Gender Analysis of Students’ Enrollment in the Federal Polytechnic, Ado-Ekiti, Ekiti State: Impacts on Women Empowerment and Technopreneurship Education

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Abstract—Technopreneurship which was coined out from the words Technology and Entrepreneurship plays an important role in fostering National Development and central to the propulsion of the National Economy. It has been established that the sustainable development of a nation depends on the full participation and contribution of every member of the society. Therefore, the female enrollment crisis is a significant part of a larger problem in the Nigerian society. The gender and women’s empowerment model is an important instrument in the development of sharing ratio quota for national poverty reduction. This presentation examined female enrollment in the Federal Polytechnic, Ado-Ekiti, Ekiti State, Nigeria over five years (2010-2015). The Federal Polytechnic, Ado-Ekiti, is a 2nd generation Polytechnic in South-West Nigeria. Data on student enrollment by gender and discipline from two different schools made up of four departments each was used for the analysis. The result of the analyzed data revealed the gender disparity that exists in male and female enrollment. The study also revealed that female student enrollment was lopsided in favor of the School of Business Studies (SBS) when compared to School of Engineering (SOE) the seat of technology and innovations. Given the implications of these findings for women empowerment and technopreneurship education, it is recommended that enhanced public education enlightenment be put in place to ensure that parents embrace girl-child education, public awareness on women’s rights and gender empowerment. Also, female students should be encouraged through fee subsidy and separate cut-off marks in the admission process without compromising quality. The Government on its part should promote an increase in girls’ access to secondary, science, and technical education. It should also put in place measures to enhance their performance. The solution was also offered to remedy the constraints in problem areas such as science and mathematics where gender gaps are inhibiting empowerment progress.

Keywords—Technopreneurship, gender, empowerment, entrepreneurship, technology, women

I. INTRODUCTION

Education is a veritable tool to bring about the much-desired economic, scientific, social, political, entrepreneurial, and technological progress of any country. The Nigerian Vision 2020, states that education constitutes the core of human development, and it is the most crucial instrument for empowering young people with knowledge and skill, which in turn provides them access to productive employment in future [1]. Nigeria’s ability to realize its vision of becoming one of the twentieths the largest economies in the world by the year 2020 is largely dependent on its capacity to transform its population into highly skilled and competent citizens capable of competing globally. The education sector is consequently pivotal to the actualization of current national and global government policy objectives [2]. This takes us to that brand of education one sure way that can enhanced global competitiveness is to embraces entrepreneurial education. The education sector is consequently pivotal to the actualization of the current national and global government policy objectives. It is in recognition of this that the Federal Government of Nigeria has adopted education as an instrument par excellence for effecting national growth [3]. Yahaya described women as an indispensable group in the development of any nation. Apart from their numerical strength, they have potentials necessary to evolve a new economic order, to accelerate social and political development and transform the society into a better one [4]. In recognition of the fact that women represent about 50 percent of the world’s total population, did not have a fair share of the available resources and opportunities, the United Nations proclaimed the International Decade for Women in 1975. Subsequently, women have become the focus of International Conferences organized by the United Nations in places like Mexico City, in 1975, Copenhagen in 1980, Nairobi in 1985, and Beijing, China in 1995. These conferences aimed at integrating women into the development process on an equal basis with men, and the deliberations at the conference includes how to promote gender equity in areas of development and education, among other issues [5]. In 2004, 9,571,016 female pupils enrolled in primary schools as against 11,824,494 male pupils. In 2005, there were 12,189,073 males and 9,926,359 females. In 2006, there were 12,575,689 males and 10,441,435 females in Nigerian primary schools. Additionally, in 2007 and 2008, there were 11,683,503 and 11,483,943 males against 9,948,567 and 9,810,575 females in Nigerian primary schools respectively [6]. Table I, shows the...
summary of students’ enrollment for public primary school respectively in Nigeria.

At post-primary level of education, Tables II and III, shows the summary of students’ enrollment of a junior and senior secondary school statistics, 2012-2016 in Nigeria. At the secondary level, gender stereotypes are reinforced by the persistence of practices and attitudes that result in girls and boys taking subjects deemed “appropriate” to either sex, so that, for example, there are more boys in mathematics and science classes and more girls in literature and language classes. For instance, [8] found that girls, upon entering school, perform equal to or better than boys, on nearly every aspect of academic achievement, but by the time they graduate to next levels of education, their achievement declines. These findings coincide with a study conducted by [9] who asserted that differences in boys and girls in class become more intense during older years, when students are directed by adolescents to choose school subjects. At this time of life, studies have shown that boys may develop interest in mathematics and sciences while girls’ interest rest in languages and reading; that boys/men are more interested in enrolling themselves in scientific and technological studies and less interested in studies related to home-care and nurturing. These differences were argued to occur because boys’ high spatial skills or girls’ fear to perform well in a competitive environment or rather shying away to avoid competition with boy. For example, if a lady or a boy believes and assume that career opportunities acceptable for or offered to a lady or a person don’t or do need arithmetic skills, they’re going to be less or additional doubtless to participate and invest in developing their arithmetic skills [9]. It is therefore more likely, according to Sainz and Eccles [10] to find boys developing an interest in the subjects areas such as mathematics, sciences, and engineering courses more than girls; likewise, girls’ interest would be more inclined in healthy sciences, biological and social sciences, languages, and readings than boys in order for them to meet societal expectations. Since mathematics is stereotyped as male domain pursuit, [11] observed that girls’ interest and confidence towards mathematics descend and hence become less successful in mathematics and its related careers such as Science and Technology.

**TABLE III: DISTRIBUTION OF STUDENTS’ ENROLMENT IN SENIOR SECONDARY SCHOOL ENROLMENT IN NIGERIA BY GENDER FOR THE YEAR 2012-2016**

<table>
<thead>
<tr>
<th>Year</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>2696686</td>
<td>2801960</td>
<td>5498646</td>
</tr>
<tr>
<td>2013</td>
<td>2821183</td>
<td>2917136</td>
<td>5738319</td>
</tr>
<tr>
<td>2014</td>
<td>2629526</td>
<td>2471992</td>
<td>5101518</td>
</tr>
<tr>
<td>2015</td>
<td>2471992</td>
<td>2058117</td>
<td>4529109</td>
</tr>
<tr>
<td>2016</td>
<td>2471992</td>
<td>2058117</td>
<td>4529109</td>
</tr>
</tbody>
</table>

Source: Compiled from publication of Nigeria Education Indicators 2016, [7].

At the tertiary level, women remain under-represented in certain academic fields. In most countries with data, women account for less than a one-third of students in scientific subjects, but over two thirds in the humanities, social sciences and health-related fields. In 2001–2002, girls created up solely twenty-three % of scholars in technology courses and twenty-six % of scholars in science courses. The gender inequality in science enrollment truly inflated over these years. The under-representation of women in the university science courses is reflected in the fact that women make up only 17 percent of all science researchers in Nigeria [12]. Also, only 5,990 female corps members as against 18,610 corps members participated in 1994/1995 National Youth Service Corps (NYSC) programme. In 1995/96 NYSC programme; only 15,613 female corps members as against 32,262 males participated. The 1996/97 NYSC programmed had only 17,796 females against 30,426 male [13]. Figure 1. shows the distribution of deployed corps members (NYSC) by state from 2010 to 2014. Nationally, 222,224 corps members were deployed in 2010. It rose in 2011 to 275,704 but dropped in 2012 and 2013 to 249,119 and 218,701 respectively. There was however, a rise in 2014 to 264,364 with male accounting for 128,096 and female 136,268.

Fig. 1. Distribution of Deployed Corps Members (NYSC) by Sex and Year for the Year 2010 to 2014 [14].

On average distribution of corps members by discipline, as shown in Figure 2. Accountancy / Business Studies and humanities recorded the largest throughout the period when compared to Sciences and Engineering disciplines.
These statistics are indicator to women’s status in a given society, which do not only indicate the possible earning capacity of women since level of education is a major determinant of quality of job and quality of life enjoyed by individuals but also give an indication of the potentials locked up in this segment of the society. Therefore, the gender characteristics of enrollment in higher education cannot be treated in isolation from the general status of women in society, and from the general aims of economic and social developments. It was observed that, the lower the primary enrollment ratio, the greater the proportionate inequality between male and female enrollments, such inequality is to the disadvantage of girls in most cases. The expansion path for enrollment growth within states is typically unequal — where enrollments are low, boys are given preference, and women are disadvantaged group regarding educational opportunities available in Nigeria. It is estimated that just 30% of the world’s researchers are women. While a growing number of women are enrolling in university, many opt out at the highest levels required for a research career. But a closer look at the data reveals some surprising exceptions. For example, in Bolivia, women account for 63% researchers, compared to France with a rate of 26% or Ethiopia at 8% [15]. The percentage of female professors out of the total number of professors in Nigerian universities is less than 4 percent [16]. The Federal Polytechnic, Ado-Ekiti is not left out in this scenario; the Academic Board of the Polytechnic which is the highest policy making body on academic matters has less than 16 percent females out of the total number of Academic Board member. Throughout human history, crises are crucial in developing our societies. Pandemics have helped advance health-care systems, wars have fuelled technological innovations, and the global financial crisis helped advance tech companies like Uber and Airbnb. The present corona-virus pandemic will arguably not be an exception; Technopreneurs can be expected to rise to the challenge [17]. New technologies can offer numerous opportunities as the crisis transforms the products or services they can offer. Service businesses in particular are likely to see a lot of innovations in how services are created, packaged, delivered and sold. In this world of accelerating economic globalization, advances in science and technology continue in the blink of an eye, and knowledge is recognized as a core competence in accumulating wealth [18]. Technology is the primary engine of economic process and provides the key to unlocking any country’s potential. “Within this framework, business and industry are the drivers, government is the catalyst, and academia is the fuel.” An integrated strategy, therefore, must link these stakeholders in the business of national development. Technology-based development can occur only with concerted efforts to revitalize education, develop personnel, and create integrated industries. Hence, countries that want to develop must invest significantly in science and technology. This is achieved by developing the talent, human capacity required to compete in a globally competitive world [19]. Today, personalities with Technological and Entrepreneurial skills are driver of global economies and prosperity. The most celebrated of all of them is Bill Gates, an enterpriser, founding father of Microsoft, a house name all over the world. Steve Jobs-well known for his innovations invented the iPod — most carried gadget by the young population. Kwara State Polytechnic mass production of pedal operated hand washing machines [20]. Various literature use the term, “technology-based entrepreneurs”, “technical entrepreneurs”, “high technology entrepreneurs” or even, “high tech new ventures” to describe new business that combine entrepreneurial skills and technology [21], [22], [23], [24], [25]. Technology-based Entrepreneurship is a process and formation of a new business that involves science and technology and these “technopreneurs” use technological innovations and translate such technology into successful products or services. A technopreneur is an entrepreneur who is technology-savvy, creative, innovative, and dynamic, dares to be different and takes the unexplored path, and is very passionate about his work. He takes challenges head-on, and strives to lead his life with greater success. He does not fear to fail and take failure as a learning experience or as a stimulator to look at things differently while striving for the next challenge. Technopreneurs continuously go through an organic process of continual improvement, and always try to redefine the dynamic digital economy. Some top 10 great technopreneurs / entrepreneurs in Nigeria today are men as compiled by [26], these include:

Alhaji Aliko Dangote founder of Dangote Group and Richest black man in the world
Mike Adenuga Globacom, Conoil, Equatorial Trust Bank
Femi Otedola ZENON Oil and Gas
Orji Uzor Kalu Slok Group
Cosmos Maduka Coscharis Group
Jimoh Ibrahim Nicon Insurance, Global Fleet
Jim Ovia Zenith Bank, Visafone
Pascal Dozie MTN Nigeria, Diamond Bank
Oha Oudeko Honeywell Group Nigeria
Alhaji Sayyu Dantata MRS Group

Countries across the world are benefiting from female entrepreneurship. During the 1990s, the number of female-owned businesses in the United States increased 16%, more than 2.5 times the rate of establishment of new businesses generally. In the United Kingdom female-owned businesses made up a quarter of new businesses during the late 1990s, and growth was substantial in France, Germany, and Italy as well. More female entrepreneurs increase economic diversity [27]. Women’s technopreneurship / entrepreneurship can be a valuable tool for promoting gender quality and empowering women, helped to achieve the third Millennium Development Goal target. Advances are less important, however, in gender equality within the economy and society. Bigger girl’s participation within the economy through women’s technopreneurship / entrepreneurship will bring additional women into leadership positions in society. Technopreneurship Education is not a product, but a process of synthesis in engineering the future of a person, an organization, a nation and the world. In a digital, knowledge-based society, strategic directions or decision-making processes will be demanding and complex. These require tertiary level and professional development programs, and training producing strategic thinkers who will have the skills to succeed in a dynamically changing global environment. Traditional educational programs, however, lack the methodology to transform today’s students into creative, innovative, visionary global leaders who will understand the importance of technopreneurship.
Women Technopreneurs must be passionate about their science and technology, but findings from studies carried out by notable scholars, revealed that fewer females are interested in science and technology-based disciplines. [28] reported that women enrolled more in humanities, and related courses than in science and technology courses. In a study carried out at the University of Lagos, [29] found out that for science education, female enrollment was 36.8% for the science and 9.3% for engineering. Likewise, [30] reported that female enrollment in the science, and a science-based course was low while it was appreciable in the humanities. [31] found there were disparities in male and female enrollment in science and technology-based courses at the University of Ilorin. He observed a relatively low enrollment of female undergraduates in the faculties that are science and technology-based. In the study, less than 25% of the undergraduates in the faculties between 1991/1992 and 2000/2001 sessions were females. Thus, the males constituted the larger percentage of student enrollment. This may be due to cultural barriers, community role expectation for women, early wedding, teen physiological state, non-secular beliefs, peer influence, socialization experiences of home and in school likewise as overt negative attitude of male science teachers to female science students. The sustainable development of Nigeria depends on the full participation and contribution of every member (men and women) of the society. Access to technopreneurship education for Nigerian women is important not only to ensure equity but because of the appreciable, economic returns which raises women’s innovative ability and creativity as well as the educational and income levels of families. The irony this is often that, the mass education of women is significant driver of overall national development and going by an African adage, If you educate a male you educate an individual, however, if you educate a female you educate a family (nation). It is against this background that this study examined the relationship between women empowerment and technopreneurship education using the Federal Polytechnic, Ado-Ekiti as case study. This Institution is typical of similar types in Southern Nigeria. In the course of the study, the following were highlighted:

III. Analysis of the gender pattern of enrolment according to discipline or type of courses offered.

II. METHODOLOGY
Data on students’ enrolment were collected from the Academic Planning Division of the Federal Polytechnic, Ado-Ekiti, Nigeria, and percentage scores were used to analyze the collected data.

III RESULTS
The results of data analysis on the basis of the research questions are represented in Fig 4- 6.
Girls should be encouraged to take science and technology-based subjects. Government should put in place measures to enhance access to science and technology. Separate cut-off marks for female students of science and technology-based courses in the admission process. Government should promote increase in girls’ access to secondary, science, and technical education.

g) Government should put in place measures to enhance female performance in science and technology-based courses.

h) Girls should be encouraged to take science and mathematics seriously in the Secondary Schools, so that, they will be qualified for admission into professional courses.

VI RECOMMENDATIONS

In view of the implications of the findings from this study for women empowerment and technopreneurship education in the country, the following recommendations are considered necessary:

a) Government at various levels and private organizations should provide incentives for more girls’ attendance in the polytechnic.

b) Enhanced public education enlightenment is needed to ensure that parents embrace girl-child education.

c) Enhanced public awareness on women’s rights and gender empowerment.

d) Female science students should be encouraged through fee subsidy and scholarship awards.

e) Female science students should be encouraged through fee subsidy and scholarship awards.

f) Government should promote increase in girls’ access to secondary, science, and technical education.

g) Government should put in place measures to enhance female performance in science and technology-based courses.

h) Girls should be encouraged to take science and mathematics seriously in the Secondary Schools, so that, they will be qualified for admission into professional courses.

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