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Insurance development and economic growth in Nigeria, 1986-2010

Olalekan Yinusa and Taiwo Akinlo*

Department of Economics, Obafemi Awolowo University, Ile-Ife, Nigeria.

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This study analyzed both the long and short run relationship between insurance development and economic growth in Nigeria over the period 1986 to 2010. Using error correction model (ECM), the study finds that insurance development cointegrated with economic growth in Nigeria. That is there is long run relationship between insurance development and economic growth in Nigeria. The results also shows that physical capital and interest rate both at contemporary and one lagged value has significant positive effect on economic growth in Nigeria while physical capital and inflation has negative long run relationship with economic growth. The results of this study generally indicate statistically significance contribution of insurance to economic growth in Nigeria.

Key words: Economic growth, insurance, Error Correction Model (ECM).

INTRODUCTION

The role of insurance sector in mitigating sudden and devastating occurrences thereby stimulating economic growth cannot be over emphasised. Both in developed and developing countries, insurance sector contributes to economic growth both sectorally and geographically. Since insurance sector has links to sectors such as industrial, transportation, agriculture, mining, petroleum and trade both locally and internationally, its relevance to general human activities has continued to grow for all ages as all categories of risks increase.

Recently, several interesting lines of research have begun to map the specific contributions of insurance to the economic growth processes as well as to the well-being of the poor. In particular, several studies have focused on the relationship between insurance and economic growth. However, no consensus has emerged on the impact of insurance development and economic growth. For example, studies such as Arena (2006), Haiss and Sumegi (2008), Mojekwu et al. (2011), and Pen-Fen et al. (2011) found that insurance had positive

impact on economic growth. However, study by Webb et al. (2005) showed that insurance had no significant positive effect on economic growth.

The number of empirical studies is relatively small (for survey sees Levine, 1997; Thiel, 2001; Ang, 2008). Indeed, most existing studies on insurance-growth nexus are focused on the developed and few industrializing countries. In the developing countries, not many studies have focused on the insurance sector probably due to the small size of the sector before the reforms in the early 80s. Indeed, few studies to our knowledge have been published on the insurance-growth nexus in Nigeria. These are, no, doubt big gaps in the literature that needed to be filled. It is expedient to inquire not only into the growth of the insurance sector in Nigeria but also how the sector has impacted economic growth. This is why the main objective of this article is to examine both the short and long run relationship between insurance and economic growth in Nigeria.

The rest of the paper is structured as follows: first, we

*Corresponding author. E-mail: taiwoakinlo@yahoo.com. Tel: +234 803 062 4692.

provide an overview of the insurance sub-sector in Nigeria. Second, summary of the empirical studies on the impact of insurance on economic growth is discussed. Third, we discuss the methodology adopted in the work and then provide the empirical results. The last section contains the concluding remarks.

Overview of insurance sector in Nigeria

The British colonial government introduced insurance business into Nigeria in 1910. Before this time some forms of traditional social insurance had been in existence in every part of Nigeria. This was in the form of mutual and social scheme, which evolved through the extended family system, age grades and clan union of African cultures (Osoka, 1992).

Out of twenty-five insurance companies that existed in 1960, only seven were indigenous and their total market share was far below 10% (Osoka, 1992). The fallout from this was the drain on Nigeria foreign exchange earnings. As a result of this, a parliamentary committee was therefore set up in 1964, under the chairmanship of Honourable Obadan, to look into foreign domination of insurance. In the end, Obadan committee's recommendation could not go beyond sensitization of Government over the danger inherent in the foreign domination of insurance industry (Usman, 2009).

There was a phenomenal increase in the number of insurance companies in Nigerian financial market following the introduction of Structural Adjustment Programme (SAP) in mid 1986. The need for intervention and control of the government led to the formation of National Insurance Corporation of Nigeria (NICON), in 1989 which was latter christened NICON Plc. The number of insurance companies increased from 70 in 1976 to 110 in 1990. However, to streamline insurance business activities and stem the upsurge of the "mushroom" insurance companies, insurance capital base was raised from N1 million to N2 million. Fall-out from this event was that only fifty-seven out of one hundred and fifty-two insurance companies qualified for registration. This was coupled with the tighter control over the industry that requested for provision for the licensing and control of insurance intermediary.

In an attempt to fortify insurance sector in Nigeria, the sub-sector has undergone two round of recapitalization over the past 8 years. The first of the two round of recapitalization occurred in 2003 in line with passing of the 2003 insurance act where insurance companies were required to increase their capital bases from N20 million to N150 million for life businesses, N70 million to N300 million for non-life businesses, and N150 million to N350 million for reinsurance businesses. There were 117 insurance companies before the recapitalization in December 2002, 14 of them did not make it and were liquidated. In September 2005, a new capitalization

requirement was announced, increasing the capital base to N2 billion for life businesses, N3 billion for non-life businesses and N10 billion for reinsurance. Following the completion of the 2005/6 recapitalization exercise, which also involved quite a number of consolidations, the number of insurance companies dropped from 103 to 49. In 2008 the total asset of insurance companies was N573, 152.48 billion (National Insurance commission, 2010).

In Nigeria, insurance carriers accounted for 61% of jobs, while insurance agencies, brokerages and providers of other related-insurance services accounted for 39% of jobs in the industry. The majority of establishments in insurance industry were small. However, a few large establishments accounted for many of the jobs in the industry (National Bureau of Statistics, 2009). Insurance carrier tends to large establishments, often employ 250 or more workers, and whereas agencies and brokerages tend to be much smaller frequently employ fewer than 20 workers. Many insurance carriers' home and regional offices are situated near large urban centres. Insurance companies which deal directly with the public are located throughout the country. Most of the workers are working in local insurance company offices. Many others in the industry work for independent firms in small towns and cities throughout the country (Mia de Vos et al., 2011).

According to Akanro (2008), Government legislation has also supported the prospect of growth for the industry. Regulations that have been propagated by the Government in recent times in support of growth in the industry include the following: Compulsory insurance for all public buildings as well as those under construction; compulsion for all private sector organisations operating in the country to enrols their employees in National Health Insurance scheme to boost the resources base of the scheme; National Insurance Commission must ensure that any inhibitions to local insurers participating in the oil and Gas business are removed. It has also worked to ensure that "consortium bidding" is strongly considered by the Oil and Gas companies in selecting insurers for participation in the Oil and Gas business. This is to achieve a wider spread in participation by local insurance companies; an upward review of interest rates by the Central Bank that are currently earned on the Statutory Deposits of insurance companies which are placed with the CBN and the plan by the regulatory authority to address the tax law, which places separate tax on gross premium.

REVIEW OF EMPIRICAL LITERATURE

Some empirical studies have been conducted to examine the nature of the relationship between insurance and economic growth in the developed countries. However, in developing countries, Nigeria inclusive, not many studies have been conducted on the subject matter. In this

subsection, we provide a summary of the findings of the existing studies on the relationship between insurance and economic growth.

Outreville (1990) examined the relationship between property-liability insurance premia and economic and financial development with a cross-section of 55 developing countries. A positive relationship between logarithm of property-liability premia per capita and GDP per capital was found. It was argued that 1% increases in GDP causes more than 1% increase in demand. A positive relationship between insurance development (defined as insurance penetration or ratio of insurance premia to GDP) and financial development (ratio of M2 to GDP) was reported by using OLS method. He reported that the income elasticity was greater than one and a positive relationship between demand for insurance and financial development, but the coefficient for price was not statistically significant. In the end, he concluded that financial development is an important factor for insurance demand.

Webb et al. (2005) analyzed the effect of banking and insurance on the economic growth based on cross-country data of 55 countries for the period from 1980 to 1996. The insurance variable is measured by average insurance penetration (insurance premium relative to GDP) of life and non-life insurance respectively. At the first stage they used ordinary least squares estimation method, and they used iterated three stages least squares simultaneous estimation in second stage. The results of the first estimation, assuming exogenous financial variables, indicated positive effect of banking development on economic growth, while insurance variables do not enter significantly. The result of simultaneous equations, assuming endogenous relationship between financial activity and growth, show that higher levels of banking and life insurance penetration predict higher rate of economic growth. Concerning the other direction of the relationship, economic growth affects life insurance penetration, but did not predict banking development. There is no link between non-life insurance and economic growth in any direction.

Haiss and Sumeji (2008) investigated both the impact of insurance investment and premiums on GDP growth in Europe and conducted a cross-country panel data analysis from 1992 to 2005 for 29 European countries. They found a positive impact of life insurance on GDP growth in 15 EU countries, among which were Switzerland, Norway and Iceland. For the New EU Member States from Central and Eastern Europe, they found a larger impact for liability insurance. Furthermore their findings emphasised the impact of the real interest rate and the level of economic development on the insurance-growth nexus. They argued that the insurance sector needed to be paid more attention to in financial sector analysis and macroeconomics policy.

Mojekwu et al. (2011) examined the impact of insurance contributions on economic growth in Nigeria. The study covered the period between 1981 and 2008.

This study used dynamic factor model which described a number of methods designed to analyse a functional relationship between the volume of insurance contribution and economic growth in terms of underlying but unobservable random quantities called factors. The factor loadings indicated which common trend is related to which set of the series. The study found a functional positive relationship between the volume of insurance contributions and economic growth in Nigeria.

Pen-Fen et al. (2011) investigated the effect of life insurance on economic growth and what conditions affect the insurance-growth nexus. These conditions include the degree of financial development, private saving rates, interest rates, social security expenditures, income, young dependency ratio, life expectancy, and geographic regions. The main findings confirmed the positive impact of the development of the life insurance market on economic growth. The insurance-growth nexus varied across countries with different conditions. For example, the positive impact on economic growth is less in the middle-income countries, but high in the low-income countries. Moreover, they found that the development of stock market and the life insurance market are substitutes rather than complements.

METHODOLOGY

This study adopted the endogenous growth model with a modified Cobb-Dougllass production function assuming constant return to scale. This approach has been adopted by several authors including Eller et al. (2005), Fink et al. (2004, 2005) and Webb et al. (2002). Aggregate output is specified as:

$$Y = AK^\alpha H^\beta L^{1-\alpha-\beta} \quad (1)$$

Where Y represents the output (GDP), A denotes technology progress, K represents physical capital, H stands for human capital and finally L is the used labour force. After transforming equation (1) into the intensive form, it becomes:

$$y = Ak^\alpha h^\beta \quad (2)$$

By taking logarithm of both sides and differentiating equation (2)

$$\Delta \ln(y) = \ln(A) + \alpha \Delta \ln(k) + \beta \Delta \ln(h) \quad (3)$$

To incorporate insurance into equation (3), $\ln(k)$ is decomposed into two separately observable parts as argued by Haiss and Sumeji (2007). According to them, premiums collected by insurance companies are a flow variable and they resemble an input factor which influences the performance of physical capital. Therefore, the accumulation of premiums can be transformed into assets which add to their physical capital. This increases their capital base and encourages further investment. Therefore, physical capital can be decomposed into premium and capital:

$$\Delta \ln(k) = \Delta \ln(\text{PREM}) + \Delta \ln(k_f) \quad (4)$$

By substituting equation (4) into equation (3), it becomes:

$$\Delta \ln(y) = \ln(A) + \alpha_1 \Delta \ln(\text{PREM}) + \alpha_2 \Delta \ln(k_f) + \alpha_3 \Delta \ln(h) \quad (5)$$

Where PREM represents insurance premium, k_f represents

Table 1. Unit root test result.

Series	ADF		KPSS	
	Level	1 st Difference	Level	1 st Difference
GDP (constant)	- 1.916	- 3.065**	1.307	0.395
(Constant & Linear)	- 1.284	- 3.822**	0.266	0.043
PREM (constant)	-1.456	-2.769**	1.259	0.277
(Constant & Linear)	-1.953	-3.170	0.238	0.051
HUM (constant)	-0.759	-2.492	1.330	0.058
(Constant & Linear)	-2.95	-2.416	0.094	0.058
INF (constant)	-2.944	-5.806***	0.405	0.075
(Constant & Linear)	-4.262	-5.527***	0.089	0.055
INT (constant)	-1.671	-5.296***	0.428	0.192
(Constant & Linear)	-2.678	-5.994***	0.163	0.041
PHY (constant)	-1.365	-5.070***	1.307	0.168
(Constant & Linear)	-2.409	-5.707***	0.175	0.043

Note: Mackinnon critical values for rejection of hypothesis of a unit root.

** Denote significant at 5% level. ***Denote significant at 1% level

The critical values for ADF are: -3.753, -2.998, and -2.639 (constant only @ level); -3.769, -3.00, and -2.642 (constant only @ 1st difference); -4.416, -3.622, and -3.249; (constant & trend @ level); -4.441, -3.633 and -3.255 (constant and trend @ 1st difference) at 1%, 5% and 10% level of significance respectively. However, the critical values for KPSS test are: 0.739, 0.463 and 0.347 (with constant only); 0.216, 0.146 and 0.119 (constant and trend) at 1%, 5% and 10% level of significance, respectively.

financial capital, h represents human capital, A represents technology and y represents economic growth.

Apart from the financial and investment factors, evidence from previous studies has shown that many other factors are significant determinants of real growth. Peter and Kjell (2006) found interest rate to be one of such factors, while Liyan et al. (2010) took account of inflation.

$$\Delta \ln(y) = \ln(A) + \alpha_1 \Delta \ln(PREM) + \alpha_2 \Delta \ln(k_f) + \alpha_3 \Delta \ln(h) + \alpha_4 \Delta \ln(INF) + \alpha_5 \Delta \ln(INT) + e_t \quad (6)$$

where all the variables are as defined earlier and $\alpha_1, \alpha_2, \alpha_3, \alpha_4$ and α_5 are coefficients of premium, capital, human capital, inflation and interest rate respectively, and e_t is the disturbance term.

Measurement of variables and data source

The following variables were used for the regression. Real GDP – this is measured by gross domestic output calculated by dividing the gross domestic output by the consumer price index. Physical capital (k) – this is measured by gross capital formation. Human capital stock (h) – constructed index using weighted employee education figures, Interest rate (INT), proxies by treasury bill, Inflation rate (INF) – this is the log difference of composite consumer price indices, gross premium income ($PREM$): Gross premium income is measured by total sum of premium income from life and non-life insurance business as insurance companies can be categorized into two main divisions. The first is General insurance companies which provide all types of insurance apart from life

insurance. The second is a Life insurance company which deals with life insurance, pension products and annuities.

This study used secondary data. The data were obtained from the Central Bank of Nigeria. Specifically, data on economic growth, inflation, interest rate and premium were obtained from Central Bank of Nigeria (CBN) Statistical Bulletin, 2009. The data on capital and labour were obtained from and National Bureau of Statistic (NBS), Annual Abstract of Statistics (2009).

EMPIRICAL RESULTS

In order to do meaningful policy analysis with the results, using both ADF and KPSS test, we perform unit root tests in log level and first differences to determine univariate properties of the series being examined (Table 1). That is, to test for the presence of the unit roots or non-stationarity. Both tests involve testing the null hypothesis of a unit root or nonstationarity of the series against the alternative of stationarity. The results from both ADF and KPSS statistics shows that all the variables are stationary at first difference, therefore are integrated of order 1(1). Therefore, we can reject the null hypothesis of unit root.

Having established that the variables are integrated of the same order 1(1), we then applied the Johansen and Juselius (1990) technique to determine whether there is at least one linear combination of these variables that is

Table 2. Cointegration results (with a linear) where r in the number of co-integrating vectors.

Null	Alternative r	λ -max	Critical values 95%	Trace	Critical values 95%
0	1	71.73**	40.07	176.91**	95.57
≤ 1	2	39.39**	33.88	105.19**	69.82
≤ 2	3	35.23**	27.58	65.79**	47.86
≤ 3	4	22.02**	21.13	30.56**	29.80
≤ 4	5	8.54	14.26	8.54	15.49
≤ 5	6	0.0002	3.84	0.0002	3.84

Panel (B): Estimates of co-integrating vector					
dlog(gdp)	dlog(prem)	dlog(phy)	dlog(hum)	dlog(Inf)	dlog(int)
-1.00	0.09	1.53	-5.26	-0.41	1.17
	(1.29)*	(10.93)***	(-5.16)***	(-10.25)***	(9.75)***

Note: t ratios are in parentheses; ***denote significant at 1% and * significant at 10%.

1(0). The results of λ -max and trace test are shown in panel A of Table 2. The co-integrating equation (normalized on the growth variable) is shown in panel B of Table 2. In summary, the results in panel A of Table 2 shows that both maximum λ -max and trace test statistics reveal that there are, at most, four cointegrating relationships among the real GDP and other variables. In essence, both the test statistics (trace and λ -max) reject the null hypothesis of $H_0: r = 0$, $H_0: r \leq 0$ and $H_0: r \leq 0$ at the 5% significance level. The conclusion from this result is that there is a long run relationship between economic growth and premium and other variables. The co-integrating equation (normalized on growth variable) shown in panel B of Table 2 result shows all the coefficients apart from premium are highly statistically significant at 1% significance level. The coefficient of premium is only significant at 10% level. Theoretically, the results show that premium, physical capital, and inflation conform to a priori expectation. On the contrary interest rate is positive sign and significant which means it is positively related to GDP growth. Human capital has significant negative effect on economic growth. This might due to the high illiteracy rate in Nigeria and as many workers are unskilled, leading to their low productivity. Also, it could be that the personnel management system in firms and enterprises does not allow well-educated employee to contribute meaningfully to the enterprises.

Given that a cointegrating relationship is present among the related variables, an error correction model is estimated. This is a model that combines both the short run properties of the economic relationship in the first difference form as well as the long run information provided by the data in level form. Therefore, we use the information provided by the likelihood ratio test to generate a set of the models that capture the short and long run behaviour of the output relationship. The changes in the relevant variables represent elasticities, while the coefficient of the ECM term represents the

speed of adjustment back to the long run relationship among variables. The short run results are provided under the error correction model as shown in Table 3. The ECM produced interesting results with varying statistical significance level for some of the coefficients while some of them were also statistically insignificant. The adjusted R-squared of 0.63, 0.60, 0.58, 0.62 and 0.56 in regression 1, 2, 3, 4 and 5 respectively are obtained from the short-run model. This suggests that all the explanatory variables (premium, human capital, physical capital, inflation and interest rate) account for high percent between 56 to 63 variations in the dependent variable (GDP). The F-statistics which test for the over all significance of the model is relatively high and provides a good fit for the estimated model. The Durbin Watson (DW) statistics are generally satisfactory indicating non-existence of autocorrelation problem in the model. The coefficients of ECM carry the correct sign (negative) and are statistically significant in the entire models at 1 or 5% except in model 3 where it is significant at 10% with t-statistics ranging between -1.92 and -3.21. The speed of adjustment of economic parameters to equilibrium is ranging between 40 and 44% to GDP growth rate in the short run. This implies that convergence to equilibrium after shock to the variables in Nigeria will take about two and half years. Hence, the ECM is able to correct any deviations in the relationship between GDP growth rate and explanatory variables.

The results show that current premium has negative impact on growth in Nigeria. However, the coefficient is not significant. As the coefficient of contemporaneous premium is not significant, conclusive inference cannot be drawn from it. However, the result of premium lagged one and two years are positive and significant which show that the insurance premium has positive relationship with economic growth.

The coefficient on the human capital variable showed a positive sign and statistically significant at first lag,

Table 3. Error Correction Model (dependent variable $\Delta \ln Y$).

OLS regressions					
Variables	1	2	3	4	5
Constant	0.047 (0.22)	0.13 (0.59)	0.08 (0.31)	0.008 (0.04)	0.18(0.76)
$\Delta \ln \text{Prem}$			-0.09 (-0.70)	-0.09 (-0.87)	
$\Delta \ln \text{Prem}_{-1}$	0.29** (2.64)	0.22* (1.82)	0.28** (2.03)	0.33** (2.76)	0.12 (0.93)
$\Delta \ln \text{Prem}_{-2}$	0.35*** (3.49)	0.41*** (3.69)	0.38*** (3.06)	0.34*** (3.34)	0.46*** (3.97)
$\Delta \ln \text{Hum}_{-1}$	17.47** (2.60)	13.21* (1.45)	14.2* (1.49)	18.64** (2.70)	11.87 (1.32)
$\Delta \ln(\text{Phy})$	0.22* (1.61)	0.18 (1.19)	0.18 (1.16)	0.21* (1.55)	0.13 (1.32)
$\Delta \ln(\text{Inf})$	0.03 (0.77)	0.04 (1.08)	0.048 (1.12)	0.72 (0.01)	0.07* (1.59)
Int	0.008 (1.25)	0.009* (1.53)	0.011* (1.63)	0.01* (1.49)	
Int_{-1}					0.01* (1.54)
ECM_{-1}	-0.43***(-3.19)	-0.41** (-2.06)	-0.40* (-1.92)	-0.44*** (-3.21)	-0.44** (-2.17)
R^2	0.63	0.60	0.58	0.62	0.56
S.E.	0.11	0.11	0.12	0.11	0.12
F-Statistics	6.12	4.76	4.11	5.35	4.28
Pro(F-statistics)	0.002	0.008	0.0016	0.004	0.012
D.W.	2.41	2.20	2.19	2.40	2.34

Note. t statistics in parentheses. (*) (**) (***) denotes significance at 10%, 5% and 1% level respectively. All variables are as defined earlier.

implying that human capital has positive relationship with economic growth. This is probably due to the role of human capital in improving the quality of life and ensuring social and economic progress and also helping the developing country to absorb modern technology and to develop the capacity for self-sustaining growth and development.

The coefficient of physical capital is positive and statistically significant in the model 1, and 4. The coefficient is however significant at 10% significant level. Taking model 2 as a lead the results show that a 10% increase in physical capital will lead to 2% increase in economic growth.

The coefficient of inflation is positive but only significant in model 5. Interest rates both contemporaneous and lagged values have positive effect on economic growth. The coefficient of interest rate is significant at 10% in model 2, 3 and 4 but not significant in model 1. The positive impact of interest rate variable could be the result of the interest rate reform that started in 1986. The interest rate reform positively enhanced the efficiency of investment with positive effect on the growth rate.

The results of this study generally indicate statistically significance contribution of insurance to economic growth in Nigeria. This positive contribution of insurance to economic growth in Nigeria in this study is consistence with the findings of Mojekwu et al. (2011), Boon (2005) and Wadlamati (2008). This same study was done on Nigeria by Mojekwu et al. (2011) though with different time period and concluded that insurance positively impact economic growth in Nigeria. Boon (2005) and Wadlamati (2008) also found in their studies the positive

impact of insurance on economic growth despite the difference time period and country samples.

Concluding remarks

The link between insurance and economic growth has been examined in Nigeria. The results show that insurance development and economic growth are cointegrated. This means that there is long run relationship between insurance development and economic growth. The results also shows that physical capital and interest rate both at contemporary and one lagged value has significant positive effect on economic growth in Nigeria while physical capital and inflation has negative long run relationship with economic growth.

One of the findings of this study is that there is long run relationship between premium and insurance. A well developed insurance sector must be the target of Government so that the sector can ultimately occupy its rightful place in economics activities in Nigeria as they provide the necessary long-term fund for investment and absolving risks. Government can achieve this by providing appropriate environment for insurance business like massive investment in the infrastructure facilities especially in the area of ICT and appropriate legislation that will ensure the prospect of growth of the industry. In the area of ICT, it will help the industry to redeem its waning image through prompt settlement of verified claims. Indeed, many operators in the industry have come to realize that verification of claims can be expeditiously done through the adoption of appropriate

software and the creation of a single customer data-base from disparate back-office systems including underwriting, claims, billing, policy-management, etc. As regards to legislation, Government can put in place regulations that will make insurance compulsory for the public and the protection of the consumer not only by the professional indemnity of his advisor, nor in the case of broker, or the government regulatory agency like NAICON but for the consumers themselves to be part of the process that decides what is best for them.

The lacks of confidence of average person in insurance can be reduced by removing the suspicion that claims would not be paid which limits growth of the insurance market in Nigeria as they have to improve their business practise in this regards. On the part of insurance companies they should use seminar, conferences, and advertisement to create public awareness for their products and other policies aim at massive education of insurance consumers on the importance of buying insurance products should also put in place.

The finding that physical capital play important role in economic growth should encourage government to embark on developmental policies that aimed at increasing the level of physical capital stock of the nation. This will entail increase investment in social and economic infrastructure. This recommendation is also in line with the government current policies of diverting resources from consumption expenditure to infrastructure development. Infrastructure such as good roads, electricity, health facilities will accelerate the development of insurance sector in the country.

The result of negative effect of human capital on economic growth in the long run suggests the need for the Government to introduce policies that will reverse this negative effect and also embark on massive investment in human knowledge which is capable of increasing productivity. Enhancement of skills in vocational and technical education in order to increase productivity and stimulation of resourcefulness of trainees for effective and efficient service should be systematic, sustainable and strategic. This process should be systematic to the extent that there should be a plan for which previous activities will provide support for upcoming activities while facilitating the attainment of set goals. One of the major problems facing insurance sector is the human capital which can be improved by appropriate policies.

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