

# Digital Genders Divide in Nigeria: Leapfrogging opportunities to bridge the Imbalance

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## ABSTRACT

There is a low participation of females in ICT as compared to males due to their gender and roles. Gender is a social construct defining differentiated roles of males and females. Gender equity is promoting equal opportunity and fair treatment for males and females. Acquisition and application of information technology requires that one creates time and resources. People with more roles to perform outside their daily work tend to be disadvantaged and thus lag behind in information technology. In Africa, gender roles are clearly defined. Females play most of the family chores that eat into their time heavily. This affects their technological advancement. The paper seeks to examine how roles ascribed to genders affect their acquisition and use of information technology. It will also assess whether gender equity as advocated by affirmative action has had an impact in bridging the gap between men and women in information technology. Data were collected and analysed qualitatively through content analysis. The paper concluded that any countermeasures to eradicate the imbalance should be done gradually. One of the suggestions proffered by the paper is that Nigeria and other Sub-Saharan countries should endeavour to keep abreast of new innovations which would aid in the speedy growth of

IT in the region and that both females and males should be targeted by establishing Separate Access and Training Strategies.

Keywords: Gender, Information Technology, Literacy, e – education, Social factors

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## 1.0 INTRODUCTION

As the Information and Communication Technology sector grows tremendously, there seem to be lack of information technology specialists. One of the causes of the lack is as a result of some gender dominance in the field. In other words, there seem to occur under representation of the feminine gender in this profession hence causing an imbalance. Trauth (2004) notes that the biggest question that lingers in minds of many educationists, is how to address this challenge. Aaltio and Huang (2007) point out that a solution to this challenge may be the policy making and strategic Work place human Resource aimed at wooing and maintaining the feminine gender in this profession. Hence the study of the Gender Imbalance remains a necessary tool to be handled in many institutions owing to the fact that little literature concerning this inequality exists.

The present study aims at discussing the ways in which this gap can be overcome. The paper tries to seek an in-depth look into the ways in which the feminine gender takes part in the Information technology field. This is achieved through an analysis of the factors contributing to the less involvement of feminine gender in the field of Information technology. The paper looks at this in the broad aspect at both the developed and developing countries.

On the other hand, the ways in which these problems can be alleviated are also explored. Institutional, Individuals, Sociological traits have greatly influenced the manner in which these factors contribute towards the existing inequality (Rensanen, 2006). Adya et al (2006) classify these indicators into *Social Factors* (Family, Peers, and Media), *Structural Factors* (Computer Use, Teachers/Counsellor Influence, Same Sex Versus

Coeducational Schools), and *Individual Differences* among others. According to Aaltio and Huang (2007) Career is defined as Sequence of Employment-Related posts, duties, Activities and Ones' Experiences. The paper concludes by noting that the Key Female influence to the Information Technology profession is the Parent, especially the father. Little or almost no teacher/ counsellor involvement towards selecting of profession by females is realized. Some of the solutions to implement to drastically reduce female being intimidated and biased towards information technology as a profession include Early Access to Computers and Identical Sex-Education. The paper insufficiently addresses the following career Choice patterns, Technology Availability, Girls and Women Independence increase, Offshore or Nearshore Information technology, Jobs Outsourcing. Finally recommendations on how the population of the feminine gender can be increased in the information technology field are presented. As such the paper will try to answer the following questions (Haines and Leonard, 2007):

- Does Social influence including Gender, Stereotypes, Role Models, Peers, Family, and Media have any impacts on Career Choice of Information Technology to Children?
- Do Structural factors including Teachers /Counselors, School and Personal Technology Resources and Identical - Sex Education have any impacts on career choice of Information Technology to Children?
- What is the manifestation of Social and Structural Factors as per varied Ethnic Cultures?
- What are the impacts of Individual Differences to ones choice of Information Technology profession with reference to the problems in developed/ underdeveloped countries are undergoing?
- What are the influences of Social, Structural and Individual differences towards one Choice of Information Technology Profession?

## **2.0 Determinants of career choice**

The determinants (factors) of female choice towards given information technology career are classified as follows:

### **2.1 Socialization**

Owing to the fact that the masculine gender has been associated to the over dominance in the science, engineering and technology related disciplines, and then computers are seen as a possession to the males. Due to this association, Boyer (2006) asserts that Socialization acts adversely (negatively) to the feminine gender in terms of their interactions. Males seem to acquire the stereotype of computers at young ages. Since Parents and Instructors appear to concentrate more on the masculine gender, they tend to be the frequent computer users in the family setup than females. As they grow old, Maguire (2001) observes that the effect of Socialization appear acutely pronounced than before. Ladner (2003) notes that the males have a positive attitude towards information technology as opposed to females.

### **2.1.1 Computer Software role**

Computer Games is an example of a Computer Software where Stereotype in gender is depicted. Generally the society tend to have female Stereotype in the assertion that they can only manage light duties hence this follows according to the Computer Game, where if it happens that she might be the centre of interest, then most males will be interested in observing her performance. Leahy and Yermish (2003) point out that if the female performs better than the male then Violence and Unfair Competition increases. This definitely affects the morale of the females consequently reducing the number. Hence, this software is assumed to favor the males but not the females. This makes them feel discriminated and shy away from pursuing information technology related fields.

As such McCorduck and Ramsey (2005) observe that this biasness in gender consequently affects the like of the children in participating in those egames - a situation that results in many males playing in plenty as compared to females. Such sceneries are more pronounced in the Primary coupled with Middle School Level. Some of the questions lingering in the minds of researchers is that when females observe the males play these egames and treat them as skill earners and solutions to the Problems, are there changes of their Observations being influenced?(Al-Gahtani et al, 2007). Possibly through guessing the immediate solution could be yes.

### **2.1.2 Significance of role models**

According to Michie and Nelson (2006), the masculine gender frequently utilizes computers at family level. Research has shown most males teach Computers Science units both at Secondary and Tertiary Colleges as opposed to females. Obviously, it follows that there is a deficiency of female science oriented subjects. As such designers, Educators, analysts are not aware of the menace behind Female Stereotype perpetuation. The tendency of women shying away from the use of computers is enhanced by such factors as educator Practices, Values and Beliefs (Hanafi and Wong, 2007).

## **2.2 Computer access**

There has been a significant difference between the use of Computers by males and females. This variation is more pronounced at the youthful stage.

Liu and Wilson (2001) observe that the same equality in terms of gender noticed in Universities, Tertiary, Colleges, and Secondary Schools is also observed in the pre unit institutions. At the same stages of the children development, it is noted that as the child grows, the time spent on the computers decrease for women while for men it increases. Statistics show that at Secondary Schools and Universities , more males posses personal computers as opposed to females who rarely have interests in owning them ( Michie and Nelson, 2006) . Infact, these researchers further notes that compared to males and females, the males have a home – computer Access and use Computers (at home) more frequently as opposed to females. In addition, irrespective of the fact that everyone has access to computers at school, males appear to have some dominance to the computers available. Thus the females face under-representation in most Programming units. This is observed not only in the developing nations but also in the developed nations (Liu and Wilson, 2001).

Females may not have the chance to explore this kind of profession due to the Policy of the school and the Practice of the Classrooms. This occurs in circumstances where Computer Science as a unit is classified together with Mathematics in the same departments. This definitely makes the feminine gender categorize this unit the same she had categorized Mathematics. Irrespective of the fact that there appears to be a balance of mathematics by both the males and females, males fill more in computer science than females (Aaltio and Huang, 2007). The access to Information Technology by females is

not only the accessibility to a PC that is networked and availed for them to make use of. Harkin and Taggart (2001) observe that there are other various factors contributing to access level of a female to any new technology , namely Education , Financial Resources , Language, Cost, Location, Time , Culture and Skills.

### **2.2.1 Level of literacy and education**

In order for the feminine gender to be able to Read and do message composition, carryout navigability over the internet, Literacy and level of numeracy is essential (Harkin and Taggart, 2001). Females are not in a position to fit for the emerging global IT jobs owing to the fact that they constitute Two thirds of the Illiterate cream. This gives the masculine gender upper hand to dominate the information technology market. Some of the problems facing females as they attempt to pursue their studies are unlimited time to go School, Household and Familial chores, Inability to manage finance to meet their studies, Low Priority as a result of Socio-cultural Norms. However there has been a drastic reduction in the Gender Gap in the

Primary Institutions but the number remains high for the feminine gender (UNDP, 2004). Statistically, the figures still remain on upper side to the Developing nations as opposed to the industrialized nations. In Europe (Eastern and Central), the figures of female who are illiterate is very small compared to other states. The only challenge in this case is the access to Tertiary/ Higher Education or Information Technology Training. On the other hand in other continents such as (Asia, Africa, Middle East, Latin America) illiteracy level is very high for the females which denies them the right to Access Information (Amuei and Rekabdarkolaei, 2008).

### **2.2.2 Language**

The fact that most websites have Information put on it by the use of English as the national language, its disadvantages nations which do not have English as a national (taught language) and more especially the females who are the majority of the population according to Harkin and Taggart (2001),

Language is one of the obstacles hindering females from the use of internet thereby denying them the chance to advance technologically. This is not only a problem to the feminine gender but also to all the internet users who are not satisfied since they cannot

make use of their Native Language to access any information. It has been noted that over the years different continents have been able to make web pages in their own Languages so as to suit the needs of their continents/ citizens. It is expected by 2020 more continents/ nations to have adopted this trend if at all language barrier have to be addressed. At the moment the fact that most information in the internet is posted in English means that information interchange between developed and developing nations is a nightmare.

### **2.2.3 Time**

The fact most of the family chores and responsibility of taking care of the children lies on the hands on the female, they rarely get the free time which they can spend in the internet either at Home, Workplace or even Public Internet Centres. This according to Hashim (2008) is an immense obstacle towards females' Access to the net. Lack of time is a barrier to women in accessing, downloading, emailing, making a webpage studying and information securitizations. For females who are working, it may not be easy for them to get time and navigate over the internet. After work they will need to be at home executing family chores.

### **2.2.4 Cost**

In the third world nations, Okpara (2004) asserts that the availability of PCs and internet only exists to the Elite. In the developing continents, the cost of materials and labor to connect internet is high such that most that connect cannot meet them. In some nations in the developing continents, the cost of internet connection and the PCs is too high such that they cannot afford e.g. Ethiopia. This makes women in these countries not in a position to have their own (private internet) connection instead rely on the Public access which is only available in the work places. However, most women find jobs in the informal sector making it difficult for them to access IT related jobs thereby advantaging the males.

### **2.2.5 Geographical location**

The location of a Public Internet Center geographically determines the Information Access by females from the societal point of view, Trauth (2002) notes that the ability of the feminine gender is limited to some extent as opposed to the masculine gender who

have ease in moving from one phase to another. Moreover, some communities are so conservatives to an extent they supervise the females or monitor their movements.

There is a limited visitation of the females if the PICs (Public Internet Centers) are situated in areas far away from their areas of residence or if the PICs are situated in regions that endanger the security of the females. If security matters arise, females may not frequently visit those PICs and this eventually disadvantages them. Tele-centers should be located in accessible institutions including Libraries and schools owing to the fact that they are reliable, Comfortable and secure. Haines and Leonard (2007) reiterate that the greatest percentage of female resides in the Rural Areas and this further hinder the Internet Access Gap (Rural/ Urban Divide). In the rural (marginalized areas), most females (60%) miss the Resources and the Information Technology Infrastructure. Internet connectivity can only be found in big cities and possibly Secondary Cities in 3rd-world states. However, ample population of these nations stays far away from these towns. Adya and Kaiser (2006) further add that the females taking care of the siblings and moreover are aged, may not shift to the Cities and Towns hence this biasness in the Urban Connectivity denies the feministic gender the right to technological acquaintance access.

#### **2.2.6 Social and Cultural norms**

Socio-cultural Norms determines women interest and behaviors thereby affecting their capability in accessing Information Technology. Resanen (2006) points out that it looks awkward for females to use PICs which are dominated by males or ask assistance from masculine gender personnel.

The Interaction ensuing amidst females and males out of the family set up are greatly influenced by their cultural Norms. On the other hand, the condition that a man appears aggressive as compared to a woman exists (Okpara, 2004). Such a scenario may result to the over dominance of the male over the females irrespective of the same originality. As a consequence they may not share a computer makes the woman seem discriminated.

Continents such as Asia are forced to have “Only female” day’s yield “only-female” Access Days which consequently results in criticism due to inequality in circumstances where the resources are not enough.



### **2.2.7 Skills**

Irrespective of the efforts to provide all the necessary facilities to Information Technology access, females will still lack some computer technicalities however little they may be. Joshi and

Kuhn (2007) asserts that availability of some facilities such as Fax machines in cybercafés which are frequently used by female is a liability to some extent since they may not know the need of it and if they know they will in most cases lack the basic skills on how to utilize them.

### **2.3 Computer experience.**

A vital determinant of the attitude females have towards the use of computers is the experience one has in handling computers. Hashim (2008) notes that women have Lower Experience Levels compared to men due to the dominance men have over the available resources. During their free time, men tend to dominate computers thus depriving the females their right to Information Technology access. This is also rampant in the workplace as Trauth (2002) notes. This has even extended to schools where students go to the extent of identifying the computers by their names. It is observed that this tendency is more prevalent in male students than in female students. Due to these experience male possess, they tend to intimidate the females by virtue of being more experienced than their counterparts (Adya and Kaiser, 2006). There is a need for students in the Primary and Middle School to have Experience so as to achieve Gender equity in Attitudes and use of Computers.

### **2.4 Anxiety and attitude.**

The attitude of students towards PCs is greatly influenced by Socialization, Lack of Access coupled with Computer Experience (UNDP, 2004).

Masculinity is attributed to use of computer and skills. According to McCorduck and Ramsey (2005) the differences in gender commences at childhood stage (3 years). Pronounced differences are realized in Secondary and University as opposed to Primary level.

### **2.5 Perceived ability**

The Self-Perceived ability to excel in Fields related to computer has a direct relationship to Anxiety and Attitude. When rating of females and males takes place in terms of ability to use computer, females may not see the difference in their rating instead would assume to be rated the same as the males. However, in terms of ratings, they are at a low level when compared to males (Ladner, 2003).

## **2.6 Learning approaches and genders**

Michie and Nelson (2006) observe that the masculine gender begins the process of learning through objects that are abstract while females had a great attraction towards Concrete Learning Styles. The females are considered to be underprivileged by the current education system since it called for change from the traditional format to the ideological system.

## **3.0 Solutions to the challenges**

### **3.1 Change of Attitude**

Liu and Wilson (2001) assert that the mentality that men were more fit for some jobs than women should be completely waived and have a Paradigm Change in Traditional thoughts towards females participating in Information Technology. There are no jobs for men and jobs for women. Hanafi and Wong (2007) reiterate that with everybody's abilities, one can attempt any job.

### **3.2 Increasing the Number of Female Role models**

When we have women who are IT professionals, then the rest would like to emulate them. The government of differed states, Al- Gahtani (2007) observed that should strive towards encouraging females to venture the IT sector. This will not only create jobs for them but open chances / room for more female to join the sector. In so doing, gender equality will be attained.

### **3.3 Training/ Increased specialist Access**

For the females to be fully equipped with the relevant skills, Liu and Wilson (2007) note that improved access to IT specialists or even advanced training possibly in Management or Technical challenges will address the challenge of illiteracy. Amuei and Rekabdarkolaei (2008) reiterate that a backward society is poor and illiterate.

### **3.4 Assertion Training**

This is a training aimed at boosting the females confidence. Michie and Nelson (2006) point out that this immense benefit will not only be felt by the feminine gender but also the country at large. This is due to the fact that it will have positive impact on the country's economy.

### **3.5 Pay increase**

So as to recognize the efforts of females in venturing the IT sector, (Leahy and Yermish, 2003) observe that there is a need to reward women who have shown the interest in IT. This will definitely alleviate cases of shortage of finance, responsibilities a woman is entitled to in the family set up and even poverty. This will act as incentive which will definitely attract more females to this sector. It will also reduce the mentality that it is only men who get good jobs and earn better salaries. In the analysis of the solutions that can be imposed so as to address these challenges, identification of the stakeholders to be involved is done.

#### **They include**

- Employs
- Partners
- The government
- Educators
- Family and
- Women in general

In addition the paper highlights basically two Predominant Factors that promote the Problems/barriers towards female development, basically, they are:

1. The fact that the Business Culture is greatly influenced by the Men (opposite sex) who on the hand dominates the Technological Field
2. In the field of Technology, few females do hold senior positions an- indicator to the hostility they face and fear venturing this sector. (Liu and Wilson, 2001).

To address these two main challenges, there should be attitude shift so as to achieve Gender Equality in the IT sector

Moreover, an improvement of the female figures holding senior positions so as to promote female matters sensitive the place of work.

### **3.6 Information Technology Policies**

So as to achieve the goals of a certain country in attaining gender equity in IT, it is important for governments to come up with policies aimed at addressing some of these challenges. For instance, World Bank (2004) proposed the following Flagship for Thailand to achieve its ideals:

#### **3.6.1 e-society**

This covers issues such as Digital Divide, Quality of Life, Culture, Health, and Public Participation.

#### **3.6.2 e-education**

It involves issues such as Life-Long-Learning, Computer, Literacy, Human Resource Development, Virtual Education, among others.

#### **3.6.3 e-government**

This involved Public Service through: e-service Delivery, Employment, Legal Infrastructure.

#### **3.6.4 e-commerce**

It involved special emphasis on electron services which included Not Only Finance, Tourist and Information technology Services, but also Other Industries.

#### **3.6.5 e-industry**

Focused basically on electronic manufacturing, Information Technology related industries inclusive of their Standardizations.

### **4.0 Conclusion**

From the above discussion, it is clear that there are numerous factors/barriers that hinder Gender Equity in the IT sector. Some of the factors are intertwined; i.e. the impacts of one factor directly affect another factor which consequently affects the female imbalance towards IT related careers. On the other hand, these problems can be addressed by application of the countermeasures elucidated. In fact the use of these solutions cannot eradicate this imbalance completely. As many efforts to eradicate the obstacles are

attempted, more barriers emerge. It is therefore concluded that it should be a gradual process. Minimal barriers are expected in the long run. The information of policies by UNDP and World Bank and at the same time identifying key indicators greatly influencing the imbalance is of significance use to this study.

## **5.0 Recommendations**

Owing to the fact that the factors identified as the challenges towards Gender Equity in the IT sector have enormous effects to a greater population of the feminine gender (approximately 60%), then projects aimed at male and female involvement ought to ascertain the following:

- Female involvement in designing and implementing the projects.
- Both female and male should be targeted by these projects (establishment of Separate Access and Training Strategies, when it deems possible).
- Social Division of Labor account is done that presupposes that the majority Household duties are executed by the female.
- Availability of Locally Appropriate coupled with Valuable Content to both the female and male.

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