

**AESTHETIC VALUES OF MATHEMATICS AS IMPERATIVE FOR THE ATTAINMENT OF THE  
MILLENNIUM DEVELOPMENT GOALS (MDGs) IN THE COMMUNICATION INDUSTRIES**

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**Abstract**

*The Millennium Development Goals (MDGs) is the resolution of the one hundred and eighty-nine (189) governments aimed at improving human and resources development by 2015. The implementation thus far seems not to indicate that the world is on track in the communication industries (mobile services' providers) due to absent of mathematics education requires to sustained action up to 2015. This paper tries to examine the aesthetic values of mathematics as imperative for the attainment of the MDGs in the communication industries. Nigerian's government had not recognized the usefulness or beauty of mathematics education in the attainment of the MDGs policies and programmes in these communication industries. When government fails to see to the welfare of life of her citizens- human and resources development through mobile services, the socio-economic developmental drives in the communication industries such as poverty alleviation programmes of buying and selling of recharged cards (small scale industry (SSM)) will be vain jeopardizing future generation. To ravage these situations, it was recommended that mathematics values should be giving her absolute place in schools, communication industries and governance through mobile services' provisions.*

**Introduction**

Education is the door to national development, science the key holder of the master key to the door, technology the master key to the door and mathematics the pillar, foundation, bedrock to all round development. Neglect of mathematics values to citizens of a country means backwardness in scientific and technological

development in attaining the MDGs in the communication industries. The quality and effectiveness of mathematics education remains a subject of public dispute in Nigeria; hence, the national goals of Education For All (EFA) became the foundation for a strong, building a self-reliance nation through the implementation of effective communication mobile services' provisions as well

as the attainment of a great and dynamic economy (Federal Republic of Nigeria (FRN), 2004). To achieve these goals, their attainments are functions of the kind of mathematics learning provided to students' by the Nigeria educational system and through interest exhibited by the government of the day. The underlining truth in Nigeria educational system is that, students are not able to see the inter-dependent relationship which exists between academic contents of subjects/courses offered while in schools and their real life applications of mathematics education to the communication industries to be functional. According to Okobiah in Igborgbor (2005:4) viewed;

“education is a useful contributor to students awareness of themselves in mobile communication services and understanding that these services' would transform their skills to be self-reliance, competencies having moral values to impact the society, giving reasoned judgments to live and interact effectively using any of the mobile services' providers (MTN, GLO, ZAIN, MTLINT etc) to interrelate with countries through e-mobile services and act positively to the economic, social, political, cultural, scientific and technological world of the MDGs attainment in 2015”.

Effective communication takes place when the message is received and it is well understood. It involves both the communicator (person who sent the message) and communicatee (person who receives the message). The communicator (the person phoning using any of the mobile services' providers) is the originator of the message which must ensure proper organization of his message so that the receiver can understand him very well. Communication is defined as mutual understanding (Camp and Sattenwhite in Yakubu, 2006). Mutual understanding dispels hostility between communicator and communicatee in mobile services'. According to Obiaku (1999:61), “effective communication requires that encoding and decoding be done with symbols that are familiar to both the sender (communicator) and the receiver (communicatee) of the message”. Words are the major tools of language in communication. So, good knowledge of language is needed for effective communication to take place.

Effective communication saves time and money. Messages sent through the phone are encoded in familiar everyday expressions will not trigger off questions from the receiver for clarification which may waste time and money. The time, speed taken for effective communication to occur in mobile services'

providers should be determined depending on distance cover. This is mathematics of speed, time, distance and accuracy topics applicable to mobile services' providers in communication industries. The mobile services' providers need the services of the mathematicians in order to reposition their services to the populaces (subscribers).

The mathematicians should teach mathematical concepts linking to students' problems that can cause hindrance to effective communication in mobile services' users and their real life experiences; moving Nigerians mathematics educational system from self-oriented to system-oriented services to develop cognitive competence of the training of mind and acquisition of appropriate skills to develop lives. With these, the mental and physical abilities of the students' can growth and contribute mathematically towards the attainment of the MDGs in the communication mobile services' industries. No wonder, Wikipedia in Agwagah (2008), described mathematics as the language with which God wrote the universe and must not be neglected in any sector of Nigeria industrial economy.

Aesthetic is the appreciation of beauty and the art of understanding beautiful things (Hornby, 2003). Aesthetic is the decorative, the icing on the cake (Birkhoff in Agwagah, 2008). The icing and the decorative are mathematical concepts having effect on the cake (country development).

Aesthetic values of mathematics are the appreciations of beauties accorded mathematics having the qualities of being useful or desirable by all (country citizenry). These aesthetic qualities according to Brady (2005) include: variety, integrity, diversity, and harmony. In the words of Hardy (1992), there is no permanent place in this world for ugly mathematics beauties. The continuous reforms of changing from one policy to another in the communication industries without adequate provisions of mathematics materials and equipment will make stakeholders (mobile services' providers and subscribers) not to recognize the aesthetics values of mathematics to achieve the MDGs. In recognizing the aesthetic values of mathematics in the communication industries, they must start from the grassroots level (primary and secondary schools) using various innovative in mathematics teaching by practical, exploratory and experimental strategies (Federal Republic of Nigeria, 2004). In adopting these teaching strategies, students will beloved mathematics and aspire themselves to uphold it beauties in science and technology developing communication industries. Remember, mathematics possesses not only truth, but supreme beauty....provides the true spirit of delight, the exaltation, the sense of being more than man, which is the touchstone of the highest excellence in knowledge (Russell in Agwagah, 2008). Mathematics involved in matters of life and

death; and the world recognize it as the foundation of all sciences, technology and development must be given her absolute place in government communication policies and programs (Ugboduma, 2006). Though this, aesthetic values of mathematics which are imperative (essential) for the attainment of the millennium development goals in the communication industries will be achieved.

**The Millennium Development Goals (MDGs)** are stated below:

**Goal 1: *Eradicate extreme poverty and hunger:*** to reduce by half the proportion of people living on less than a dollar a day and to reduce by half people who suffer from hunger.

**Goal 2: *Achieve universal primary education:*** ensure that all boys and girls complete a full course of primary schooling.

**Goal 3: *Promote gender equality and empower women:*** eliminate gender disparity in primary, secondary and at all levels of education.

**Goal 4: *Reduce child mortality:*** reduce by two thirds the mortality rate among children under five.

**Goal 5: *Improve maternal health:*** reduce by three quarters the maternal mortality ratio.

**Goal 6: *Combat HIV/AIDS, malaria and other diseases:*** halt and begin to reverse the spread of HIV/AIDS. Halt and begin to reverse the incidence of malaria and other major diseases.

**Goal 7: *Ensure environmental sustainability:***

through a significant improvement in lives of at least 100 million slum dwellers by 2015.

**Goal 8: *Develop a global partnership for development:*** through open trading and financial system that is rule-based.

The eight MDGs are the most ambitious commitment that world governments have ever made to fight poverty (Njongonkulu in Ibimilua, 2009). The first MDGs focuses on the eradication of extreme poverty; the next six goals focus mainly on the causes and consequences of poverty, while, the final one is to develop a global partnership for development (Ibimilua, 2009).

**Imperative nature of mathematics for the attainment of the MDGs in communication industries**

In order to achieve the above goals, imperativeness of mathematics is assigned to various MDGs issues:

**Goal 1: *Eradicating extreme poverty and hunger:*** Poverty is the condition of being poor, unproductiveness, deficiency, or inadequate supply of something; while, hunger is need, desire for food (Webster, 2002). According to Aluko (1998), poverty begets poverty, hunger begets hunger; and the poor people find it difficult to break loose from these vicious circles because of their low income, resulting to low purchasing power, saving capability and productivity. The Federal Office of Statistics (FOS) (1995), report that 71 percent of Nigerian household are poor

with half of this classified as very hunger. The period between 1993-1996 was also one of the increasing poverty and human hunger as revealed by most economic and indicator. But the Chief Olusegun Obasanjo from 1999-2007 has done much to reduce poverty and hunger with increased in workers wages, boosting agricultural production by giving loans to farmers, establishment of Skills Acquisition Centre (SAC) in all the local government areas of the country and empowering individuals through giving of loans for Small Scale Business (SSB) establishment. The mobile services' providers had introduced self-initiative business programme such as buying and selling recharged cards in both retail and wholesale policies. Ugboduma, Ferife and Orukpete (2008:48) stressed that, "mathematical knowledge aimed at helping people develop desirable social attitudes to business oriented, inculcating necessary skills for industrial works, resourcefulness in thinking and ability to adapt to life's challenges". Mathematics education as the impetus to strengthening self-reliance through proper education of practical, exploratory and experimentation, to improve the services and goods used by the individual in mobile services' providers services, community, nation and the world under favourable living conditions (Federal Republic of Nigeria (FRN), 2004). Knowledge drawn from mathematics education is synthesized to meet the physical, biological, social lives of the

individual making him to be creative, logical and precise in thinking and constructive in ideas in the communication industries. Its nature is dynamic and pro-sustainable development and pro-poor. Evidences abound and untapped discovery awaits all who adopts mathematics principles as a key factor to open various opportunities doors for self-reliance reducing poverty and hunger through self employment of buying and selling of recharged cards from the mobile services' providers. Acquisition of the appropriate mathematical skills achieved in schools can be applied in the businesses to boost growth. With this the individuals' abilities, and competencies can increase to elevate both their mental and physical development empowering them to live, building their potentials, talents and contribution to their immediate societies (Ugboduma, 2006).

***Goal 2: Achieve universal primary education:*** by ensuring that all boys and girls complete a full course of primary schooling. This is in line with the Federal Government Primary Educational Policies that 'everything should be done possible by stakeholders of education to discourage the incessant dropping out of pupils at the primary level of education' (FRN, 2004:16). According to Osafehinti and Aminu in Maduabum and Odili (2006:66), "any nation who aspires to be scientifically and technologically developed must have adequate level of mathematics education values at the grassroots (primary). These will

promote self-development of talents and potentials for effective articulation of the abstract elements of science that will give impetus to technology to build the communication industries". In achieving this, the prominent role of Information and Communication Technology (ICT) is emphasized for knowledge advancement and skills necessary for effective functioning of pupils (boys and girls) in the modern world of telecommunication. Mathematics education provide the pupils with the abilities to adapt to the changing environment existing in the telecommunication industries through crafts production, basic tools for manipulative skills that will enable them function effectively in the society. It becomes clear that specialist (professional) mathematics teachers who are adept in passing mathematical knowledge be employed to teach at the primary school level. This will help the grass-root educational pupils' to beloved mathematics to enhance self development, high skills manipulation and precise thinking.

**Goal 3: Promote gender equality and empower women:** eliminate gender disparity in primary, secondary and at all levels of education. The call for equity is for natural justice and fairness to be achieved in every situation in life. Equality is looking at a condition where people are treated with equity on the premise that we are equal before God and the law. Equality demands that both men and women different physiologically,

priority and needs should have equal access and chances in realms of politics, education, employment, decision making at all level to create true development. Epochi-Olise (2009:25), noted that "everywhere in the world women are the heart of development and any investment in women and enhancement of their opportunities may have many positive effects". The former United Nation secretary-general Kofi Annan in Awake (2003:10) also supported the view above that "No effective development strategy in which women do not play a central role and when they are fully involved, the benefits can be seen immediately". Ezeigbo (1996:56) affirmed that "women are instructive and they are properly adjusted members of the community with a parallel line of authority in traditional governance, they assert themselves and are respected in the domain". Women should be empowered equally as the men in area of education scholarship provided by the mobile services' providers because "great Nigerians women mathematicians like Professor Grace Alele Williams who founded the African Mathematical Union's Commission on Women in Mathematics in Africa (AMUCWMA) had posted great challenges to women in Nigeria to be mathematics lovers; Catherine Okikiolu who won two very high research awards in the United State of American (USA) in functional analysis, had inculcated in Nigerian women the need to study mathematics at the higher level" (Williams,

2005:1).

**Goals 4, 5 and 6: To reduce child mortality by two thirds the mortality rate among children under five; improve maternal health by three quarters the maternal mortality ratio; and Combating HIV/AIDS, malaria and other diseases; halt and begin to reverse the spread of HIV/AIDS,**

mathematics syntheses and analytical processes should be used. The act of effective articulations of drugs administrations to patients by medical practitioners' is mathematical knowledge. The mathematicians can diagnosed the diseases using mathematical theories such as category theory, knots theory, statistical theory and methodology for the analysis of wide varieties of illness causes and utility of new drugs, body scanners constructing image of inside of an object from information on single x-ray viewed (Brown and Porter, 1996). These will help the medical practitioners' to administer drugs to reduce child and maternal mortalities death ratios; combat HIV/AIDS, malaria and other diseases.

**Goal 7: Ensure environmental sustainability: through a significant improvement in lives in 2015.** A sustainable environment promotes sustainable development. Sustainable development means that type of development which meets the needs of the present citizens of a country without compromising the ability of the future generations to meet their own needs (Brundtland Commission in Amah and Shiaki,

2007). It means that sustainable development is not static but a dynamic process in which investment (mobile services' providers) to the citizenry, resources (human and materials), and institutional arrangement must match present situations to achieve MDGs as well as future needs of the country's citizens. Sustainability could be viewed as a vital attribute of the environment because of its practical and theoretical ramifications (Baumol and Oates, 1988). As Anyor and Shiaki (2007) put it, mathematics education has practical values to all the citizens of a sustainable democratic developed/ developing country as time to vote, count votes, divide for respective contestants and reaching a decision as to who won the election, and ravaging the communication industries for effective mobile services' provisions, are mathematical decisions that promote peace and equity improving lives. So, mathematicians should be given their place to re-structure Nigerian's democratic system to enhance significant sustainability development in the communication industries of mobile services' providers to improve lives of the Nigerian citizenry.

**Goal 8: Develop a global partnership for development:** through open trading and financial system that is rule- based, predictable, non-discriminatory trading including commitment to good government, development and poverty reduction both nationally and internationally. Mathematics has the ingredients for effective

articulation of the elements of science that give impetus to the manpower development and sustainability of technologies of any nation to meet global challenges of trading via mobile services' providers. A great deal of mathematics is used in determining the quality of goods and services that will be involved so as to generate a favourable balance of trade for a better economic growth of import and export and international trading among the services' providers. This is the applications of linear, quadratic and higher equations in mathematics. For example, assuming a caller (1) using Mtn(x), want to connect to Glo(y), Zain(z), Mtnlink(w) or stamcom(q), in business, the Mtn provider should be able to determine the duration of the business transaction and charge equal rate. That is,  $1 = x + y$  or  $z$  or  $w$  or  $q$  as the case may be. Using 30 minutes with cost per minute unit of 23 kobo gives N6.90 charged by Mtn; while, y gets N3.10 as commission cost. The person then pay N10 as total charge deducted from his phone. The Foreign Exchange Market (FEM), powerful economic measure adopted to restructure Nigerian economy depends on mathematics (cost and selling using money) for their successful operation. Also, advances made with supercomputers are possible using mathematical theory, which instructs the computer, what is to be done, so allowing it to apply its capacity for speed and accuracy in monies exchange in FEMs and effective trading among mobile services'

providers. For example, how much dollars will be offered for sale in the FEMs in the mobile services' providers industries and how many to be built, privatized and commercialized to ease global economic partnership among them.

### **Conclusion**

This paper had enlightened the imperativeness of mathematics in attaining the MDGs in 2015 in Nigeria communication industries (mobile services' providers). Neglect of mathematicians ideas in achieving these MDGs in Nigeria, will bring total backwardness to the country economy development in the communication industries (mobile services' providers).

### **Recommendations**

The paper posted the following recommendations in order to reposition mathematics education in realizing the MDGs in 2015 as:

1. mathematicians should be appointed into Nigeria federal executive position in order to sell their theoretical ideas using mathematical concepts in the communication industries.
2. mathematics recreational centres, equipped with mathematical materials (ICT soft and hard wares) to test the mind-set of mathematicians intuitions in the communication industries be built by stakeholders of mobile services' providers. This will make them to be more creative in

ideas to achieve the MDGs programmes in the communication industries.

3. the latest mathematical tools and equipment be purchase by government in schools in order to impact the values of mathematics at the grass-roots. This will help Nigerian's students to be modern in coping with the global challenges of science and technology development building mankind to be self-reliant using the mobile services' providers.

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