# PERCEIVED IMPACTS OF SCIENCE EDUCATION ON ECONOMIC RECESSION IN OYO TOWNSHIP

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## Abstract

*Economic recession strongly impacted on lifestyles and the generally living conditions of the citizens of the recessed economy. It leads inflation, increase in food prices, low budgetary allocation for education and general negative effects on societal development. Science education was found to be pivotal to the individual and national development. Thus, this paper investigated the perceived impacts of science education on economic recession in Oyo township. Two research questions and five null-hypotheses guided the study. A descriptive type of survey design was adopted for the study, sampled randomly 400 participants from the four local government areas of the state using a validated instrument titled: Perceived Impacts of Science Education on Economic Recession Questionnaire, PISERQ (r=.75). Simple frequency counts and percentages, t-test and ANOVA were used for data analysis. The results indicated that there are 294 male, 46 15-26 years age- group, 93 NCE and below educational qualification and 235 civil servants among the respondents., significant perceived impact of science education on economic recession (t= 133.05; df= 399; p<.05). The perception index was not beclouded by gender, age-group and occupation type while the respondents' educational qualification significantly influenced the index ($F_{(2,237)}$= 6.93; p<.05). It was therefore recommended that science education should be made available to all irrespective of gender, age-group and occupation type., organization of seminars, conferences and workshops sponsored by Governmental and Non-Governmental Organizations (NGOs) as avenue to hike people's perception of science education in unraveling economic recession in Nigeria.*

**Keywords:** Economic recession, Science education, Gender, Educational qualification & Age-group.

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### Introduction

Science education is an educational endeavour which instills in the mind of the recipients the knowledge, skills, abilities, aptitudes and competencies in the processes and and products of science. Science education is the aspect of education that leads to the acquisition of practical and applied skills, as well as basic scientific

knowledge (Jimbo, 2009). It is widely and generally acknowledged that the gateway to the survival of a nation scientifically and technologically, lies in the scientific literacy which can only be achieved through science education (Alebiosu & Ifamuyiwa, 2008). Thus, the purpose of science education is to cultivate the knowing and rational mind needed to maintain the good life; democracy and enlightened humanity; produce scientists for rational development; further the cause of science in human and national development and service study in technology (Service science). Ige., Durowoju and Oke (2017) perceived science education as the art of teaching science in order to acquaint learners with basic knowledge, skills and attitudes needed in science and science related fields.

Therefore, science education is the provider of fundamental scientific knowledge used by technology. At the senior secondary school level in Nigeria, the sciences are taught in school subject as Chemistry, Biology, Physics, Agricultural science, Mathematics. Science education holds the key to the present and future development of Nigeria. The sooner Nigeria realizes that her escape from poverty and economic recession is predicated to her investment on science education the better for her. At the present, our science education is too theoretical, less-pragmatic, less-activity based, less-hand-on-mind-on in approach leaving the students with poor academic achievement, insensate disposition and shallow skills to technoentreprise, with little contribution to Domestic Gross Product (GDP) that engender economic recession (Otti, 2017).

Recession is a period of general economic decline and is typically accompanied by a drop in the stock market, drastic fall in crude oil prices, an increase in unemployment and a decline in the housing market. Thus, recession is a general downturn in any economy. However, recession is associated with high unemployment, low gross domestics product and high inflation which in turn lead to social unrest and other vices. Economic recession can typically be defined as decline in Gross Domestic Products (GDP) for two or more consecutive quarters. However, GDP is the market value of all goods and services produced within a country in a particular period of time. It is obvious that people generally blame the president or Federal executives or the legislature for economy recession (Fabunmi & Isah, 2009).

According to Farabiyi (2016), the Causes of economic recession are: Hike of interest rate causes recession because this limit liquidity or available money in the circulation; Reduction in consumer confidence is another factor that can cause economic recession. That means if consumers believe that economy is bad, and they are less likely to spend their money. Though this is psychological in nature, still it can have a real impact on any economy. Inflation:- this refers to a general rise in the prices of goods and services over a particular period of time. That means as inflation increases the percentage of goods and services that can be purchased with the same amount of money decreases; Reduction in real wages is another factor that causes economic recession. This refers to wages that have been adjusted as a result of inflation. This, during the inflation the amount earn might not be enough to purchase of goods and services; The introduction of treasury single account (TSA) that was supposedly meant to block loopholes in our economy and minimize corruption mopped up liquidity in the circulation and economic activities in the country. This has a great grave effect on the economy of Nigeria; Subsidy removal:- The effect of subsidy removal cannot be under-estimated as this also contributed its toll on economy. Nigeria economy revolves around oil, especially when the pump price increased. Hence, inflationary pressure comes when fuel price was adjusted to N149 from previous pump-price of N85. However NNPC already saying that there is impeding likelihood that fuel price will increase as this will in turn bring about increase in price of commodity.

Furthermore, fall in the global crude oil prices is another factor engendering economic recession. Nigeria have solely depends on oil over the years. And the fluctuation of fuel prices has actually dampened the Nigeria economy because the benchmark oil price for 2016 budgetary allocation was changed to reflect the current realities of price. Thus, this later translated into fiscal policies. Hence most of state government in the country could not pay their workers' salaries because of the dwindling budgetary allocation from the federal government; Lack of Patriotism and naturalism by political leaders. For instance, Nigerian political

leaders made governance to be too expensive as they take allowances and salary that the economy cannot sustain (Fabunmi & Isah, 2009); Perpetration of corruption in top administrative sectors of the government in Nigeria: The civil servants are also joined in looting the treasury; Monolithic, undiversified economy which is non-science and technological driven easily breeds collapse economy.

Anya in Okobiah (2017) described economic recession as failure to plan for a resilient self-reliant economy. That Nigeria economy in 2014 was rated the largest in Africa, but instead of persistent growth in the economy, the years 2015 and after, witnessed economic downturn. Further identified the nation monolithic economy, the refusal to shift from overall dependent on export of oil commodity to knowledge-based and diversified economy; import dependent and import distributive economy; corruption; decadence in infrastructure as precursors of Nigeria economic woes which plunged the nation into the fourth rated lowest economy in the World! According to Emunemu (2017), uncontrolled and unabated economic recession leads to economic depression which is more severe than the former. Stated further that economic recession periods are usually shorter than the periods of economic expansion that they follow but they can be quite severe even if brief. What then are the consequences of economic recession?

First, economic recession brings about reduction in budgetary allocation and this has effects on educational funding. This occurs when government is unable to fund its project very well especially skills acquisition centres and our institutions. Secondly, economic recession will escalate unemployment. High rate of unemployment in turn will bring about social unrest, psychological disinterest in schooling and other vices. Bamigboye, Ede and Adeyemi (2016) in an empirical study of the impact of economic crisis on education: case study of southwest Nigeria, found that the current economic crisis has resulted to a drop in governmental allocation to educational sector and this has negatively affected the education curriculum delivery. The government and the teachers thus encouraged to diversify their revenue base and also be judicious in spending their earnings and allocations in order to overcome this financial crisis.

Science and Technology (S&T) education holds the key to the present and future development of Nigeria or any other country. For instance, Emmanuel (2012) stated that "there is a technological power vacuum in Nigeria wanting to be filled by whichever geo-political zone that cares to mobilize its people through dedicated and selfless service". This vacuum, technology is problem-solving enterprise, which is propelled by scientific discovery. Thus, S&T education will not only prepare the youths of Nigeria for fulfilled career prospects but also train their minds to address socio-economic problem with scientific mind. Youths equipped with science education are also endowed with high employment opportunities. S&T plays a fundamental role in wealth creation, improvement of the quality of life and real economic growth and transformation in any society (Emmanuel, 2012). It is just unfortunate that scientific discovery is not given adequate attention by the Nigerian government let alone empowers the discovery.

Mercan and Sezer (2014) reported a strong, positive significant relationship between educational expenses and economic growth in the Turkish economy for the period of 1970-2012. Dumciuviene (2015) pointed out that the future growth and societal welfare will depend on knowledge-intensive industries and services as more jobs require a higher education qualification with high impact research, technological development and total factor productivity growth. By x-raying other nations' experiences, Okpala (2011) previously identified that science education has strong impacts on the economic development of developed nations of the world, countries like United States, China**,** Finland, Malaysia, Austria, United Arab Emirates, Singapore and the likes with functional S&T education attach high priority to it backed with sound policy guidelines and effective implementation strategies; laid more emphasis on teacher quality, through certification, accreditation, training and retraining in S&T subjects; devote a big chunk of their budget on education in S&T subjects at all levels of education; make education especially at the basic level tuition free and pragmatic; consider teachers as experts and major stakeholders in education decision making and policy formulation; Make technoentrepreneurship as focus of economic development.

**Statement of the Problem**

There is hike in economic situations of the world, scanty available money chasing small goods and services, salaries are delayed, slashed and even paid in percentages, or fractional installment, scarcity and paucity of jobs, loss of jobs looming on economic recession, distress and invariably economic depression. Host of factors are responsible for this perplexing situation ranges from poor economic planning, monolistic economy, bribery and corruption and many other factors.

Available studies revealed that economic recession have strong impacts on national development, and that allocation which is usually on the low end impairs educational development but none of the available literature have ever investigated the perceived impacts of science education on economic recession, Likewise, the impacts of science education on the economic recession in the studied area based on respondent socio-economic variables such as gender, age group, educational qualifications and occupation types have not been brought to record. This study thus investigated the perceived impacts of science education on economic recession in Oyo township vis-à-vis the impacts of science education on economic recession based on respondents' gender, age group, educational qualifications and occupation type.

**Research Questions**

i. What are the perceived impacts of science education on economic recession in Oyo township?

ii. Is there any difference in the perceived impacts of science education on economic recession by gender, age-group, educational qualification and respondents' occupation?

**Hypotheses**

**$Ho_1$**: There is no significant perceived impact of science education on economic recession in Oyo township;

**$Ho_2$**: There is no significant perceived impact of science education on economic recession based on gender;

**$Ho_3$**: There is no significant perceived impact of science education on economic recession based on age group.

**$Ho_4$**: There is no significant perceived impact of science education on economic recession based on educational qualification.

**$Ho_5$**: There is no significant perceived impact of science education on economic recession based on respondents' occupation.

**Purpose of the study**

The main thrust of the study is to investigate the perceived impacts of science education on economic recession in Oyo township. Other drives of the investigation are to:

i. assess the perceived impacts of science education on economic recession based on gender;
ii. evaluate the perceived impacts of science education on economic recession in Oyo township based on age group;
iii. assess the perceived impacts of science education on economic recession in Oyo township based on educational qualification.,
iv. verify the perceived impacts of science education on economic recession in Oyo township based on respondents' occupation.

**Method**

**Research Design**

The descriptive type of survey design was adopted for the study. This design seems fitting as the study collected data from relatively large sampled population with the aid of questionnaire and subjected the data to empirical analysis for systematic description of the variables of the study.

### Population of the Study

The population comprises of all matured individuals (civil and non-civil servants) in the four local government areas in Oyo township (Afijio, Atiba, Oyo-East and West) constituted the population of the study.

### Sample and Sampling Technique

Simple random sampling strategy was adopted to select one hundred individuals from each of the four Local Government Areas of the study area to make four hundred sample size.

### Instrumentation

A 25-item, self-constructed instrument titled: **Perceived Impacts of Science Education on Economic Recession Questionnaire (PISERQ)** was used for data collection. The initial 30 items covering the universe of contents on perceived impacts of science education on economic recession in Oyo township. Copies of the instrument were given to experts of Test and Measurement and Psychometrics, their critiques were incorporated into the final draft of the twenty-five item instrument. The validated questionnaire were administered on twenty-five individuals in Akinyele Local Government Area of Oyo state, their responses were subjected to Cronbach's Alpha reliability measure yielding a value of . 75

### Procedure for Data Collection

The researchers as well as their assistants went to the four Local Government Areas to administer the instruments on the randomly sampled individuals. There was hundred percent return of the instrument.

### Method of Data Analysis

The socio-demographic variables of the respondents were presented in table of frequency counts and percentages. Mean and standard deviation were used to answer the research questions. The hypotheses were tested using t-test and Analysis of Variance (ANOVA) parametric statistics. Scheffe post-hoc was employed where ANOVA was significant to detect the direction of the differences.

### Results

**Table 1: Socio-demographic Attributes of the Respondents**

| *Variables* | *Frequency* | *Percentage (%)* |
|---|---|---|
| ***Gender*** | | |
| Male | 294 | 73.5 |
| Female | 106 | 26.5 |
| Total | 400 | 100.0 |
| ***Age group*** | | |
| 15-20 Years | 23 | 5.75 |
| 21-26 Years | 23 | 5.75 |
| 27 Years & Above | 354 | 88.5 |
| **Total** | 400 | 100.0 |
| ***Educational Qualification*** | | |
| Secondary Certificate & Below | 24 | 6.0 |
| NCE | 69 | 17.25 |
| First Degree & Above | 307 | 76.75 |
| **Total** | 400 | 100.0 |
| ***Respondents' Occupation*** | | |
| Civil servants | 235 | 58.75 |
| Non-Civil Servants | 165 | 41.25 |
| **Total** | 400 | 100.0 |

From Table 1, 294 (73.5%) of the respondents were male while a smaller proportion were female (106, 26.5 %); 23 each were 15-20 years and 21-26 years age groups while the largest sample size proportion were from 27 Years & Above (354, 88.5 %); 24 (6.0%) have Secondary & Below Certificate, 69 (17.25%) have NCE

qualification, 307 (76.75%) have First Degree and Above educational qualification. 235 (58,75%) were civil servants while the remaining 165 (41.25%) were non-civil servants.

**Answers to Research Questions**

**Research Question One:** What are the perceived impacts of science education on economic recession in Oyo township?

**Table 2: Perceived impacts of science education on economic recession in Oyo township**

| Mean | Median | Mode | S.D. | Variance | Range | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| 80.73 | 80.00 | 79.00 | 12.14 | 147.27 | 61.00 | 62.00 | 123.00 |

From Table 2, the mean perceived impacts of science education on economic recession in Oyo township is 80.73, standard deviation of 12.14, the minimum score is 62.00 while the maximum perception score is 123.00.

**Research Question Two**: Is there any difference in the perceived impacts of science education on economic recession by gender, age-group, educational qualification and respondents' occupation?

**Table 3: Differences in respondents' perceptions based on gender, age-group, educational qualification and respondents' occupation**

| | Variables | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Teachers' perception | Gender | | | | |
| | Male | 294 | 80.93 | 13.90 | .81 |
| | Female | 106 | 80.18 | 4.44 | .43 |
| | Total | 400 | | | |
| | Age-group | | | | |
| | 15-20 Years | 23 | 69.84 | 12.74 | .41 |
| | 21-26 Years | 23 | 73.19 | 8,83 | .93 |
| | 27 Years & Above | 354 | 74.82 | 12.11 | 1.26 |
| | Total | 400 | | | |
| | Educational Qualification | | | | |
| | Secondary certificate & Below | 24 | 73.16 | 14.05 | .89 |
| | NCE | 69 | 81.80 | 11.41 | .95 |
| | First Degree & Above | 307 | 82.60 | 13.00 | 1.19 |
| | Total | 400 | | | |
| | Respondents' Occupation | | | | |
| | Civil servants | 235 | 81.11 | 15.52 | 1.01 |
| | Non-civil Servants | 165 | 80.19 | 3.78 | .29 |
| | Total | 400 | | | |

Table 3 revealed that the male respondents' mean perception of impacts of science education on economic recession is 80.93 which is greater than that of the female, 80.18., those with 27 years and above age group had the highest mean perception score of 74.82 which was greater than 73.19 and 69.84 of the 21-26 years and 15-20 years age-groups., first degree and above holders had the highest mean perception score of 82.60 which was greater than 81.80 and 73.16 of the NCE and Secondary certificate holders respectively. Civil servants had higher mean perception score of 81.11 than the non-civil servants (80.19).

**Hypotheses Testing**

**$Ho_1$**: There is no significant perceived impact of science education on economic recession in Oyo township.

**Table 4: T-test analysis of perceived impact of science education on economic recession in Oyo township**

| *Perceived impacts of Science Education* | *N* | *Mean* | *SD* | *T* | *Df* | *Sig.* | *Remarks* |
|---|---|---|---|---|---|---|---|
| | 400 | 80.73 | 12.14 | 133.05 | 399 | .000 | *S |

Table 4 revealed that there is significant perceived impacts of science education on economic recession in Oyo township (T= 80.73; df= 399; p<.05). Therefore, Ho1 is not accepted.

**$Ho_2$**: There is no significant perceived impact of science education on economic recession based on gender.

**Table 5: T-test analysis of difference in perceived impact of science education on economic recession based on gender**

| *Respondents' gender* | *N* | *Mean* | *SD* | *T* | *Df* | *Sig.* | *Remarks* |
|---|---|---|---|---|---|---|---|
| **Male** | 294 | 80.93 | 13.90 | .547 | 398 | .585 | NS |
| **Female** | 106 | 80.18 | 4.44 | | | | |

From Table 5, there is no significant difference in perceived impact of science education on economic recession based on gender (T= .547; df= 398; p>.05). Therefore, Ho2 is not rejected.

**$Ho_3$**: There is no significant perceived impact of science education on economic recession based on age group.

**Table 6: Analysis of Variance of perceived impact of science education on economic recession based on age group**

**ANOVA**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 574.549 | 2 | 287.275 | 1.960 | .142 |
| Within Groups | 58185.828 | 397 | 146.564 | | |
| Total | 58760.377 | 399 | | | |

The Analysis of Variance in Table 6 indicated that the perceived impact of science education on economic recession based on age group is not significant ($F_{(2, 397)} = 1.96$; p >.05). Therefore, Ho3 is not rejected.

**$Ho_4$:** 'There is no significant perceived impact of science education on economic recession based on educational qualification'.

**Table 7a: Analysis of Variance of perceived impact of science education on economic recession based on educational qualification**

**ANOVA**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1982.924 | 2 | 991.462 | 6.933 | .001 |
| Within Groups | 56777.453 | 397 | 143.016 | | |
| Total | 58760.377 | 399 | | | |

The Analysis of Variance in Table 7a indicated that the perceived impact of science education on economic recession based on educational qualification is significant ($F_{(2, 397)} = 6.93$; p <.05). Therefore, Ho4 is not accepted. To determine the actual difference in the perceived impacts of science education based on the educational qualification, scheffe post-hoc test was conducted, the result is presented in Table 7b.

**Table 7b: Scheffe Post-hoc test of perceived impact of science education on economic recession based on educational qualification**

| (I) respondents' educational qualification | (J) respondents' educational qualification | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| secondary certificate & below | Nce | -8.63768* | 2.83403 | .010 | -15.6009 | -1.6744 |
| | first degree & above | -9.43648* | 2.53473 | .001 | -15.6643 | -3.2086 |
| Nce | secondary certificate & below | 8.63768* | 2.83403 | .010 | 1.6744 | 15.6009 |
| | first degree & above | -.79880 | 1.59328 | .882 | -4.7135 | 3.1159 |

| | | | | | | |
|---|---|---|---|---|---|---|
| first degree & above | secondary certificate & below | 9.43648* | 2.53473 | .001 | 3.2086 | 15.6643 |
| | Nce | .79880 | 1.59328 | .882 | -3.1159 | 4.7135 |

*. The mean difference is significant at the 0.05 level.

Table 7b revealed that the significant perceived impact of science education on economic recession based on educational qualification was as a result of differences between degree holders and secondary certificate holders (9.44), degree holders and NCE holders (.90) and NCE holders and secondary certificate holders (8.64).

**$Ho_5$:** There is no significant perceived impact of science education on economic recession based on respondents' occupation.

**Table 8: T-test analysis of difference in perceived impact of science education on economic recession based on respondents' occupation**

| *Respondents' occupation* | ***N*** | ***Mean*** | ***SD*** | ***T*** | ***Df*** | ***Sig.*** | ***Remarks*** |
|---|---|---|---|---|---|---|---|
| **Civil servants** | 235 | 81.11 | 15.52 | .743 | 398 | .548 | NS |
| **Non-Civil servants** | 165 | 80.19 | 3.78 | | | | |

From Table 8, there is no significant difference in perceived impact of science education on economic recession based on respondents' occupation (T= .743; df= 398; p>.05). Therefore, Ho5 is not rejected.

**Discussion**

From the answered research questions and tested hypotheses, it was revealed that the perceived impact of science education on economic recession is high and significant. This may be owing to the fact that science education, knowledge, skills, processes and products of science have become ubiquitous in our society and thus the respondents perceived science education as a sinequanone to buoyant and developed economy. It would be noted that the more the society becomes scientifically and technologically literate, the more advanced and developed the society and economy becomes. As knowledge (science education) increases in the society, the prowess for skillful individuals to be more innovative and creative which are bedrocks of entrepreneurship and economic buoyancy in a nation.

This is in tandem with the submission of Emmanuel (2012) that science and technology plays a fundamental role in wealth creation, improvement of the quality of life and real economic growth and transformation in any society, although, it is just unfortunate that scientific discovery is not given adequate attention by the Nigerian government let alone empowers the discovery. Earlier, Okpala (2011) identified that the developed nations were hedged above the underdeveloped and developing economies of the world by their investments, innovativeness and creativities in science and technology and that the more the investments in scientific and technological activities the more vibrant economic development. These results also found supports in Mercan and Sezer (2014) that reported a strong, positive significant relationship between educational expenses and economic growth in the Turkish economy for the period of 1970-2012. Likewise, the findings are corroborating the report of Dumciuviene (2015) which pointed out that the future growth and societal welfare would depend on the knowledge-intensive industries and services as more jobs require a higher education qualification with high impact research, technological development and total factor productivity growth. Olagunju., Bolaji., Adesina and Oladeji (2017) equally reported technoentrepreneurship as a panacea to the lingering economic pandemonium in the country and that incorporating science and technological entrepreneurship into school curriculum goes a long way in averting economic inadequacy.

The perceived impact of science education on economic recession which is high and significant is not beclouded by the respondents' gender, age-groups and occupation type. This means that there were no disparity in the perception of science education impacts on economic recession whether male or female,

young or old, civil or non-civil servants individuals. It implies that gender, age and occupation were no more constraining factors towards economic buoyancy through science and technological activities. Although, respondents' educational qualification still rage strong potency in determining the perception of the impacts of science education on economic advancement. It could be deduced that the more educated individual is, the better for the nation scientific and technological advancement and the more the economic proliferation of the country.

**Conclusion**

The perception individuals made about impacts of science education on economic recession was strong, positive and significant. Irrespective of the respondents' gender, age-group and occupational type, the perception individuals made on the impacts of science education on economic recession was strong, positive and significant. Educational qualification is a strong index influencing the people perception on impacts of science education on economic recession in Oyo township.

**Recommendations**

Based on the findings of the study, the following recommendations were put forth:

i. Government and Non-Governmental agencies should provide facilities, technological gadgets scientific infrastructures in the schools, colleges, polytechnics and universities for efficient utilization in pragmatic teaching and learning of science to enhance hands-on-mind-on activities that can generate income;
ii. Government should provide the necessary funds to procure educational materials, infrastructures, payment of salary and other emoluments in order to reduce the effects of the crisis on educational development;
iii. Science and Technological literacy should be made available to the populace irrespective of the gender, age-groups and occupational type of the recipients as these would facilitate adequate spread of scientific and technological innovations across the nation and encourage techno-entrepreneurship that can mellow unemployment and economic recession.,
iv. Workshops, seminars, lectures, symposia and conferences should be organized for the Science teachers to intimate them and keep them abreast of the trending scientific and technological innovations and creativities in science teaching and learning which they can adopt and diffuse to their learners.

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