EFFECT OF INDUSTRIAL STRIKE ACTION ON SCIENCE, TECHNOLOGY, MATHEMATICS, AND EDUCATION IN THE HIGHER INSTITUTIONS OF EDUCATION ZONE IN KADUNA STATE, NIGERIA

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**Abstract**

*This study aims to investigate the impact of continuous industrial strike actions (CISA) on science, technology, mathematics, and education (STME) in higher institutions. STME plays a crucial role in promoting educational excellence and national development, especially in Nigeria. However, external factors such as CISA can hinder the program and its associated activities, leading to setbacks. CISA can significantly affect the education sector, particularly STME-oriented subjects in higher institutions. When an industrial strike action (ISA) is initiated, it can last for months or even years, disrupting learning activities and causing students to fall behind in their studies. The study involved the administration of a questionnaire to STME learners and professionally trained lecturers teaching STME in higher institutions. A total of 150 individuals were randomly selected from selected schools in the Zaria/Kaduna educational zone of Kaduna state. The test-re-test method of findings was used, and a reliability coefficient of 0.65 was obtained. Tables were used for the collection of data from persons for sampling. The findings revealed that issues within the educational sector often led to industrial strike actions as a last resort. The study recommends several solutions, including the proper financing and provision of adequate STME learning and teaching materials in higher institutions. These measures will promote national development in Nigeria.*

**Keywords:** Industrial Strike Action, Education, Science, Technology, Mathematics and Education (STME), National Development

**Introduction**

Education in science, technology, and mathematics (STME) relies on the creativity, innovation, and imagination of individuals as they critically reflect on their experiences. In today's global society, technology is crucial for national growth and communication, making it a pathway to achieving a nation's goals. To achieve these goals, every country needs adequate resources, including human and material resources, to improve its community and social organizations, preserve its culture, enhance national development, and increase productivity. Technological tools are essential in curbing the economic challenges that hinder recovery and development.

Technology has always been a topic of great interest and concern worldwide. This is because it has become the most powerful tool for educational, economic, political, agricultural, and social progress, as well as the overall well-being of any society. All the elements that contribute to a meaningful life can be traced back to technology. The skills and knowledge of technology are essential to produce scientists, technologists, and highly skilled professionals such as teachers, engineers, and agriculturists, among others. This means that no society can afford to ignore the importance of technology.

Science, Technology, Mathematics, and Education (STME) have been the driving force behind social, economic, and political transformation in every society. These disciplines provide students with valuable information and techniques, fostering inquiry-based thinking, logical reasoning, and collaborative skills. Through active involvement in experiments and practical activities, students are expected to acquire science process skills, which will enable them to apply their knowledge in the production of goods and services. This will not only empower students' development but also contribute to the national development of our country.

Innovation, creativity, and imagination are essential for progress and success in any venture. With the world becoming a global village, technology has become the driving force behind national growth and communication. Countries require adequate resources, both human and material, to improve their communities, and social organizations, preserve culture, and achieve national development goals. Technological tools are crucial in curbing economic challenges and societal issues, and their significance cannot be overemphasized. The use of technology has become the strongest instrument for educational, economic, political, agricultural, and social progress, and it is vital for a country's well-being.

Science, Technology, Mathematics, and Education (STME) have been the driving force for social, economic, and political transformation in every society. STME disseminates information and techniques to students in four different disciplines, fostering inquiry minds, logical reasoning, and collaborative skills. Students learn science process skills through active involvement in experiments and practical activities, which facilitate their application in the production of goods and services for society, thereby empowering their development and the national development of our country.

Parents and guardians need to be incorporated and knowledgeable about the trend to motivate promising learners into STME fields. In the National Science Foundation conference (NSF, 2011), STME was developed as a new 'meta-discipline' that combines Science, Technology, Mathematics, and Education subject areas. This new discipline aims to transform traditional classrooms from teacher-centred instruction into inquiry-based problem-solving where learners engage with content to find solutions. STME is critical in any effort to eradicate poverty and reduce sustained national development and growth.

**Agriculture**

Agriculture in Nigeria has received significant support and recognition, especially during the last administration. It serves as a source of income generation for our country, thanks to programs like the Anchor Borrower Loans that support farmers in various segments such as irrigation farming, mechanized farming, and feed production. These programs have made the country proud and reduced our dependence on imported resources. STME deserves credit for their contribution to this success.

**Medicine**

The progress in science and technology has led to the widespread use of genetic engineering in medicine. This has resulted in the development of diagnostic and detective machines that can provide solutions to a variety of health problems. Additionally, genetic alteration of cells is now possible, which can help individuals with low sperm count or infertility issues to produce offspring. These advancements are made possible with the aid of STEM.

**Tourism**

STME has played a significant role in the tourism industry, helping to address poverty and increase the country's global appeal for national development. The sector generates substantial revenue for the nation through various means, including showcasing the country's technological resources with the assistance of STME. There is enormous potential for tourism, including the establishment of galleries, art exhibitions, zoological and botanical gardens, resorts, and game reserves that incorporate educational activities while generating revenue for national development and productivity (Adali, 2013).

The National Policy on Education (2004) emphasizes the importance of proper planning, efficient administration, and adequate financing for the success of any education system. These objectives can be achieved more easily and quickly with a technological approach, where science, technology, mathematics, and engineering (STME) education play a vital role. Education is widely recognized as the most powerful tool for societal progress and development. It serves as the key to ignite the engine of development in any society. Education is also considered an investment rather than just consumption.

Higher education is the final stage of formal learning that one can pursue after completing secondary education. It is an advanced level of education that provides individuals with knowledge, training, expertise, and certification. Higher education institutions focus on training individuals and offer access to re-training for undergraduates, graduates, and postgraduates. This helps to produce professionals and qualified individuals for various fields of life, leading to development. These institutions are usually controlled by private individuals, groups, or governments, depending on state policies. The first higher education institution in Nigeria was established in Yaba, Lagos State, in 1932, followed by others such as the University of Ibadan, University of Nigeria, Nsukka, University of Lagos, and Ahmadu Bello University, Zaria, among others. After independence, about 315 higher institutions were created. However, these institutions face numerous challenges such as poor communication, malpractices, insufficient manpower, lack of funding, lack of learning materials, and most importantly, continuous industrial strike action (CISA).

Access to education is a fundamental human right in every nation, including Nigeria. The provision of education has been the primary concern of government social policy. However, industrial strike action has been a major obstacle for students to attain this right at certain times. Continuous industrial strike action (CISA) is a means of forcefully withdrawing employees from their employers. It is a refusal of one party to conform to the other party's suggestions, expressing strong opposition to the other party in the form of a demonstration or protest to show grievances. CISA is a concerted stoppage of work by employees to improve their wages or conditions of employment, give vent to a grievance, or make a protest about something. It is a means by which employees exert pressure on their employers to accede to their demands and has a long-standing history. In Nigeria, the first strike was recorded on June 21, 1945, after the failure of protracted presentations to the government for salary increases to meet the very high cost of living.

Continuous industrial strike action (CISA) can be perceived as a refusal by one party to conform to the other party's suggestions. It can also serve as an expression of strong opposition or disapproval towards the other party, often demonstrated through protests or demonstrations to show grievances. CISA is a concerted stoppage of work by employees done to improve their wages or employment conditions, express grievances, or make a protest about something. This approach has a long-standing history, where employees exert pressure on their employers to accede to their demands.

In Nigeria, the first recorded strike was on June 21, 1945, after a series of presentations to the government for salary increases failed to meet the high increase in the cost of living. Most strikes occur when there is a breakdown or deadlock of negotiations or collective bargaining between employees and employers. This action is usually a last resort during negotiations between the government and the union.

CISA has become a major problem in Nigeria, causing disputes and conflicts that remain unresolved. The primary causes of CISA and other related issues are as follows:

i. Failure to implement collective agreements reached by parties after negotiations, such as the Academic Staff Union of Universities (ASUU) strikes in 2001 and 2002.

ii. Failure to meet demands for salary and wage increases.

iii. Poor infrastructure and lack of social amenities.

iv. Unfair policies that do not respect the fundamental rights of employees.

v. Lack of improvement in employee welfare.

vi. Differences in compensation within the same workplace.

vii. Denial of opportunities for self-expression, personal growth, and development.

This study aims to investigate the impact of the CISA on Science, Technology, Mathematics, and Engineering (STME) students in higher institutions within the educational zone of Kaduna state.

**Statement of Problem**

Science, Technology, and Mathematics Education (STME) play a crucial role in the development and prosperity of any society. When countries balance each other empirically, regardless of their size, they achieve significant national development and efficiency. STME teaching in higher institutions is necessary for the stakeholders in the education sector and government to position their economy and development as the leader in Africa. By training graduates and equipping young people with self-employment skills, the unemployment rate can be reduced after graduation. However, despite the opportunities that STME teaching/learning provides to learners for skill acquisition, it has been found that challenges in implementing and utilizing STME, known as CISA, can slow down or halt ongoing programs or activities.

**Objective of the Study**

The objective of this study is to investigate the influence of CISA on Science, Technology, Mathematics, and Engineering (STME) education in higher educational institutions located in Kaduna State.

**Research Question**

The study seeks to answer the research questions what is the effect of CISA on STME students in higher institutions in Kaduna state's educational zone?

**Research Methodology**

The study utilized a survey research design to investigate the population of ten higher institutions of learning in the Kaduna Educational Zone of Kaduna State. Two institutions, Kaduna State University (KASU) and Ahmadu Bello University, Zaria, Kaduna State (ABU), were selected using a stratified random sampling technique. A sample of 150 individuals, including lecturers, learners, and administrators, were randomly chosen from science-oriented faculties in each school. The researcher designed a structured student questionnaire consisting of 10 items arranged into two sections: part A for personal information and part B for statements in which the respondents were to agree or disagree. Data were analyzed using frequency counts and simple percentages.

**Results**

**Table 1:** *The effect of CISA on STME students in higher institutions in Kaduna state's educational zone*

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| --- | --- | --- | --- |
| **S/N** | **Items** | **Agreed** | **Disagreed** |
| 1. | I am in support of CISA in higher institutions. | 15 (5.5%) | 135 (97.5%) |
| 2. | CISA has a negative impact on the academic performance of students in STME. | 125 (85.1) | 25 (14.5%) |
| 3. | I am aware of and involved in the Science, Technology, Mathematics, and Engineering (STME) programme at my school. | 100 (75.3%) | 50 (24.7) |
| 4. | The STMEs class is quite dull and uninteresting. | 20 (13.3%) | 130 (86.7%) |
| 5. | I believe that the content of STME has had a positive impact on my self-employment. | 115 (83.0%) | 35 (17.0%) |
| 6. | Despite the prolonged CISA while in school, my skills in STME have improved. | 130 (86.7%) | 20 (13.3%) |
| 7. | The slow-down of STME is due to poor communication. | 140 (93.3%) | 10 (6.7%) |
| 8. | The impact of CISA on STME education can have an emotional effect on learners. | 105 (78.3%) | 45 (12%) |
| 9. | Students studying science in higher institutions are more likely to suffer from CISA compared to other students. | 100 (75%) | 50 (25%) |
| 10. | STME lecturers are willing to work regardless of a salary increase. | 74 (43%) | 76 (57%) |

**Discussion of Findings**

The table below presents the results of a study conducted to evaluate the impact of CISA on the learning outcomes of Science, Technology, Engineering, and Mathematics (STEM) students in higher education institutions. The study results showed that 97.5% of the respondents are not in support of CISA in higher institutions, while 85.1% of the respondents believed that CISA negatively affects the performance of students in STME. The study also revealed that 75.3% of the respondents are aware of and are involved in the Science, Technology, Mathematics, and Engineering (STME) programme in their schools. Data from item 4 showed that 86.7% of the respondents disagreed with the notion that STME class is quite dull and uninteresting. while item 5 (83.0%) supported the idea that STEM content affects the self-employment of learners. The study also revealed that 86.7% of the respondents revealed that despite the prolonged CISA while in school, their skills in STME have improved. Data from item 7 also showed that 93.3% of the respondents agreed that the slowdown of STME was due to poor communication. Furthermore, data from item 8 showed that 78.3% of the respondents attest that the impact of CISA on STME education can have an emotional effect on learners. The study also revealed that 75% of the respondents agreed that students studying science in higher institutions are more likely to suffer from CISA compared to other students. Results from item 10 showed that 57% of the respondents disagreed which revealed that STME lecturers are willing to work regardless of a salary increase.

Based on the analysis of items 1, 2, 3, 5, 6, 8, and 9, it can be concluded that the implementation of CISA has a negative impact on STEM learners' activities in higher institutions. This finding is consistent with Achufusi's (2009) study in Taliat (2017), which suggests that the lack of materials and human resources hinders the effective acquisition of scientific and technological skills. Additionally, there are gaps in the system that lead to adverse effects on the learners, which supports Lapkini's (2012) study that emphasizes the need to train students with adequate strategies to enhance national development and bridge communication gaps.

The results indicate that students, particularly those in STME courses, are experiencing setbacks in their studies. Ultimately, it is evident that CISA has done more harm than good in our learning institutions, where learners are regressing instead of progressing in their studies.

This supports Mahyuddin's (2010) argument in Animasahun (2017) that external factors such as CISA trigger negative attitudes towards noble subjects like STME and national development.

**Conclusion**

STME (Science, Technology, Mathematics, and Engineering) is crucial for the sustainable growth of any nation. It instils essential skills, knowledge, attitudes, morals, and values in individuals, enabling them to handle life's challenges and contribute to national development. STME is a vital tool for development and productivity, and Nigeria's technology-driven economy demands a growing need for these skills. Therefore, policymakers and stakeholders must promote the scope and content of STME, modify courses, and provide adequate funding.

STME involves assuming responsibility and risks in doing business with the expectation of making a profit. Individuals decide on the product, acquire facilities, and bring together the labour force, capital, and production materials. As professionals keep expanding, the economy increases and develops in every part of the country.

Unfortunately, Continuous Industrial Strike Action (CISA) has deeply affected the education sector's progress, resulting in a significant setback for STME programs for learners and lecturers. Therefore, there should be a paradigm shift in embarking on any CISA for everyone's betterment and Nigeria's national development.

**Recommendations**

To avoid and eradicate industrial strike actions in our institution, the government needs to pay adequate attention to the education sector by financing the system. The following measures can be taken to achieve this:

1. Conduct various workshops, seminars, and conferences to keep individuals updated and upgraded in their field of study.
2. Provide incentives and funding to establish new centres and acquire modern materials for acquiring skills.
3. Encourage good communication and adequate enlightenment on the importance of education.
4. Appoint an in-house fellow as the Minister of Education, rather than a novice politician.
5. Encourage taxable individuals to contribute financially to education for national development.
6. Ensure that government funds given to institutions are used for the intended purposes and not diverted elsewhere.
7. Provide enlightenment on the check and balanced maintenance culture from the government to institutions.
8. Encourage learners/students to engage in practical work whenever industrial strike actions occur for their development and Nigeria's national development.

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