parity between men and women. Subsequently, Law no. 10/1972³, outlined in the Labor Code, presented extensive opportunities for women's advancement under conditions of complete social parity with men. This included equal employment opportunities, special protective measures at workplace, and access to any hierarchical position or job commensurate with her qualifications. The objective was to contribute to both material production and intellectual creativity, women being encouraged to participate in the workforce to contribute to the communist leader's vision of national prosperity. Additionally, the state committed to providing women with the necessary support for raising and educating children.

With that being said, it is evident that the communist regime incentivized minorities, women, and lower-income classes to surmount specific barriers, granting them access to greater and improved opportunities than previously available. Women, in particular, were urged to pursue higher education and employment, all in pursuit of the national prosperity

² https://www.cdep.ro/pls/legis/legis_pck.htp_act_text?id=1574

³ <https://legislatie.just.ro/Public/DetaliuDocumentAfis/295>

Romanian researchers portray the emancipation of women promoted by communist policies in a positive manner. However, this emancipation conceals the harsh constraints and additional barriers that women encountered in their professional careers, particularly those in higher education. After the publication of the first communist constitution, in 1948, a systematic purge targeted university professors and students, viewed as the primary adversaries of communist ideology and principles (Betea, 2021). When Elena Ceausescu, the wife of Romanian Communist dictator Nicolae Ceausescu, rose to become the second most influential figure in Romanian politics, a wave of oppression was unleashed against academics: their avenues for promotion were obstructed, research scholarships were denied and revoked, and in a fit of anger from the Romanian first lady, doctoral programs were shuttered under the pretext of inadequate performance (Betea, 2021). This purge specifically targeted the university elite, which had flourished during a period when Romanian education and culture were most deeply intertwined with Western standards and values. Although a doctoral degree from Bucharest did not carry the same international prestige as those from Paris or Berlin, it was scientifically equivalent and held recognition as such (Cioroianu, 2021).

4.2. An overview of the Romanian academic system

Employing a descriptive approach, this section presents the experience of Romanian academics, focusing on women, for the periods of interest: communist and post-communist.

Starting from 1948 with the implementation of the centralized economy and communist precepts, including those of a legislative nature, accounting academics had to constantly adapt to the regime's requirements. The communist period had already seen the establishment of several universities and institutes with an economic profile, starting in 1913. The insertion of communist principles into higher education occurred via the Decree-Law of the Grand National Assembly, no. 175, of 1948. This legislation was viewed as a moment of rupture not only with the traditions of the Romanian school, but also with the processes and trends of education in Western European countries (Murgescu 2010). The period was intensely politicized (Giurescu 2001). After 1953, such politicization required ensuring the ideological and political education of students and teachers, including in higher education (Decision of the Council of Ministers—HCM 3886, 1953). Moreover, recognition of the importance of scientific research decreased, while emphasis on practice and productive activity in the educational process increased (Giurescu et al. 2003). The close relationship that the communist regime fostered between the education system and the labor market also became evident in the precise rules and regulations it imposed on the distribution of higher education graduates in workplaces. This stage was one of the most dramatic in the education system's history, marked by the removal of most of the intellectual elite by purging education of elements supposedly hostile to the new political regime established in Romania, with Soviet help and protection (Vasile 2009). Moreover, education became increasingly isolated on all levels through the severing of ties and exchanges with other countries, including restrictions on the import of books and other publications (Giurescu 2001). In the first stage, as the regime's economic goal focused on the country's industrialization (Ghebrea 2015) aimed

to gain national economic independence, a process of over-technicalization of university education took place. In time, the Education Laws of 1968 and 1978 tentatively initiated the process of distancing from the Soviet model and recovering traditional values by insisting on a 'multilateral formation' of youth that presupposed the presence in the educational process of some disciplines from social sciences. After 1968, through a decree by the communist regime, economic education was rehabilitated; however, it continued to be viewed as a means of preparing office workers, an unproductive social stratum that did not produce tangible material goods (Sora 2011).

Immediately after the fall of the communist regime, a complex process of identity reconstruction began, with the elimination of ideological disciplines, a reorganization of curricula, a re-evaluation of faculty members, and a new openness to collaborations with internationally recognized universities (Korka 2002, Sora 2011). The harmonization with the value system of European university education, aiming at integration into the European Higher Education and Research Area, was at the heart of efforts to implement the principles of the Bologna Process (Korka 2002, Curaj et al. 2015), which was initiated in Europe in 1999. Therefore, starting with the 2005–2006 academic year, as a result of Romania's integration into the EU, the university system implemented the European Bologna study system (three years bachelor's, two years master's, and three years doctorate). After that, together with other European countries, Romania participated in the implementation of Europe Strategy 2020, launched in 2010, which aimed to better adapt higher education to the dynamics of the labor market and produce a highly skilled workforce. International cooperation developed between higher education institutions in Romania and partner institutions from the EU to identify a regulatory framework allowing the portability of grants and study grant credits within the EU countries. Awareness of the impact of scientific research triggered a process of university classification (i.e., universities focusing on education, universities of education and scientific research/artistic creation, and universities of advanced research and education). Gradually, the international visibility of many universities increased, and some were included in international rankings and received recognition for quality in education, research, and community services (Egron-Polak et al. 2015). Financing became an objective of the Ministry of Education, and academic and postgraduate education had priority. However, public expenditure on education has remained flat in recent years, at approximately 8% of total public expenditure, and Romania was one of the few European states that directed less than 10% to this sector, at an amount below 5% of GDP⁴. Overall, despite persistent underfunding, the Romanian higher education system has made some consistent improvements in the areas of education and research.

4.3. An inquiry on the progress of Romanian women in academia

Theme 1: The exercise of the profession in academia

This section reports data at the national level or for the representative universities in Romania, those with the longest tradition in the country and which are the most prominent in international rankings: Babeş-Bolyai University of Cluj-

⁴ [https://www.edu.ro/sites/default/files/_fişiere/Minister/2016/Transparenta/2016/Raport-asupra-starii-sistemului-national-de-invatamant-2006.pdf](https://www.edu.ro/sites/default/files/_fi%C5%9Fiere/Minister/2016/Transparenta/2016/Raport-asupra-starii-sistemului-national-de-invatamant-2006.pdf)

Napoca (UBB), the Academy of Economic Studies of Bucharest (ASE), and Alexandru Ioan Cuza University of Iași (UAIC) (hereafter, 'universities in consortium'). The UBB and UAIC data comes from their Faculty of Economics and Business Administration.

Teaching in academia

To integrate our timeframe into a broader span, the starting point of this analysis is the percentage of women teaching at UBB for the year 1930 (4.5%), and for the year 1944 (0%) (Matiș et al. 2011). Then, Table 1 below presents the available evidence for the two periods under investigation.

Table 1. Statistics of the teachers in economic academic institutions

Temporal reference	University in consortium	Number of teachers [*]		Total	Ratio Women/Total (%)
		Men	Women		
COMMUNIST PERIOD					
1961–1975	<i>Mean for the interval</i>				19.2
1961–1965	UBB ^{**}	37	7	44	15.9
1961–1965	UAIC ^{***}	4-12	2-3	-	23.8
1966–1975	UBB ^{**}	82	17	99	17.2
1966–1975	UAIC ^{***}	12-20	3-5	-	20.0
1976–1989	<i>Mean for the interval</i>				21.8
1976–1984	UAIC ^{***}	18-20	5-7	-	24.0
1985–1990	UAIC ^{***}	29-33	7-8	-	19.5
<i>Mean for the communist period</i>					20.5
POST-COMMUNIST PERIOD					
1990–2000		105	80	185	43.2
2001–2010	UBB ^{****}	122	145	267	54.3
2011–2020		135	177	312	56.7
<i>Mean for the post-communist period</i>					51.4

^{*}The calculation was made by cumulating for the entire period the number of staff reported annually, which was necessary due to the lack of annual data; ^{**}Matiș, et al. (2011);

^{***}available at <http://dictionare.enciclopedii.uaic.ro/catalogCD-UAIC/>; except for the year 2020, the values are intervals and the percentage means for the interval mentioned;

^{****}available at https://econ.ubbcluj.ro/n1.php?id_m=2&m=Departamente.

The sources for UBB and UAIC confirm these results. In 2020, the proportion of female teachers was 48.9% for UBB and 40.9% for UAIC. For ASE, in the faculty of the Accounting and Management Information Systems department, we found a proportion of 59.3%.⁵

Although the presence of women as teachers in universities was quasi-null when the communist regime took power, it increased significantly after 1961 (over 20% in about 20 years), and it remained relatively constant until the end of this stage. In the post-communist period, the participation of women doubled (as the mean of the interval), reaching a significant percentage of up to 60% in the year

⁵ <https://cig.ase.ro/departamente/>

2020, depending on the consortium university. Our results accord with those of Istrate (2012), which confirm that for the interval from 1999 until 2011, women held half of the teaching positions in 15 Romanian economic universities. Additionally, our results are similar to those of Galizzi and Siboni (2016), which place Romania first in the European hierarchy, with a share of 46.5% of women's participation in academia.

Publications in international refereed journals

In our search for internationally visible publications, we inspected the Scopus/Elsevier database, which contains Clarivate Analytics publications and other well-ranked journals, books, and conference proceedings that provide details for the accounting domain. We searched Romania as the affiliation country; Business-Management-Accounting as the subject area; articles, conference papers, and book chapters as the types of publications; and 1948–1989 and 1990–2020 as the periods. We did not find scientific publications for this domain that dated from the communist period. Table 2 provides the statistics only for the post-communist period. For the period from 1990–2000, we found 239 documents; for the period from 2001–2010, 1,584 documents; for 2011–2021, 6,892 documents. Inside these lists, after the title and/or abstract for the accounting domain, we searched and identified each author's gender based on the first name. In general, we noticed that the majority of Romanian researchers' publications are found in international conference proceedings.

Table 2. Statistics of publications in international refereed journals in the post-communist period

Temporal reference	Number of authors		Total	Ratio Women/Total (%)
	Men	Women		
2007–2010*	29	42	71	59.2
2011–2015	126	197	323	61.0
2016–2020	41	104	145	71.7

*For the 1990–2006 interval, we did not find any relevant scientific publications. We observed a significant and increasing number of female authors over the five-year sub-periods.

Leadership in academia

The secondary sources revealed the number of university leaders tangential to the universities in the consortium, as shown in Table 3.

Table 3. Statistics of management positions* in academia

Temporal reference	University in consortium	Number of		Total	Ratio Women/Total (%)
		Men	Women		
<i>COMMUNIST PERIOD</i>					
1961**–1990	UBB	18	1	19	5.3
1967–1989	ASE***	14	0	14	0.0
1962**–1989	UAIC	3	1	4	25.0

Temporal reference	University in consortium	Number of		Total	Ratio Women/Total (%)
		Men	Women		
Mean for the communist period					10.1
POST-COMMUNIST PERIOD					
1990–2020	UBB****	36	14	50	28.0
1990–2020	ASE*****	49	10	59	16.9
1990–2020	UAIC*****	15	2	17	11.8
Mean for the post-communist period					18.9

*Management positions designate the following: rectors and vice-rectors, provided by the Faculty of Business at the university level, deans, vice-deans, and chancellors of the Faculty of Business; ASE is an independent institution; **the year of the faculty establishment; ***deans for the period from 1967–1989 and rectors for the period from 1948–1989; ****Matiş et al. (2011) for 1990–2013 and www.ubb.ro; Talpoş, Rosca, and Istudor (2013) indicate another period and the number of managers; this data is not included in the computation; *****Talpoş, Rosca, and Istudor (2013) for 1990–2013 and www.ubbcluj.ro, www.ase.ro, <http://dictionare.enciclopedii.uaic.ro/catalogCD-UAIC/>.

Although the recognition of women as leaders in academia improved during the post-communist period, they remain greatly underrepresented compared to men.

Theme 2: Training for the exercise of the profession

Bachelor education

For the basic university education (bachelor's degree), our archival research (Statistical Annuary of Romania, consulted at DGS Cluj archives) and secondary sources provide information for the communist and post-communist period, which Table 4 shows, at about five-year intervals.

Table 4. Statistics of the economic academic institutions' graduates

Temporal reference	Statistics		Temporal reference	Statistics	
	Total number	% of women		Total number	% of women
COMMUNIST PERIOD			POST-COMMUNIST PERIOD		
1948	1,895	22.4	1990	2,839	84.0
1950	1,411	22.4	1995	9,672	82.0
1955	1,585	30.0	2000	18,726	78.0
1960	967	41.0	2005	12,620	60.5
1965	1,275	47.1	2010	49,183	62.2
1970	4,408	54.0	2015*	51,765	58.3
1975	4,137	63.0	2020	45,400	59.1
1980	4,953	72.0			
1985	4,103	78.0			

*Since 2014, the classification of specializations as a result of the revision of education levels according to ISCED-2011, the Economic Sciences group, is no longer reported separately but is included in the Social Sciences, Journalism and Information groups.

Our searches for the universities in the consortium yielded supplementary statistics on the number and the gender of the students. For the communist period, we gathered data from the Academy Library in Cluj-Napoca for accounting-related path at

UBB,⁶ which indicates a ratio of women to total graduates of 26.6% in the 1959–1965 interval and a doubling (41.6%) for the 1966–1970 interval. For this temporal point, UBB statistics equalize the national mean, as shown in Table 4. For the post-communist period, we obtained data for UAIC, which indicated a ratio of women to total graduates of 76.1% in 1999–2005 and 81.5% in 2006–2011 (Istrate 2012). For these intervals, the UAIC statistics are notably higher than the values in Table 4.

Our results confirm other findings in the literature stating that, in the first part of the communist period, the number of students in the economic field decreased between 1948 and 1965. Then, starting in 1970, the number of economics graduates increased. Until the end of the communist period, accompanied by a preponderance of women among the total number of graduates at an increasing percentage (78% in 1989), growth was maintained through the post-communist period until 2015. Then, due to a variety of factors, the percentage of female graduates declined to 59%. The massification phenomenon in economic higher education also appeared in 2000 and has been exacerbated since 2010.

Doctoral education

For this sub-theme, we obtained data online by browsing the universities' consortium websites (for the post-communist period), requesting it at the doctoral institutes (for the communist period), finding it in biographical volumes, or analyzing orders from the Ministry of Education for awarding the doctorate. Among various statistics on the subject, we sought the frequency with which doctoral theses were publicly defended, as Table 5 presents.

Table 5. Statistics of doctoral theses in the field

Temporal reference	University in the consortium	Number of authors		Total	Ratio Women/Total (%)
		Men	Women		
<i>COMMUNIST PERIOD</i>					
1946–1989	UBB ^{*,**}	21	5	26	19.2
	UAIC ^{***,****}	32	4	36	11.1
	<i>Mean for the communist period</i>				15.2
<i>POST-COMMUNIST PERIOD</i>					
1990–2020	UBB ^{****}	48	59	107	55.1
2007–2020 ^{*****}	ASE	109	192	301	63.8
2007–2020 ^{*****}	UAIC	21	63	84	75.0
	<i>Mean for the post-communist period</i>				64.6

^{*}The UBB archive contains data starting in 1971 because, according to Decree no. 1058 of 1967 on the scientific titles in the Socialist Republic of Romania, the coordination, supervision, and control of the activities regarding the award of scientific titles were exerted by the Ministry of Education; for this period we obtained data globally, for the entire economic domain and not only for the accounting field; ^{**}During

⁶ Political Economy and Planning, Accounting, Finance and Credit for 1959–1965, and Political Economy and Planning; Economics of Industry; Economics of Agriculture; Economics of Industries, Construction and Transportation; Accounting, Finance and Credit; Finance and Accounting for 1966–1970.

the communist period, after 1975, the organization of doctoral studies was only allowed in Bucharest, in three sessions, in 1981, 1985, and 1989, according to Talpoș, Roșca, and Istudor (2013); “Volume dedicated to Professor Dumitru Rusu, *File din cronică permanențelor învățământului și culturii economice la Iași* [Files from the chronicle of the permanencies of education and economic culture in Iași], coordinator Rusalim Petre, Policromia, Piatra Neamț, 1995, p. 84–87; <https://doctorat.ubbcluj.ro/ro/sustinerile-publice-ale-tezelor-de-doctorat/?an=2020&luna=0&facultate=13&domeniu=7>; 2007 is the year of mandatory publishing of such data on university websites.

Table 5 presents the significant increase of women versus men participating in the highest level of education, comparing the communist period (15%) with the post-communist period (65%). For the latter, statistics reveal an ascendant trend of women achieving the doctoral title.

5. Influence of the legal factor in Romanian academia

We further comment on the relevant articles and paragraphs of the regulations on women’s rights, education, and research.

The communist period

The social protection granted to mothers and expectant mothers was a copy of the measures taken by the Soviet Union, and it was one of the key points addressed and used in communist propaganda before the elections that were held in 1946. The first measure in the Labour Code of 1950 that relates to gender equality—an equal salary for equal work—can be considered an inclusion measure that establishes equal opportunities between men and women.

In 1972, a new Labour Code was developed, which specifies the rights and obligations of each category of workers, and the inclusion measures for women are more comprehensive than in the previous version from 1950. The remuneration was made, according to the Labour Code, considering the complexity of the work performed, the responsibility, and the degree of implication that these entail. Additionally, the Labour Code of 1972 discusses issues linked to education and research. It contains provisions on promotion conditions, as well as on the role and rights of teaching and research staff.

As for the constitutions we analyzed, their role was to declare and present the rights and duties of citizens. We focused our attention on regulations that referred to work, including mentions of the principles of equality, education, research, and salary, and we checked whether there were special stipulations for women. The three constitutions of this period (1948, 1952, and 1965) provided equal general rights, including education and equal pay for equal work, for women. The constitutions from 1952 and 1965 (especially the 1965 constitution) included other specific provisions that protected women and paid for maternity leave.

The education legislative reform started in 1948 with provisions to ensure equal rights to education for all citizens, which were copied from the Soviet model. Furthermore, the decree-law from 1948 stipulated the conditions for access to higher education, including doctoral studies, based on exams. Law no.11/1968 on the education system in the Social Republic of Romania reiterated the right to education. Moreover, it claimed that education develops and remains in close connection with the progress of science and technology, depending on the economic and cultural

requirements, all this to ensure the construction of socialism and communism. It also contains provisions meant to enhance academic research; even the objectives of the research were subordinated to the Communist Party's economic and political goals. Another law drafted in 1978 made special provisions in terms of research, though it seems that the role of education was to train qualified labor, in accordance with the economic objectives of the communist society.

The post-communist period

The Labour Code published in 1972 was periodically modified after the fall of the communist regime in 1998; the last changes were made in 2001. Considering that these changes did not have a considerable impact on the professional career of academics, we discuss the final modified version of the Labour Code from 2001, a version created to correspond to the new economic and political reality of Romania. This code replicated almost all the provisions of the communist one from 1972. It shows that the work of women and the importance of the contribution brought by women through the work they perform is still encouraged and promoted by the Romanian democratic state. The principle of equal pay for equal work is preserved as well as the special health protection measures for women and the necessary conditions for the care and education of children. In 2003, a new Labor Code was developed, which would support the amendments and changes made to the 1991 Romanian Constitution. This code is radically changed compared to the previous ones in terms of structure (new titles appear, such as the collective labor contract or professional training) and content (e.g., it no longer has provisions intended for certain sectors of activity, for example, education and research). Regarding extra elements on general rights, there are few compared to the 2001 version, among which are provisions against discrimination; in terms of labor relations, the principle of equal treatment for all employees and employers is applied. Women's rights are no longer explicitly stipulated, with two minor exceptions.

The constitutions of 1991 and 2003 stipulate several rules on women's rights, education, and research. The two constitutions include the same additional measures dedicated to women. Also, the incentives and responsibility for the research domain are mentioned in the 2003 constitution, in similar terms as in the previous constitution.

The first Education Law after 1989 was issued in 1995. It was modified and supplemented several times, under the pressure of the students who went out to protest, and the trade unionists in education. Then, in 2005, through Romania's accession to the Bologna education system, university courses were radically reorganized.

Regarding the presence of women in university management, we notice that no provision was made as part of the education legislation, for any of the periods, although the Labour Code from 1972 (enacted with minimal adjustments, including in 2001) explicitly mentioned the equality between women and men for occupying higher positions in the hierarchy.

6. Discussion of the historical role of women in Romanian accounting academia

In this interpretive section, we outline the progress of Romanian woman academic accountants, which, in addition to the general gender barriers, has been shaped by country-level influential factors—legal factors for our research.

6.1 Comparative international analysis results

The literature review in Section 3 presented a picture of women participating in accounting academia at the international level. The majority of the literature worldwide attests to the increased presence of women in the accounting profession, including as teachers and graduates in higher education in business (accounting). Moreover, most scholars agree that there has been growth—slower than that for the mentioned issues—in the number of women participating in academic research (as measured by the number of publications) and in academic leadership. We must highlight that the visible international data overwhelmingly applies to Anglo-Saxon countries, a fact that the scarcity of related publications for other contexts could explain. Nevertheless, our comparative analysis focuses especially on Anglo-Saxon countries. Our findings sorted by analytical themes are discussed further in comparison with the international context. The statistics were presented previously.

The regime stimulated the advancement of Romanian women as regards *teaching in academia* during the communist period as nearly 20% (on average after 30 years of communism) of faculty members at universities were women, a value that endured until the end of the stage. This number resembles the international statistics (21%), with countries that started the first period of our analysis at 10%. The percentage of Romanian female teachers in academia reached, in the post-communist period, a mean of 51%. For other comparative contexts, we obtained a percentage of approximately 31% in 2002–2007 for the US and under 50% in 2012 for the European space.

During the communist period, and in the first years of the post-communist era until 2007, *research* having Romanian authorship was completely absent from publication in internationally recognized journals. However, the visibility of Romanian authors later improved, with women constituting the majority throughout the entire interval (after 2007) and reaching a share of 72% in 2020. These percentages exceed the contribution of women globally; we found evidence for less than 50% as the ratio for female authorship for 2010–2015.

The percentage of women holding *management positions in Romanian academia* is much lower than that of men (only 19% in 2020), although participation from the communist period nearly doubled during the post-communist period. This finding is in line with our international observations (for the US); the data from 2004 indicated a value of approximately 16%.

It seems that the communist regime stimulated women's involvement in universities, first in terms of education at the bachelor's level. Romania far exceeded Anglo-Saxon countries (i.e., in 1950, 22.4% versus 9.75%; in 1970, 54% versus 10%; in 1985/1986, 78% versus 43%). The trend was steady during the post-communist period, but growth later slowed, with female graduates in 2020 reaching similar percentages to Anglo-Saxon or other countries (e.g., China) at about 50%.

Women's access to *doctoral studies* increased significantly in the post-communist period; the ratio of women to total diplomas awarded was 65%, compared to the communist period, for which the value was 15%. If we examine the international context (US) for 2012, the percentage was 45%, lower than the value for Romania as the mean for the interval.

At this point, our numerical results confirm that the advancement of women academics in Romania mirrors or overpass international ascendant trends (except research activities in the communist period). The inherent economic advancement and greater access to education and training that women obtained could explain all these statistics regarding the academic achievements of women. Other explanations are possible, however, and are specific to Romanian history during the communist and post-communist periods, which we investigated through the lens of the legal influential factor.

6.2 Discussion on the advancement of Romanian women in accounting academia: The influence of the legal factor

The discussion in this section is grounded in the previous findings in a comparison with the international context.

For the first period, our study investigated (the communist period in Romania) and for the international context (especially Anglo-Saxon countries), we argued that women made slow progress regarding participation in academic activities (teaching and initial education) and securing leadership positions in academia. For Romania, compared to the international context, we found evidence of superior advancement in access to education (bachelor's and doctoral degrees), a relatively similar growth for teaching and leadership, and less of an increase in publications in international refereed journals (due to the opacity toward the world outside the Iron Curtain that the regime created). For doctoral studies, we did not find data for the international context that would allow us to make comparisons with other countries for this period.

In the international comparative contexts, we observed—even during the second period we studied, the post-communist period—a significant increase for women in terms of access to academia as teachers and students, but they lagged behind men in leadership positions in both areas. The position of the Romanian woman is better than that found globally in terms of teaching, research publications as well doctoral studies; for leadership in academia and bachelor studies, it is similar to that of their counterparts.

We observed how, during the period we investigated, and reaching our days, Romanian women slightly outpaced their local male colleagues and female counterparts in other countries in terms of internationally visible scientific publications, teaching, and entry to doctoral studies (for doctoral studies Romanian women overpassed their female colleagues also in the communist period, due to Ceaușescu family politics). Contemporary Romanian academics demonstrate a similar ascension in terms of basic university education and leadership compared to women in the international context. Therefore, despite political and economic pressures, Romanian women have demonstrated their ambition and willingness to pursue careers in accounting academia. But these results are lower compared with men for all the countries we studied.

For the Romanian post-communist period, we observed women's status in the academic discipline of accounting and noted a positive evolution compared to the communist period, but the proportion of women in key roles remains far behind that of men. A study in the Romanian higher education social sciences field confirms that for Romanian academics, access to management positions (and academic titles) is beset by prejudices, stereotypes, the influence of traditions, the balance between private and professional lives, access to informal networks, and a promoting process that men largely control (Albulescu and Herrera-Saldana, 2016).

Out of the factors influencing women's advancement in Romania across all the investigated themes, we specifically focus on the legal one. Despite the specific legislation on gender equality applied in the EU and Romania and although the universities we analyzed issued official documents (university charters) claiming respect for the principle of equal opportunities, academia was influenced by other regulations as well: labor codes, constitutions, and specific laws for education. For all these regulations, we conducted a content analysis concerning general rights (independent of gender), then on women's rights specifically, and general access to education and research.

For a comparative analysis of the Romanian legislation between the communist and post-communist periods, we first highlight the normative acts that proved complex and rich in provisions for women's rights. Through observation of the changes via analytical themes and sub-themes, as revealed by our results for Romania, it seems that these regulations favorably influenced women's share, with the timing following the years of issuing the normative acts in question:

-For the teaching theme: 21.8% and 20.5% for the 1961–1970 and 1976–1989 intervals, respectively; and the ascendant evolution of 43%, 54%, and 57% in the intervals of 1990–2000, 2001–2010, and 2011–2020, respectively.

-For publications in international journals existing only for the post-communist period: there is visible concordance with the adoption of the Bologna legislation and the stimulating effect of the constitution from 1991 on research issues.

-For leadership: 10% and 18% in the 1961–1990 and 1990–2020 intervals, respectively;

-For access to education at the bachelor's level: 27% and 42% in the 1959–1965 and 1966–1970 intervals, respectively; and 76% and 81% in the 1999–2005 and 2006–2011 (post-Bologna) intervals, respectively.

-For access to doctoral studies: Relevant only to the post-communist evolution, as we had no data for sub-intervals during the communist period (i.e., 65% compared to 15.2% in the previous period).

Concluding remarks

Gender in accounting academia is a debated subject. Moreover, gaps in the research remain to be filled, as the gender concept could be explored in its complexity and nuance. Aware of the internal (due to their own volition and preferences) and external (due to complex social, cultural, economic, and political issues) barriers women faced to develop themselves and achieve their professional goals, we focused in this research on describing the results of their progress based on one influential factor, namely the legal factor. The analyzed region is an emergent European country, Romania, and the period covers the communist and post-communist intervals, which totals about 75 years.

Our study first explored women's advancement in accounting academia in the communist period. During this period, women faced an evolution different from that of women in Anglo-Saxon countries, although the results for teaching and leadership were similar. For scientific publications by Romanian academics, we found no contributions in international visible journals during the communist period, due to the opacity of the regime that kept Romanian researchers away from international scientific interaction. However, regarding access to bachelor and doctoral studies, we found more favorable statistics. The political context that the communist regime imposed, which was significantly different from that of the market economy and liberal democracies, influenced women's professional evolution. We found that the pace of growth in the number of women compared to men in the mentioned areas of our investigation accorded with the pace of the rules issued by the communist regime, aiming to promote women's 'emancipation by work'. Therefore, at the de jure level, the legal factor promoted a favorable evolution of women's presence and contributions in academia. We believe that, paradoxically, communism helped women toward emancipation, even though it compelled them to exert significant efforts (working at home, taking care of children, and working as employees). This is especially evident in light of our observations that, compared to Western European countries or other countries of the world, Romanian women (as well as those in other CEE countries and the Soviet Union) had to give up the status of 'housewife' more quickly and pursue professions that would develop their professional capabilities.

In the post-communist period, the pace of progress for women academic accountants mirrored some of the international patterns regarding access to basic university education and leadership in academia, while for the other three issues (teaching in academia, publishing scientific papers, and accessing doctoral studies), the performance of women academics appeared to exceed that of their international counterparts. This period, with the transition to a market economy, brought a similar trend of growth and change for women. In addition to the political factor and other factors of influence, the legal factor was also observed, as the pace of women's advancement was linked to the issuance of regulations on work, education, and research.

All our remarks are based on the comparison with women's advancement in other contexts, between the periods of Romanian history and with the issuance of provisions that stimulated women's progress. However, in comparison with the men's share in pursuing the profession in academia and training to enter the profession, there is little evidence for equal opportunity between women and men, not even today. Hence, although the number of women attending bachelor and doctoral level programs, becoming teachers in academia, and producing research publications (representing four of our five analysis themes) exceeds the number of men, women are not represented to the same extent in academic leadership. Accounting academia seems to propose unique challenges for women, as women are often competing to balance time: time to achieve tenure and promotion, time for academic service, and time spent with their families. Society must still work to understand and eliminate current stereotypes in the workplace, and academia as well. Change starts within each individual, and gender issues in the field of accounting academia must be addressed in all their complexity and exposed in all their nuances so that people, especially politicians, become aware of the issues and their impacts, and ask for regulatory changes and support.

In terms of the legal factor, we note that some laws stimulated gender equality and offered protection to women. However, other studies must further investigate the de facto situation and examine whether women perceived themselves as equal to men, especially during the communist period. The cultural inclination of the Romanian nation toward conformity could also be investigated. This trait could have prompted women to accept the struggle they were subjected to, perhaps even causing them to consider themselves happy and fulfilled. Perhaps they were also influenced by communist propaganda. Furthermore, future research could question how, considering the communist requirements of visibility and promotion of women in mind, the increased presence of women in business leadership (the new provisions in EU legislation)—not necessarily due to meritocracy but to a legal obligation—will serve the emancipation of women. Is contemporary Romania repeating communist history?

References

- Albulescu, M., Herrera-Saldana, L. (2016). Democratization and gender representation in Romanian higher education, *Governing for the future*, Medimond Publishing Company, Bucharest
- Baldarelli, M. G., Del Baldo, M., Vignini, S. (2016). Pink accounting in Italy: Cultural perspectives over discrimination and/or lack of interest, *Meditari Accountancy Research*, 24 (2), 269–292
- Bay, D., Allen, M. F., Njoroge, J. (2015). Gender orientation, success and job satisfaction in accounting academia, *Advances in Accountability: Regulation, Research, Gender and Justice*, 1–20
- Betea, L. (2021). Tovarășa. Biografia Elenei Ceaușescu [Comrade. Biography of Elena Ceausescu], Corint Publisher, Bucharest
- Broadbent, J. (2016). A gender agenda, *Meditari Accountancy Research*, 24 (2), 169–181
- Buchheit, S., Collins, A., Collins, D. (2000). Must female accounting faculty publish more to achieve tenure?, *Women in Management Review*, 15 (7), 344–355
- Carnegie, G.D., McWatters, C.S., Potter, B.N. (2003). The development of the specialist accounting history literature in the English language: An analysis by gender, *Accounting, Auditing & Accountability Journal*, 16 (2), 186–207
- Carolfi, I.A., Hasselback, J.R., Pillsbury, C.M. (1996) The hiring of women in accounting academia, *Journal of Education for Business*, 71 (3), 151–159
- Carrera, N., Gutiérrez, I., Carmona, S. (2001). Gender, the state and the audit profession: Evidence from Spain (1942–88), *European Accounting Review*, 10 (4), 803–815
- Cioroianu, A. (2021). A fost odată ca niciodată partidul communist român (1921–2021). Pentru o istorie dezinhibată a “viitorului luminos”, Editura Polirom, București
- Cooper, K. (2010). Accounting by Women: Fear, Favour, and the Path to Professional Recognition for Australian Women, *Accounting History*, 15 (3), 309–336
- Christian, M. (2020). The gender of communism. Encyclopédie d'histoire numérique de l'Europe. <https://ehne.fr/en/encyclopedia/themes/gender-and-europe/gender-and-revolution-in-europe-19th-20th-century/gender-communism>
- Curaj, A., Deca, L., Egron-Polak, E., Salmi, J. (2015). Higher education reforms in Romania: Between the Bologna process and national challenges, Springer Nature
- Curseu, P. L., Boros, S. (2011). Gender stereotypes in management: A comparative study of communist and postcommunist Romania, *International Journal of Psychology*, 46 (4), 299–309

- Czarniawska, B. (2008). Accounting and gender across times and places: An excursion into fiction, *Accounting, Organizations, and Society*, 33, 33–47
- Eaton, T. V., DiFilippo, M. (2016). Working toward achieving significant representation: Changes in diversity and their implications in the accounting and auditing profession, *Journal of Diversity Management*, 11 (1), 9–18
- Egron-Polak, E., Howard, L., Hunter, F., de Wit, H. (2015). Internationalisation of higher education, European Union, Directorate General for Internal Policies.
- Fowler, C. J., Keeper, T. (2016). Twenty years of Accounting History, 1996–2015: Evidence of the changing faces of accounting history research, *Accounting History*, 21(4), 389–418
- Galizzi, G., Siboni, B. (2016). Positive action plans in Italian universities: Does gender really matter, *Meditari Accountancy Research*, 246–268
- Ghebreza, G. (2015). Contextul de actiune a egalitatii de gen inainte de 1989” [“The context of gender equality action before 1989”]. in Statutul femeii în România comunistă. Politici publice și viață private [The status of women in communist Romania. Public policies and private life] edited by Hurubean, A. (ed.), Institutul European Publisher, Iași
- Giurescu, D.C. (2001). Învățământul în România între anii 1948 și 1989. Academia Romana – disertație susținută cu ocazia ceremoniei de acordare a titlului de Doctor Honoris Causa al Universității din Craiova. [Education in Romania between 1948 and 1989. Romanian Academy – Dissertation delivered on the occasion of the ceremony of awarding the title of Doctor Honoris Causa of the University of Craiova] https://www.ucv.ro/pdf/international/informatii_generale/doctor_honoris/68.pdf.
- Giurescu, D.C., Matei, H.C., Nicolescu, N.C., Popa, M.D., Radulescu, Gh. (2003). Istoria României în date [Romanian History in dates], Ed. Enciclopedică Bucuresti
- Hardies, K., Khalifa, R. (2018). Gender is not a “dummy variable”: A discussion of current gender research in Accounting, *Qualitative Research in Accounting & Management*, 15 (3), 385–407
- Haynes, K. (2008). Moving the gender agenda or stirring chicken’s entrails? Where next for feminist methodologies in Accounting, *Accounting, Auditing & Accountability Journal*, 21 (4), 539–555
- Haynes, K. (2017). Accounting as Gendering and Gendered: A Review of 25 Years of Critical Accounting Research on Gender, *Critical Perspectives on Accounting*, 43, 110–124
- Haynes, K., Fearfull, A. (2008). Exploring ourselves: Exploiting and resisting gendered identities of women academics in accounting and management, *Pacific Accounting Review*, 20 (2), 185–204
- Hopwood, A.G. (1987). Accounting and gender: An introduction, *Accounting, Organizations and Society*, 12 (1), 65–69
- Hsu, C-S., Kuo, L., Chang, B-G. (2016). Non-linear relationship between gender diversity in the partnership and profit performance in accounting firms, *Pacific Accounting Review*, 28 (3), 306–336
- Hukai, D., Li, J. (2009). The underrepresentation of women in accounting academia, *Academy of Accounting and Financial Studies Journal*, 13 (Si), 27–42
- Ilie, M.I. (2013). The Evolution of the Romanian Feminism in the 20th Century, *Social and Behavioral Sciences*, 81, 454–458
- Istrate, C. (2012). Gender issues in Romanian accounting profession, *Review of Economic Business Studies*, 5 (2), 21–45
- Jinga, L.M. (2015). Gen și reprezentare în România Comunistă 1944–1989 [Gender and Representation in Communist Romania 1944-1989], Polirom, Bucharest

- Jordan, C.E., Pate, G.R., Clark, S.J. (2006). Gender imbalance in accounting academia: Past and present, *Journal of Education for Business*, 81 (3), 165–169
- Komori, N. (2008). Towards the feminization of accounting practice: Lessons from the experiences of Japanese women in the accounting profession, *Accounting, Auditing & Accountability Journal*, 21 (4), 507–538
- Komori, N. (2012). Visualizing the negative space: Making feminine accounting practices visible by reference to Japanese women's household accounting practices, *Critical Perspectives on Accounting*, 23, 451–467
- Komori, N. (2016). West meets East and East meets West: Gender research as a cultural encounter in accounting, *Advances in Public Interest Accounting*, 19, 57–87
- Korka, M. (2002). Universitățile românești în fața integrării în spațiul european de învățământ superior [Romanian universities facing integration into the European Higher Education Area], POLITEIA-SNSPA, Bucharest
- Lupu, I. (2012). Approved routes and alternative paths: The construction of women's careers in large accounting firms: Evidence from the French Big Four, *Critical Perspectives on Accounting*, 23 (4/5), 351–369
- Mațiș, D., Popescu, Gh. (coordinators), Codoban, A., Gîdiu, V., Jula, O., Mihuț, M.I., Negru, A. (2011). *Oeconomicus Napocensis 1920–2010*, Imprimeria Ardealul, Cluj-Napoca
- McKeen, C.A., Richardson, A.J. (1998). Education, employment and certification: An oral history of the entry of women into the Canadian accounting profession, *Business and Economic History*, 27 (2), 500–521
- Metcalfe, B.D., Afanassieva, M. (2005). Gender, work, and equal opportunities in central and eastern Europe, *Women in Management Review*, 20 (6), 397–411
- Murgescu, B. (2010). România și Europa. Acumularea decalajelor economice (1500–2000) [Romania and Europe. Accumulating economic gaps (1500-2000)], Polirom, Iași
- Omundson, J.S, Mann, G.J. (1994). Publication productivity and promotion of accounting faculty women: A comparative study, *Journal of Education for Business*, 70 (1), 17–26
- Sora, A.F. (2011). Evoluția calificărilor din învățământul universitar românesc 1968–2011 [Evolution of qualifications in Romanian university education 1968-2011], http://www.invatamant-superior.ro/wp-content/uploads/2013/08/Raport_istoria_calificarilor.pdf
- Talpoș, I., Roșca, C., Istudor, N. (2013). *Pagini din istoria învățământului superior economic din România 1843-2013* [Pages from the history of economic higher education in Romania], Academia de Studii Economice, Bucharest
- The Accountant (1915). The admission of women into the profession, *The Accountant* January, 23, 127–129
- Vasile, C. (2009). The Romanian educational system during the Stalinist epoch (1947–1953): Considerations, *Historical Review*, 20 (1-2), 115–138
- Walker, S. P. (2008). Accounting histories of women: Beyond recovery?, *Accounting, Auditing & Accountability Journal*, 21 (4), 580–610
- Žalėnienė, I., Krinickienė, E., Tvaronavičienė, A., Lobačevskytė, A. (2016). Gender equality and its Implementation in universities of Lithuania, *Economics and Sociology*, 237–251
- Zhao, Y., Lord, B.R. (2016). Chinese women in the accounting profession, *Meditari Accountancy Research*, 24 (2), 226–245

DYNAMIC STOCHASTIC PANEL ANALYSIS OF FDI INFLOWS, EMPLOYMENT GENERATION AND POVERTY REDUCTION IN SOME SELECTED ECOWAS COUNTRIES

Olawunmi OMITOGUN 

Olabisi Onabanjo University, Nigeria

Olufemi Samuel OMOYELE 

Osun State University, Nigeria

Lanke B. AWOMAILO 

Yaba College of Technology, Nigeria

Wahid Damilola OLANIPEKUN 

American International University, The Gambia

Timothy Ayomitunde ADEREMI 

Bells University of Technology, Nigeria

Abstract: Background and aim: Foreign direct investment (FDI) has historically played a vital contribution in promoting the economic growth and development in many undeveloped countries by creating jobs opportunities and facilitating technology transfer. However, over the past decade, the ECOWAS region has experienced a steady decline in FDI inflows, resulting in a shortfall in investment needed for initiatives aimed at enhancing employment. In light of this, the study explores the dynamic stochastic interactions between reduction in poverty, employment provision and foreign direct investment inflows among ECOWAS sub-region. The study draws on data from 1990-2021. The research employs the impulse response analysis and variance decomposition techniques. The study revealed that there is a strong relationship and interaction between FDI, employment, and poverty reduction, highlighting the significant impact of FDI on job creation and poverty alleviation in the ECOWAS region. Policy makers need to consider the inherent time lags in these processes to ensure that policies are appropriately timed when the goals are to generate employment and reduce poverty.

JEL Classification: F21, F23, F36

Keywords: ECOWAS, Poverty Reduction, Employment, FDI inflows

* Corresponding author. Address: Department of Economics, Accounting and Finance, Bells University of Technology, km. 8, Idiroko Road, Benja Village, P.M.B. 1015, Ota, Nigeria
Email: aderemi.timothy@gmail.com

1. Introduction

Over the past decades, the ECOWAS sub region is locked in a double constraints given the insufficient local revenue and foreign aid to support the infrastructural facilities in one hand and these countries have a low capacity investment and private-sector capital due to poverty on the other hand (Chea, 2011; Sy & Rakotondrazaka, 2015; Ajagbe *et al.*, 2023). In this respect, FDI becomes an inevitable means of private finance. Besides being the prominent source of external capital, the influx of FDI assists also in filling the inadequacies of resources between the planned investment and domestically driven savings in addition to the gap between planned foreign exchange and those revenues net export generated. Based on the vital and significant contribution of FDI in host countries, global FDI sparked off from \$158 billion in 1988 to \$1 trillion, 39 billion in 2019. Meanwhile, FDI concentrated more in developed countries. As such the inflows of FDI into developed markets rose from 170 billion dollars in 1990 to 712 billion dollars in 2017, which slumped to 643 billion dollars in 2019. In the case of developing countries, FDI inflows rose from 34 billion dollars to 695 billion dollars in 2019. In the context of Africa, FDI rose from 2.80 billion dollars 1990 to 45 billion dollars in 2019. However, African as a region has been lagging behind in attracting FDI comparing to other regions of the world. In the last 37 years, African continent has only been able to attract three (3) percent (%) of FDI inflows in the entire globe. This flow of capital in Africa is extremely far below the performance of other developing regions especially Asian continent (UNCTAD, 2020).

Recent data highlight the instability of FDI inflows in Africa over the past few years. From 2015 to 2016, FDI dropped from \$61 billion, and it saw a further 10% reduction to \$53 billion in 2019 (UNCTAD, 2020). The allocation of FDI across Africa sub-regions has been uneven, with Ghana, Egypt, Ethiopia, Angola, and Nigeria collectively receiving more than 57% of the continent total FDI in 2016 (UNCTAD, 2018). Historically, the economic community of west African state (ECOWAS) has been a leading recipient on FDI in Africa. UNCTAD report shows that ECOWAS nations accounted for over 19%, 74%, and 55% of Africa's total FDI in 1975, 1973 and 1971 respectively. Throughout the 1990s, ECOWAS continued to attract the highest proportion of Africa's FDI. Between 1971 and 2010, ECOWAS sub-region received 31.3% of the continent's FDI, while North Africa captured 29.1%, with the two regions together accounting for over 60% of Africa's total FDI. However, from 2011 to 2017, West Africa's share of the continent's FDI inflows was 23.8% (UNCTAD, 2018).

Foreign direct investment (FDI) is a crucial instrument for developing countries to generate jobs (Aderemi *et al.*, 2022). Foreign direct investment (FDI) has a long history of helping developing countries' economies thrive by creating employment and transferring technology. The works of Mohammadvand and Ketabforoush (2013), Adelowokan *et al.* (2023), Aderemi *et al.* (2021), Tang and Tan (2014), Mohammadreza and Arash (2014), and UCAL (2014). Theoretically, FDI has the potential to drive regional economic growth and increase employment prospects. There is a lack of money for initiatives that aim to generate jobs since ECOWAS has seen a steady decline in foreign aid inflows over the last few decades. Consequently, governments in West African countries are grappling with high unemployment rates, poor wages, and heavy reliance on the informal sector as a direct consequence of the investment gap. References: (Ogunleye *et al.*, 2020; Aderemi *et al.*, 2020; World Bank 2020, UNDP

2019). According to investment theories like Mundell's (1957) capital movement theory, a country's investment shortfall may be filled by foreign direct investment (FDI) projects, which in turn create a large number of employment. It is acknowledged that there is presently inadequate evidence for policy action in the ECOWAS subregion, even though academics have published empirical data supporting FDI-induced job spillovers. Mkombe et al. (2021), Olowookere et al. (2021), and Folawewo and Adeboje (2017). In light of this, the current study aims to address a gap in the existing literature.

Furthermore, the use of impulse response and variance decomposition in calculating the aims of this study contributes to its uniqueness, since no study has recently explored the ECOWAS subregion and beyond. As a consequence, our study filled the identified gap by providing empirical remedies to these specific challenges. As a result, the study presents an empirical response to this research issue. How do FDI, poverty reduction, and employment react to shocks in the ECOWAS Sub-Region? This research is important because policymakers and other stakeholders must understand the optimal method for achieving full employment and reducing poverty in investment deficit nations. The study's findings would benefit policymakers by providing a better understanding of how FDI inflows may close the current investment gap in the ECOWAS subregion. Similarly, unemployment and poverty are the current particular development concerns confronting the ECOWAS subregion. As a consequence, the fundamental motivation for this study is the urgent need to understand the effect of FDI on job creation and poverty reduction in the ECOWAS subregion. As such, the main implication of this study is to provide statistically trustworthy data for policymakers and other major development organisations charged with tackling the unemployment and poverty challenge in the ECOWAS subregion. Because there has recently been a knowledge gap in the literature about the link between FDI, poverty reduction, and job generation in the ECOWAS sub-region, this study would add to the current body of knowledge. In particular, the findings of this study would be useful to academics, policymakers, investors, and development organizations working in the subject of development economics literature.

2. Empirical Review

The review was conducted from developing and emerging countries, developed countries and Sub-Saharan countries in order for ease of understanding the historical development of the subject matter.

Jorge and Richard (2018) used ARDL to determine if FDI accelerated Spain's growth between 1984 and 2010. There is no proof, according to the authors, that FDI will boost economic growth in this nation. It is also discovered that the introduction of Spain into the EU and the euro has no beneficial impact on growth. To assess the relationship between FDI inflows, employment, and wages for low and high-skilled workers in Mexico's real sector from 2005 to 2018, (Saucedo et al, 2020) utilized Panel Corrected Standard Errors (PCSE) alongside fixed Effects. They argued that an increase in FDI inflows in the manufacturing sector directly influences the employment of both low and high skilled workers. However, the study found mixed results for the service sector. Habibi and Karimi (2017) employed ARDL and Granger causality approaches to investigate the interference of FDI with economic development in Iran and the Gulf Cooperation Council (GCC) between 1980 and

2014. According to the authors, FDI is a significant propeller of economic prosperity in Iran and the GCC nations. Yet, there is a two-way causal impact between FDI and real GDP growth in Qatar, Saudi Arabia, and the UAE. Yet, the rates of real GDP growth in Iran and Bahrain are only one-way causally connected to FDI. Sukhadolets et al. (2020) estimated the association between poverty reduction, construction investment, and FDI in BRICS and EU countries using the ARDL approach. According to the paper, foreign direct investment mitigated the detrimental consequences of financial crises. Long-term building investments aided the economies of the nations under consideration, and the spillover effects decreased poverty by boosting people's assets. Yunus (2020) utilised the Ordinary Least Squares (OLS) estimator to examine the relationship between Malaysia's manufacturing sector and FDI drivers from 2000 to 2018. According to the research, indigenous direct domestic investment and investments in employer training had a substantial impact on FDI inbound stock in medium-high and low-technology sectors.

Moreover, degree holders working in the chemical, machinery and equipment, electrical and electronics (E&E), and other sectors were shown to have a disastrous influence on FDI inwards owing to their evaluated level of absorptive ability. Tsaurai (2020) employed pooled OLS, fixed effects, and Fully Modified Ordinary Least Squares to interrogate if the complementarity between FDI and financial subsector growth aided poverty reduction in BRICS countries between 1994 and 2013. (FMOLS). According to the study's conclusions, financial development has a favourable influence on poverty reduction. The impacts of financial development and FDI on poverty reduction are likewise varied, however it is generally obvious that their complimentary nature increased the effectiveness of poverty reduction measures. Hanim (2021) utilised the Triangular Hypothesis between 2012 and 2016 to investigate how FDI affects poverty reduction in the Indonesian economy. The author argued that FDI had a big direct influence on the growth of the Indonesian economy, and that this expansion had a considerable impact on poverty reduction. Yet, the relationship between the prosperity of economy and income unevenness had a far higher influence on the nation's poverty reduction.

Therefore, using dynamic OLS (DOLS) for the analysis of the study, Brambila-Macia and Massa (2010) investigated the effects of various types of capital flows on growth in a chosen group of nations in Sub-Saharan Africa from 1980 to 2008. Even after adjusting for other growth drivers like government spending and trade openness, the analysis clearly showed that both FDI and offshore bank advances had large, positive benefits on GDP. Tsaurai (2018) investigated the possibility for complementarity between natural resource availability and FDI in weakling poverty in both Southern and Western African markets between 2002 and 2012. She also assessed the impact of FDI on poverty. The author used dynamic OLS and GMM with fixed effect, random effect, and dynamic OLS to analyse the study's purpose and make this assertion. Natural resources are often abundant in countries that have received FDI. Poverty decreased in the nations under examination as a consequence of the link between natural endowments and FDI.

Poumie and Claude (2021) employed the augmented mean group (AMG), dynamic ordinary least square(DOLS), and the common correlated effect means group(CCEMG) methodologies to analyze the impact of foreign capital, including FDI and migrant remittances, on overall employment and job creation across various sectors in 43 African countries from 2002 to 2018. The study's results revealed that

FDI and migrant remittances had a direct influence on total employment. Yet, only FDI has a direct and meaningful impact on job development in African nations' industrial, agricultural, and service sectors. Akinlo (2017) investigated the variables that impact FDI in Nigeria using the Markov Regime Switching Model (MSMs). Discount rates, GDP growth, macroeconomic instability, currency rates, inflation, and financial development, according to the author, are the most influential elements influencing FDI in Nigeria. To achieve the study's aim, Kallon (2020) assessed the interference of FDI with poverty across ECOWAS markets between 1990 and 2018 using a number of econometric approaches, including OLS, FE and RE, and GMM. The study's conclusions on how FDI influenced poverty in the ECOWAS sub region were found to be contradictory. This research indicates that the kind and form of the link between FDI and poverty in the ECOWAS sub region could not be stated more precisely. Moreover, FDI, poverty alleviation, and job creation are continuous concerns in emerging nations. Notwithstanding the fact that scholars have presented empirical data that supports employment-enhancing FDI spillovers, we believe that the evidence is presently insufficient for policy action in the ECOWAS sub region. In terms of methodology, the empirical evaluation revealed that no regional or country-specific research studied the reactions of FDI, job creation, and poverty reduction to shocks in the ECOWAS Sub-region. An investigation into the future implications of different shocks, as well as the interactive contribution of each kind of shock to the forecast error variance of the variables of interest, will only help us reframe policy and stimulate more research interest in ECOWAS nations and beyond.

3. Methodology

The data used in this study are secondary data spanning from 1990 to 2021. This is because most ECOWAS nations had higher FDI inflows in the late 1980s than in prior years. The research focuses on four ECOWAS nations: Nigeria, Ghana, Côte d'Ivoire, and Senegal. The selection of these nations was primarily influenced by the availability of statistics, on the one hand, and the fact that these countries account for more than 90% (%) of the ECOWAS subregional GDP, on the other (AfDB, 2018). Similarly, during the previous decades, the four nations have regularly received more than 70% of FDI inflows in the ECOWAS subregion (UNCTAD, 2020).

3.1. Technique of Estimation

3.1.1. Impulse Response

Given the complex interconnections within the economic systems, the use of impulse response analysis is more informative for examining both immediate and long-term effects. Total derivatives, represented by the coefficients in the impulse response function, lack the *ceteris paribus* restriction (Luekepohl and Reimers, 1992). When variables are intertwined, a disturbance in one variable can trigger a series of cascading and feedback effects throughout the system. In such scenarios, the partial derivatives from the error correction model, which by design ignore these interactions, may not accurately depict the short-term and long-term consequences of these disturbance. Conversely, impulse response analysis evaluates the comprehensive effect of both the forward and backward influences of the disturbance across all time periods following the initial event.

$$Y_t = \theta_1 Y_{t-1} + \theta_2 Y_{t-2} + \dots + \theta_p Y_{t-p} + \varepsilon_t \quad (1)$$

Consider a different vector autoregressive (VAR) model. Suppose X_t was a $(n \times 1)$ vector of jointly determined integrated order one (I(1)) variables; q had represented the lag of X_t in the estimation; for each $(j=1, \dots, q)$ were $(n \times n)$ matrices of coefficients, and t had ranged from 1 to N ; v_t had been a $(n \times 1)$ vector of disturbances with zero mean and a non-diagonal covariance matrix (VMA) through the moving average representation δ_j

$$Y_t = \varepsilon_t + A_1 \varepsilon_{t-1} + A_2 \varepsilon_{t-2} + \dots + A_p \varepsilon_{t-p} + \varepsilon_t \quad (2)$$

$(p = 1, 2 \dots T)$

3.1.2 Variance Decomposition

Variance decomposition will allocate the changes in an endogenous variable to specific shocks within the VAR framework. Meanwhile, impulse response functions will illustrate how a shock to one endogenous variable affects the others in the VAR system. This allows variance decomposition to reveal the comparative impact of each random disturbance on the variables in the VAR. Utilizing the moving average representation in impulse response analysis, as demonstrated in equation (1) and equation (2). These interactions will be clearly depicted below:

$$Y_{t+n} = c + \sum_{i=0}^p A_i \varepsilon_{t+n-i} = c + \sum_{i=0}^p A_i P_{\sigma t+n-i} \quad (3)$$

3.2. Measurement of Variables

Table 1. Variable Description

Abbreviation	Description	Unit of Measurement	Source
FDI	Foreign direct investment inflows consist of the total of equity capital, reinvested earnings, and both long-term and short-term capital. This essentially reflected the value of inward direct investment made by non-residents investors in the reporting economy. In this study, FDI inflows was measured as percentage of GDP	Percentage	United Nations Conference on Trade and Development
EMP	Employment is defined as the ratio of a country's total annual employment to its labor force	Percentage	International Labour Organization
HDI	The HDI - According to the UNDP, the HDI is a composite index that assesses wellbeing in the form of a country's average accomplishments in three essential dimensions of human development	Percentage	WDI

Source: Authors' Compilation

4. Results and Discussion

This section focuses on the analysis of data collected in achieving the purposes of this study. And as such, this aspect contains various estimations of the various models utilized in this study. In addition, the discussion of results were presented in this section.

4.1. Pre-estimation Results

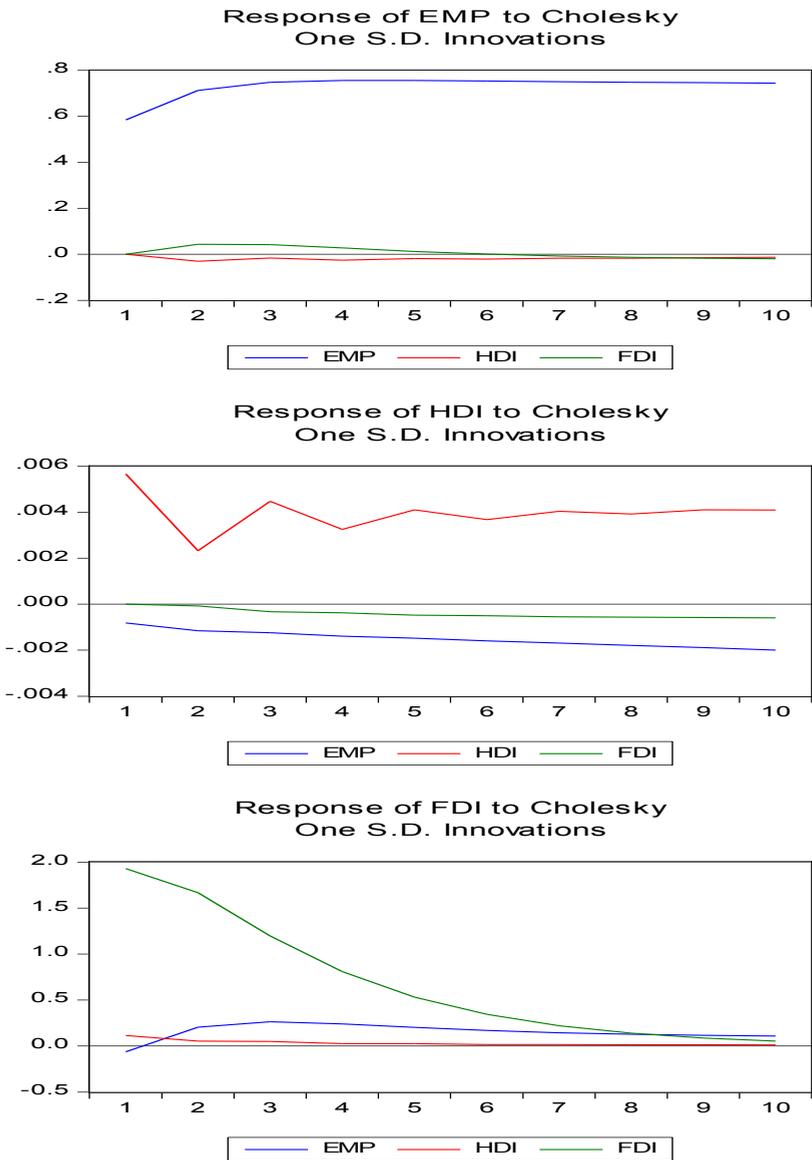
Table 2. Descriptive Statistics

Descriptive Statistics	HDI (0-1)	FDI (%)	EMP (%)
Mean	0.470254	2.912560	57.34483
Median	0.470500	1.882150	57.74500
Maximum	0.611000	16.25801	71.45000
Minimum	0.376000	-1.320522	42.58000
Std. Deviation	0.059122	3.124340	8.176057
Skewness	0.386396	2.142114	-0.131584
Kurtosis	2.509217	7.837689	2.013980
Jarque-Bera	0.127420	205.3094	5.120670
Probability	0.5549000	0.000000	0.077279
Sum	55.49000	343.6821	6766.690
Sum Sq. Dev.	0.408962	1142.096	7821.205
Observations	128	128	128

Source: Author's Computation

Table 2 provides descriptive statistics for the selected four (4) ECOWAS countries over a period of thirty-two years. These provide crucial details on the behaviour of the series that the model estimate was based on. The human development index (HDI) varies from 0.38 to 0.61 among four ECOWAS countries. Its average value is 0.47, meaning that human development index is low in this sub-region. The implication of this is that multidimensional poverty is high in ECOWAS sub region of Africa. This is contrary to the current situation reports in some African countries like Mauritius which has 0.8, Seychelles (0.78), Algeria (0.74), Egypt (0.73), Tunisia (0.73), Libya, South Africa and Gabon which have HDI of 0.71, Botswana (0.69), and morocco 0.68. However, both the minimum and maximum values of FDI inflows as percentage of GDP in ECOWAS sub region are -1.3% and 16.25 % respectively with a mean value of 2.91%. This shows that over the past three decades, FDI inflows in ECOWAS sub region are not expanding. The reason for this might be attributed to unfriendly state of investment climate in this sub region of Africa. Also, other factors such unfavourable ease of doing business, insecurity and deficient infrastructural facilities that are endemic in ECOWAS countries might be repelling FDI inflows in this sub region.

Consequently, employment rate in ECOWAS sub region ranges between 71.5% and 42.6% with a mean value of 57.3%. This means that on average basis, 57.3% of the working population in ECOWAS sub region is engaged in productive employment while leaving 42.7% of the working population as unemployed and underemployed. The level of unemployment in ECOWAS sub region is far bigger than the situation reports of North Africa and East Africa which recorded 12.56% and 4.7% unemployment rates respectively.



Source: Author's Computation

Figure 1. Impulse Response Functions (IRFs) among FDI, Employment and Poverty

Despite its utility in giving important information on the direction of causality that exists between any two variables, the Granger Causality test lacks the capacity to give judgements about the variables of interest outside the scope of the research. As a result, projections are hampered in this aspect. In light of this, the researchers went on to calculate the impulse reactions over a 10-year period when there is a one standard deviation positive innovation to another variable. It was derived using the

Impulse Response Functions (IRFs) seen in Figure 1. After a positive shock to itself, the employment rate increases for the first two periods. Nonetheless, it stabilises to the tenth period in the third period. FDI inflows grow initially, then begin to dip in the third quarter and become negative from the fifth through the end of the tenth. This reaction was triggered by employment rate shocks. Yet, as a result of employment shocks, the HDI falls in the first period, which is negative. Until the conclusion of the tenth period, the variable stays in a negative state. As a result, we may argue that the employment rate in the ECOWAS subregion has a significant influence on the subregional economy since a shock to employment is a critical element determining the degree of FDI and HDI-poverty reduction in the subregion. As a result, job creation may be regarded a positive strategy for increasing FDI inflows and HDI in general.

As a result of the shock to FDI and employment rate, HDI experienced a severe drop in the first period to the second period, when it began to vary until the conclusion of the fourth period. It began to rise somewhat in the fifth period and remained pretty constant until the conclusion of the eleventh session. However, the employment response to HDI shocks was negative but consistent from the first to the tenth periods. FDI, on the other hand, responded similarly to employment from the second to the tenth periods. Moreover, in reaction to its own shocks, FDI declines significantly and consistently from the first to the seventh period, following which the variable stabilised in the eighth to the end of the tenth period.

In summary, the results show a strong relationship between FDI, employment, and poverty reduction, implying that FDI plays an important role in creating jobs and, as a result, reducing poverty in an economy. In other words, FDI inflows continue to be a key source of job and poverty reduction in the ECOWAS subregion.

Table 3. Variance Decomposition (VD) of FDI

Period	SE	FDI	EMP	HDI
1	0.931638	100.0000	0.000000	0.000000
2	0.559389	98.95274	1.016204	0.031055
3	2.837935	98.00795	1.961256	0.030797
4	2.961107	97.35286	2.613179	0.033960
5	3.015470	96.91584	3.050962	0.033196
6	3.039837	96.61324	3.353927	0.032828
7	3.051291	96.39130	3.575979	0.032717
8	3.057183	96.21856	3.748550	0.032892
9	3.060671	96.07575	3.890637	0.033614
10	3.063093	95.95205	4.013377	0.034571

Source: Authors' Computation (2023)

After creating the IRFs for FDI, this research went on to calculate its Variance Decomposition (VD). As shown in Table 3, the findings suggest that the variation in FDI is fully attributable to its own shock, since it displays 100% variability in FDI inflows in the first period. Additionally, FDI fluctuation decreased little and gradually from 98.9 percent in the second period to 95.9 percent in the tenth quarter. Nevertheless, employment rate variance increased from 1.01 percent in the second period to 4.01 percent at the end of the tenth period, although HDI attained just 0.031 percent in the second period and 0.035 percent in the tenth period.

Table 4. Variance Decomposition (VD) of Employment

Period	SE	FDI	EMP	HDI
1	0.583782	0.101883	99.89812	0.000000
2	0.922736	0.082579	99.78990	0.127522
3	1.188420	0.069940	99.82727	0.102789
4	1.408565	0.049932	99.84015	0.109920
5	1.598407	0.045467	99.85423	0.100300
6	1.766963	0.056599	99.84719	0.096207
7	1.919784	0.076842	99.83387	0.089286
8	2.060451	0.100893	99.81531	0.083794
9	2.191393	0.125374	99.79666	0.077964
10	2.314314	0.148647	99.77863	0.072723

Source: Authors' Computation

The Variance Decomposition findings in Table 4 reveal that the employment rate variation is mostly attributable to its own dynamic, as it displays 99.89% fluctuation in employment rate and 0.10 percent fluctuation in FDI in the first period. However, the variance in employment rate marginally decreases to 99.78 percent in the period two before beginning to climb in the period three to the elapse of the period five, and observed a minor and steady reduction in the period six to till the forecast period elapses. Nevertheless, the variation of FDI begins to drop in the period two and continues to fall until the period five elapses, when it begins to grow regularly until period ten elapses. Similarly, HDI grows by 0.12 percent in the second period and subsequently drops by 0.07% from the third to the tenth periods.

Table 5. Variance Decomposition (VD) of HDI

Period	SE	FDI	EMP	HDI
1	0.005716	0.403428	1.995687	97.60088
2	0.006278	0.357532	5.020666	94.62180
3	0.007812	0.231641	5.768985	93.99937
4	0.008582	0.218936	7.434189	92.34687
5	0.009636	0.211378	8.275157	91.51347
6	0.010448	0.229827	9.394752	90.37542
7	0.011340	0.244643	10.21399	89.54137
8	0.012145	0.263168	11.10988	88.62695
9	0.012969	0.277100	11.89035	87.83255
10	0.013759	0.289682	12.68660	87.02372

Source: Authors' Computation

The Variance Decomposition findings in Table 4 reveal that the variance to HDI is mostly due to its own shock, with 97.60 percent variation in HDI, 1.99 percent variation in employment rate, and 0.40 percent variation in FDI in the period one. In the period two, however, the percentage of the variation caused by HDI variance to HDI begins to decrease continually until the conclusion of the period ten. The variance in employment rate, on the other hand, increases dramatically in the second period to 5.02 percent and continues to grow to 12.69 percent by the conclusion of the projected period. FDI variation, on the other hand, reveals that it progressively drops from the period two until the period five elapses, before increasing again in the sixth period and steadily rising until the end of the tenth period.

Moreover, the findings of Impulse Response Functions (IRFs) for FDI, employment, and poverty reduction reveal that the employment rate increases for the first two periods after a positive shock to itself. Nonetheless, it stabilizes to the tenth period in the third period. FDI inflows grow initially, then begin to dip in the third quarter and become negative from the fifth through the end of the tenth. This reaction was triggered by employment rate shocks. Yet, as a result of employment shocks, the HDI falls in the first period, which is negative. Until the conclusion of the tenth period, the variable stays in a negative state. As a result of the shock to FDI and employment rate, HDI experienced a severe drop in the first period to the second period, when it began to vary until the conclusion of the fourth period. It began to rise somewhat in the fifth period and remained pretty constant until the conclusion of the eleventh session. However, the employment response to HDI shocks was negative but consistent from the first to the tenth periods. FDI, on the other hand, responded similarly to employment from the second to the tenth periods. Moreover, in response to its own shocks, FDI declines significantly and consistently from the first to the seventh period, following which the variable exhibits some amount of stability from the eighth to the end of the tenth period. Similarly, Variance Decomposition data suggest that the employment rate variation is mostly attributable to its own dynamic, with 99.89 percent volatility in employment rate and 0.10 percent fluctuation in FDI in the first period. However, the variance in employment rate marginally decreases to 99.78 percent in the period two before beginning to climb in the period three to the elapse of the period five, and observed a minor and steady reduction in the period six till the period ten is completed. Nevertheless, the variation of FDI begins to drop in the period two and continues to fall until the period five, when it begins to grow regularly until the period ten is elapsed. Similarly, HDI grows by 0.12 percent in the period two and subsequently drops by 0.07% from the third to the tenth periods.

The variation in employment rate, on the other hand, is mostly attributable to its own shock, since it demonstrates 99.89% volatility in employment rate and 0.10 percent fluctuation in FDI in the first period. However, the variance in employment rate marginally decreases to 99.78 percent in the period two before beginning to climb in the period three till period five is elapsed, and observed a minor and steady reduction in the period six to the period ten elapses. Nevertheless, the variation of FDI begins to drop in the period two and continues to fall until the period five is elapsed, when it begins to grow regularly until till the period ten ends. Similarly, HDI grows by 0.12 percent in the period two and subsequently drops by 0.07% from the third to the tenth periods. The variation in HDI is mostly due to its own shock, since it demonstrates 97.60% variance in HDI, 1.99% variation in employment rate, and 0.40 percent variation in FDI in the period one. In the period two, however, the percentage of the variation caused by HDI variance to HDI begins to decrease continually until the conclusion of the period ten. The variance in employment rate, on the other hand, increases dramatically in the second period to 5.02 percent and continues to grow to 12.69 percent by the conclusion of the projected period. FDI variation, on the other hand, reveals that it progressively drops from the period two until the period five elapses, before increasing again in the sixth period and steadily rising until the end of the tenth period.

Moreover, it is expedient to point out that FDI, poverty reduction and employment generation are ongoing issues in developing countries. In terms of methodology, it could be pinpointed in the empirical review that neither regional nor

country specific study has examined the responses of FDI, employment generation and poverty reduction to shocks in ECOWAS Sub-region via impulse response test and variance decomposition in Africa and beyond. An enquiry into the impacts of various shocks in the future and the interactive inducement of each type of shocks to the predict error variance of the variables of interest can only help us to set new policy and spark further research interest on this subject context of ECOWAS countries and beyond. In addition, the results of the responses of FDI, employment and poverty reduction to shocks show: employment rate rises for the first two periods owing to a direct innovation to itself. However, in the period three, it becomes stabilize to the period ten. FDI inflows witness an initial rise, which it starts to fall in third period and turns inverse in the fifth horizon to the end of the period ten. This response was due to shocks from employment rate. However, in response to employment shocks, HDI witnesses a fall in the period one which is negative. The variable remains in negative position till the period ten elapses. Accordingly, we could posit that employment rate in ECOWAS sub region has an important impact on the sub regional economy because a shock to employment is a crucial factor that determines the level of FDI and HDI- poverty reduction in the sub-region. Consequently, after a shock to FDI and employment rate, HDI witnessed a sharp fall in the initial period to the period two when it started to fluctuate to till period four elapses. From the period five, it slightly rose and maintained a relatively stable position till the forecast elapses in the period ten. Meanwhile, the reaction of employment to HDI shocks was negative but continuous from the period one till period ten elapses. Whereas, the response of FDI was similar to employment from the period two to the wind up of the period ten. In addition, in response of FDI to its own shocks, it falls in a very sharp manner and consistently at the first stage to the period seven of the exercise, after which the variable witnessed some level of stability in the period eight till the period ten comes to an end.

5. Conclusion

This study aims to generate discussion on the impact of Foreign Direct Investment (FDI) on employment and poverty alleviation. The indicates a strong connection between FDI, employment, and poverty reduction, underscoring the significant role of FDI in creating jobs and reducing poverty within an economy. In the ECOWAS sub-region, FDI inflows remain a crucial factor for employment generation and poverty alleviation. It is important to note that policy changes related to FDI, employment generation, and poverty alleviation. It is important to note that policy changes related to FDI, employment generation, and poverty reduction in the ECOWAS sub-region do not yield immediate results in the desired direction. Therefore, policymakers must consider the inherent time lag involved in these processes to ensure their policies are appropriately timed when aiming to generate employment and reduce poverty. This highlights the need for prompt and thought action from policymakers and other relevant stakeholders in the ECOWAS sub-region. Limitation of this study lies in its coverage because the study might not reflect the actual situation reports of each country in ECOWAS sub region. Similarly, the findings in this study might not be used to generalize the situations in other sub regional economic blocs in Africa due to the peculiarity of each region of the African continent. Therefore, future studies could explore each of the ECOWAS countries independently.

References

- Adelowokan, O. A., Omitogun, O., Aderemi, T. A. (2023). FDI inflows, employment generation and poverty reduction in ECOWAS Sub Region: A Panel Granger Causality Approach. *EuroEconomica*, 42(1), 78–88.
- Aderemi, T. A. Okoh, J. I., Fagbola, L. O. and Idowu, A. F. (2020). Re-investigating foreign direct investment and poverty alleviation: does status quo still hold within ECOWAS Sub-Region? *Euro Economica*, 39(3), 29-37.
- Aderemi, T.A. Omitogun, O. & Osisanwo, B.G. (2022). Effect of FDI inflows on employment generation in selected ECOWAS countries: heterogeneous panel analysis. *Central Bank of Nigeria Journal of Applied Statistics*, 13(1), 241-263.
- Aderemi T. A., Olowo, S.O., Osisanwo, B.G. and Omoyele, O.S. (2021). Reinvestigating foreign direct investment and poverty nexus; any difference with the Nigerian human development? *Economic Insight-Trends and Challenges*, 10(3), 13-26.
- AfDB. (2018). West Africa Economic Outlook 2018.
- Ajagbe, S. T., Johnson, A. A., Taoridi, A. A., Gbadebo, A. O., Aderemi, T. A. (2023). Nexus between household savings and gross capital formation in Nigeria. *Acta Universitatis Danubius. Oeconomica*, 19(1), 80-94.
- Akinlo, A. E. (2017). Determinants of foreign direct investment in Nigeria: a markov regime switching approach. *Review of Innovation and Competitiveness*, 3(1), 21-48
- Brambila-Maicas J. & Isabella M. (2010). The global financial crisis and Sub-Saharan Africa: the effects of slowing private capital inflows on growth. *African Development Review/ Revue Africaine de Developpement*, 22(3), 366-377.
- Chea, A.C. (2011). Sources of global private capital flows: what developing countries can do to attract, manage, and retain global private capital flows to finance economic growth and sustainable development? *Business and Economic Research*, 1(1), 1-20.
- Folawewo, A. O., Adeboje, O. M. (2017). Macroeconomic determinants of unemployment: Empirical evidence from economic community of West African states. *African Development Review*, 29(2), 197-210.
- Habib, M. D., Sarwar, S. (2013). Impact of foreign direct investment on employment level in Pakistan: a time series analysis, *Journal of Law, Policy and Globalization*, 10(1), 46-55.
- Hanim, W. (2021). How does foreign direct investment (FDI) reduce poverty? Application of the triangular hypothesis for the Indonesian case. *Review of Integrative Business and Economics Research*, 10(1), 400- 411.
- Jorge, B. C. & Richard A. W. (2018). Does foreign direct investment generate economic growth? A new empirical approach applied to Spain, *Economic Geography*, 94(4), 425-456.
- Kallon, E. B. (2020). Foreign direct investment and poverty in the ECOWAS region (*Doctoral dissertation, Manchester Metropolitan University*).
- Lütkepohl, H., Reimers, H. (1992). Impulse response analysis of cointegrated systems, *Journal of Economic Dynamics and Control*, 16(1), 53-78.
- Mkombe, D., Tufa, A. H., Alene, A. D., Manda, J., Feleke, S., Abdoulaye, T., Manyong, V. (2021). The effects of foreign direct investment on youth unemployment in the Southern African Development Community. *Development Southern Africa*, 38(6), 863-878.

- Mohammadvand, N. & Ketabforoush, B. A. (2013). The Effect of Trade and FDI on the Employment of the Selected Improving Countries. *Eur. J. Sci. Res.*, 98(2), 234-239.
- Mohammadreza M. N., Arash K. B. (2014). FDI and employment in D8 countries *Merit Research Journal of Art, Social Science and Humanities*, 2(2), 015-020.
- Ogunleye, G.A. Aderemi, T.A., Kalejaiye, T.G., Nwagwu C.J. (2020). Official development assistance and poverty alleviation in Nigeria (1981-2017). *Acta Universitatis Danubius. Œconomica*, 16(1): 252-265.
- Olowookere, J. K., Olowo, S. O., Mabinuori T. O. and Aderemi, T. A. (2021). Foreign Capital Inflows and Poverty Reduction in Nigeria: Implication for Sustainable Development. *Euro Economica*, 40(1), 29-37
- Poumie, B., Claude, D. M. (2021). Does foreign capital really matter for employment? Evidence from agricultural dominance African countries, *Asian Journal of Economic Modelling*, 9(2), 88-104
- Saucedo, E., Ozuna, T., Zamora, H. (2020). The effect of FDI on low and high-skilled employment and wages in Mexico: a study for the manufacture and service sectors. *Journal for Labour Market Research*, 54(9), 1-15.
- Sukhadolets, T., Stupnikova, E., Fomenko, N., Kapustina, N., Kuznetsov, Y. (2020). Foreign direct investment (FDI), investment in construction and poverty in economic crises (Denmark, Italy, Germany, Romania, China, India and Russia). *Economies*, 9, 152
- Sy, A., Rakotondrazaka, F.M. (2015). Private capital flows, official development assistance, and remittances to Africa: Who gets what? Brookings Institution, Washington, DC
- Tang, C.F., Tan, E.C. (2014). Does tourism effectively stimulate Malaysia's economic growth? *Tourism Management*, 46, 158-63.
- Tsaurai, K. (2018). Investigating the impact of foreign direct investment on poverty reduction efforts in Africa. *Revista Galega De Economía*, 27(2), 139-154
- Tsaurai, K. (2020). Financial development-poverty reduction nexus in BRICS: a panel data analysis approach. *Applied Econometrics and International Development*, 20(2), 19-32.
- Ucal, M.S. (2014). Panel data analysis of foreign direct investment and poverty from the perspective of developing countries, *Social and Behavioral Science*, 109, 1101 – 1105
- UNCTAD (2018). World investment report 2018 published by the United Nations on Trade and Investment.
- UNCTAD (2020). World investment report 2018 published by the United Nations on Trade and Investment.
- UNDP (2019) Multi-Dimensional Poverty (Online Access: 6th September 2019 https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-1_nopoverty.html accessed September 2019).
- World Bank (2020). Metadata Glossary. <https://databank.worldbank.org/metadataglossary/>
- Yunus, M. (2020). Determinants of foreign direct investment: an analysis on policy variables in the Malaysian manufacturing industry. *International Journal of Asian Social Science*, 10(12), 746-760.