ICT and the Gender Question: Prospects and Challenges for the Knowledge Economy in the 21st Century

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Abstract - Without any doubt, Information and Communication Technology (ICT) is acknowledged to have greater meaning and impact among different segments of the societies in the world today. Its capacity to make information more readily available to users in a more efficient and effective manner has accounted for the wider popularity of ICT against the traditional tools of mobilizing information. The gender question is an on-going debate for many scholars, there's a wide gap between men and women's access and utilization of ICT. This position paper examines the role of ICT and gender in advancing the knowledge economy in Nigeria. It seeks to determine the level and rate of adoption of ICT's across gender with a view to ascertaining areas of gaps. The paper identifies the prospects of ICT's readily available for gender to harness, the obvious challenges and the way forward for the knowledge economy in the 21st century. The study adopts secondary sources of data and relevant theoretical positions to situate the paper. It concludes that Nigeria can achieve more in ICT, gender development and the knowledge economy.

Key words: Information, Communication, Technology, Gender, Knowledge, Economy, Nigeria

I. Introduction

ICT has been acknowledged as the latest in the series of continuing technological revolutions in the 21st century. This position was buttressed by [1] in their article titled "Utilization of Global System for mobile telecommunication (GSM) services: the Gains and the Pains" pointed out the need for greater concentration on the use of ICT for gender empowerment. Through ICT, women are better equipped to take advantage of opportunities, access services, exercise their rights in addition to holding state and non-state actors accountable. In a similar vein, the United Nations Millennium Declaration (2001) in a bid to stimulate development that is truly sustainable and ensure that the benefits of new technologies are available to all suggests:

Women's full and equal access to ICT-based economic and educational activities to will support their contributions in both business and home-based activities. One question that seemingly beg for answer in the ICT age is the issue of who ultimately benefits more from ICTs. Is it the men or the women?. Can ICT be seen to serve larger goals of equality in terms of gender and women's equal right to access and ICT utilization?. Other questions stated for this paper are:

1. What is the role of ICT and gender in the knowledge economy?
2. What is the level/rate of ICT adoption across gender in Nigeria?
3. What are the militating factors?
4. Are there benefits of ICT for women in the knowledge economy?

The primary goal of this study is to examine the role of ICT and gender in advancing the knowledge economy in Nigeria. Other objectives are:

- determine the level and rate of adoption of ICT's across gender.
- ascertain the militating factors in gender utilization of ICT and access.
- harness the benefits of ICT for women in the knowledge economy.

II. Review of Literature and Theoretical Orientation

Information and Communications Technology (ICT) means the combination of computer and telecommunication systems. It involves the use of electronic technologies for information storage and retrieval. According to [2], ICT includes the knowledge and skills necessary to use technology as a tool. Information and Communication Technology has become the emissary of all innovations taking place in different spheres in modern society [3]. [4]Powell and Snellman [4] have defined knowledge economy as the "production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence. *Knowledge economy* on the other hand, is essentially the situation where there is more reliance on intellectual capacities rather than reliance on physical inputs or natural resources in generating both tangible and intangible values. In this paper gender is defined as a socio-cultural construct. *Gender* often misconstrued as Sex in some literature describes the socially constructed

roles, activities and responsibilities assigned to women and men in a given culture, location or time. According to [5], gender is a social construct. The term denotes socially and culturally determined differences between men and women as opposed to biological differences determined by factors which are chromosomal, anatomical, hormonal and psychological. Gender is a socio-economic variable which assist to analyze the roles, responsibilities, constraints, and opportunities of both men and women [6].

The postmodernist theory of feminism is adopted to situate ICT and gender in the context of the knowledge economy. The main assumption of postmodernist theory is that those of us living in the 21st century no longer live under conditions of modernity but of "post-modernity" [7]. Information Communication Technology of today has gone beyond modernity to postmodernism. The use of internet, emails, telephone, ipad and other ICT equipments that is fast gaining popularity has gradually replaced traditional means of disseminating information and communicating common in the rural areas. Prior to the 21st century, local language was used to mobilize in addition to developing various instruments and codes to communicate such as talking drums, flutes, Gongs, Town crier, and community centres [8]Olubamise, 2005. Postmodernism and Feminism both raise the question of whose knowledge or definitions are to count and to some degree, both engage in practices of decentering and deconstruction. The idea of new technologies in modern times to disseminate information to a large heterogeneous population irrespective of distance, time and location such as telephone, radio, television, internet etc. are by products of post modernism. Whereas, feminism is a philosophical and social movement that seeks to advance the cause of women. Feminism is a worldwide movement to end sexism by empowering women. It is a movement designed to end the oppression of women by using women's perceptions and experiences to devise strategies for overcoming oppression. Liberal feminism for instance support (claims to fundamental human rights and equality of opportunities) in this case ICT assess and utilization by gender for the advancement of the knowledge economy.

III. Overview of Gender and ICT in Nigeria

According to the [9], the paucity of sex disaggregated information that is currently the norm in developing countries, reflect the more general dearth of statistical information on women's activities across all sectors including access to education, health, personal security and leisure time. [10] notes that in spite of the gender component to the digital divide in several developed and many developing nations, poor documentation and paucity of data makes it difficult if not impossible to make the case to policy makers for the inclusion of gender issues in ICT policies, plans and strategies. Put differently, it was acknowledged that "comprehensive ICT data with a gender dimension across a large number of countries do not currently exist [11]. The observed gap in availability of gender statistics is a problem as captioned thus "without data, there is no visibility; without visibility, there is no priority" [9], [12]. In almost all cases, women have many disadvantages that result in their having less access to technology and therefore less use of it [11].

In the developed countries there are only two percent fewer women using the internet, in the developing world however, 16 percent fewer women than men use the internet. Out of the worlds' 2.8billion internet users, only 13 billion are women. Nigeria is 2.3 percent of the worlds' population, the largest internet population in Africa and the 11th in the world. Her telecoms industry is the largest in Africa with 32.5 million having direct access to the internet via telecoms networks. Facebook in Nigeria by gender distribution (Male 69%, Female, 31%) [13].

Evidence from the literature shows that access to new ICTs is still a faraway reality for vast majority of the people especially the women folk. It is against this premise that the World Summit on the Information Society (WSIS) held at Geneva in December 2003 mainly to address the challenges and possibilities resulting from ICTs. Some challenges of women to ICT usage include but not limited to the following:

- **Absence of basic Infrastructure** – Poor and sometimes absence of power generation required for effective ICT access is one major challenge faced by a vast majority of the population including women.
- **Language Barrier** – The dominance of English language in internet content and access remain one major challenge especially for the rural population who are likely to be women, illiterate with no knowledge of English Language much less training in computer skills.
- **High cost of ICT deployment –** in spite of the increasing popularity of ICT equipments and access to usage in contemporary societies, High cost of ICT deployment, constant power generation and the huge resources required in procuring equipments, bandwidth and other logistics for smooth accessibility often make assess to ICT limited for a greater portion of the population.
- **Unfamiliarity with ICT –** the basic skills and expertise required to access ICT are in most instances not readily available. [14] describes ICT as a range of technologies that allow the gathering, exchange, retrieval, processing, analysis and transmission of information. Put differently, ICT is any tool that facilitates communication, processes and transmits information and shares knowledge through electronic means. Non-familiarity with the various range of technologies in ICT poses challenge to women especially those in the rural area who neither acquaint with the technology or are seeing same for the very first time. [10] suggests the need for ICT literacy skills as central to including and encouraging women to fully participate and benefit from and contribute to the information society.

IV. Case Studies

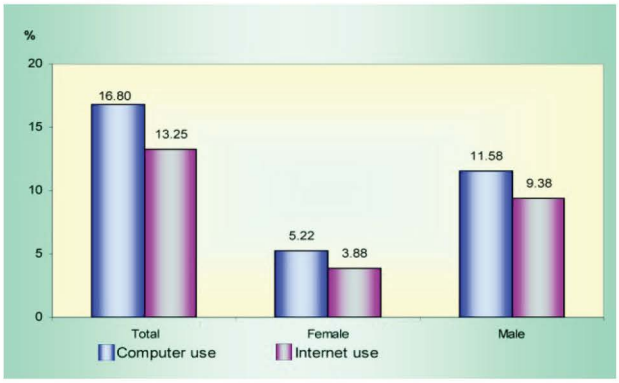

Fig. 1. Proportion of computer and internet use by gender in Turkey .Source: [15] From digital divide to digital opportunity: Measuring Infostates for Development. Montreal, Canada. Orbicom

The data from figure 1 clearly shows that females in Turkey use the internet less often. [10] in their study found that in Guinea, less than 10% of the internet users are women while in Djibouti, Greece and Nepal (less than 20%), India and Portugal women account for less than 25% users. In another study of 192 countries in 2005, education was found to be a major factor affecting ICT use by gender. Others include age and location (rural or urban). Importantly, the proportion of female internet users declined steeply with age according to [11]

V. The Knowledge Economy

The reality facing the world today is that the leading edge of the economy is being driven by technologies (made possible by the proliferation of personal computers and the widespread use of the internet and emails) based on the production and dissemination of knowledge [4], [16], [17]. Thus, investment priority is being focused on information and communication technologies (ICTs), even as knowledge-based jobs require highly skilled personnel. Hence, with the sophisticated technologies that guarantee longer-term gains in productivity and employment, employers pay more for knowledge than for manual work [18].

[4] argued that the knowledge economy encompasses a wide range of activities and interpretations that can find expression in the emphasis or focus on the rise of new science-based industries and their roles in social and economic changes. This approach to the interpretation of knowledge economy viewed theoretical knowledge as a major source of innovation.

Scholars have outlined fundamental differences between knowledge economy and traditional economy that was based on physical inputs and natural resources of societies. These differences include:

- Unlike the traditional economy that operates in the reality of scarcity and depletion due to their usage, the knowledge economy exist in abundance, shareable and does not deplete but rather increases upon application.
- Economic activities across borders have been made possible with the use of appropriate technology and methods.
- National laws, taxes and other barriers that hitherto slowed down economic activities have been circumvented by the advent of the knowledge economy
- Knowledge enhanced products or services are able to command price premiums over comparable products with low embedded knowledge or knowledge intensity.
- Unlike the traditional economy where communication is of less importance, in the knowledge economy, communication is ever more fundamental to knowledge flows. Thus, social structures and cultural contexts as well as other factors that influence social relations are of essential significance to the knowledge economy.

VI. Key Features of the Knowledge Economy

As stated in [20] reports and analyses, the key features of the knowledge economy include the following:

- A paradigm shift ("soft discontinuity") from the past, not in terms of a "new" economy on the basis of a new set of economic laws but on brain-power rather than physical strength or emphasis on natural resources.
- Knowledge economy exists in all sectors of the economy.
- The knowledge economy has a high and growing intensity of Information and Communications Technology usage by well-educated knowledge workers.

Among the benefits of the knowledge economy is innovation that will translate into cost reduction for goods in widespread use and the development of entirely new goods and services.

VII. Benefits of the Knowledge Economy

The role of knowledge and information technology in driving productivity and economic growth has been emphasized by researchers and commentators [21].

Specifically, the knowledge economy will benefit the Nigerian society in terms of:

- **Employment:** the increasing demand for highly-skilled workers in Nigeria cannot be overemphasized. Hence, for women to be able to avoid the trap of gender bias under the guise of "not qualified", it is important they are educated and adequately trained to ensure that they have the necessary skills required to cope with and succeed in the ever changing information technology age where unskilled labour are increasingly less valuable and skilled labour highly sought after. Government should ensure that priority is given to the education and training of women so as to make them fit for employment in the knowledge-based economy.

- **Science and Technology Education**: because knowledge-based economy can only thrive in a robust public research laboratories and institutes of higher education situation [22], the greatest challenge is how the system of science and education can reconcile its traditional roles of creating new knowledge through basic research and educating new generations of scientists and engineers, including women, with its newer role of collaborating with industry in the transfer of knowledge and technology. [8] opines "what exist now can be seen as an improvement of African ICT and should be embraced by all Africans for our development". one of the areas ICT can be used to foster development is in the knowledge economy.

- **Non-availability of knowledge-related indicators**: Nigerian women are generally not well informed about the happenings in the knowledge-based economy due to the constraining factors of absence of current and constantly updated knowledge-based economy indicators that measures the trends of economic progress, employment and productivity.

VIII. Conclusion and Recommendations

ICT is a vital tool for gender empowerment. In the knowledge economy for instance, women need the required exposure to the complex and often technical tools of ICT to access information and data needed for quality research output. The need for gender specific indicators on ICT use and needs can be harnessed, further developed with measureable performance indicators identified to assess the impact of funded ICT projects on the lives of women and girls [23]. As supported by [24], the world population is estimated as 7.2billion of which 2.9 billion are internet users and as at 2012, many persons have connected to the internet. Nigeria is ranked 8th position with estimated 55.9million internet users representing 12.9%. Of all the statistics presented, the actual number of female users is below 50%. However, varying statistics are reported in the literature. To further compliment the important role of ICT, [25], the Vice Chancellor of Covenant University in a recent keynote address at Harvard Medical School examined the role of ICT in early Cancer detection and education of patients on preventive measures. With more rigorous research and collaborations, the gender gap in ICT and the knowledge economy will be cheaply addressed. Finally, is the need for explicit consideration of gender issues and ICT policies in the country in addition to proactive measures by government and corporate bodies in terms of policy initiatives and funding research on ICT.

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