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Global Information Technology Infrastructure in Addressing the Borderless Problem of Overpopulation

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Abstract

The world has been beset with fears of future global overpopulation overwhelming the earth's ecological system and producing shortages of energy, resources, water and food. The sustainability has been a major long-term concern, climate change is thought to be causing a warming of the planet, an increased incidence of extreme weather events, a reduction in agricultural yields, melting the ice caps, and rising sea levels which will eventually cause flooding of low lying islands and coastal districts. As a result, there is dire need for population checks in the world. The causes of overpopulation are attributed to cultural beliefs, lack of sex and population education, religious beliefs etc. The effects of overpopulation include mass poverty, increased death rate, unemployment, etc. It becomes eminent that some measures should be put in place to address this global issue. Some past measures included equipping and funding public and special libraries to disseminate population control information. However, this has not impacted positively in addressing this menace. As a result, the paper purpose to use the global information technology infrastructure in collecting and disseminating information on population control to the masses. This shall be achieved by examining the causes and severity of overpopulation and efforts of addressing them globally, assessing the global information technology infrastructure readiness, stating the ways in which ICTs can be used to control population globally, and making policy recommendations based on the findings of this study. This will be accomplished by content analysis design with continents as the target population. Stratified sampling technique will be used to select the region in each continent. Descriptive analysis will be employed. This paper will help world demographers and population experts advocate population control. Recommendations to all countries to fund and equip telecentres, knowledgebase systems, and Geographical Information Systems are made to address this problem.

Keywords: *Global Information Technology Infrastructure, Overpopulation, GIS, Telecentres, Knowledgebase Systems.*



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1. Introduction

Population is a group composed of all members of the same species that live in a specific geographical area at a particular point in time. The term specifically refers to the relationship of human population to the planet. Overpopulation is not the number of people alone, but rather the number of people in comparison to the resources they need to survive. In other words, a ratio of population number against the amount of resource. It could be drawn from the above statement that human population, the focus of this paper, is a group of people that live in specific geographical areas of the world at a particular time. Geographical areas in this context refer to all countries in the world. The rate of population growth differs from one country to the other. From the 1900's to 1950's, many country's population was not an issue because even though the birth rate was high, death rate was also high which balanced the population. But since after the civil war, most of the country's medical care has improved and women and child mortality has drastically declined. There is now a condition of high birth rate and declining death rate which has contributed to what is known as population explosion. This is as a result of the fact that they have not changed their cultural life style (in marrying more than one wife) nor reduced the number of children they were having.

Information technology (IT) infrastructure is defined as the shared technology resource that provide the platform for the global applications. This includes investment in hardware, software, and services that are shared across the entire globe. The IT infrastructure provides the foundation for serving and managing processes.

2. Literature Review

The origins of population as a concern for the general public begin with Thomas Malthus (1766-1834), the father of modern demography (Malthus, 1998). His most famous essay on the principles of population, originally published in 1798, was the source of enormous controversy at the time. Malthus argued that human populations increase at a geometric rate, where resources to sustain that population only increase arithmetically, leading him to believe that life will eventually be destroyed. Envisioning that war, famine, and disease were the only means of population control, but Malthus later acknowledged that human behavior could yield a population reduction through abstinence and delay of marriage. Malthus' essay had a significant effect on both Herbert Spencer and Charles Darwin, inspiring Spencer to conceive his social theory about the survival of the fittest, which later became a central idea for Darwin's theory of evolution. National population censuses were also conducted after this idea was introduced to the world, which later helped compile statistics for any necessary governmental intervention.

Looking at today's populations of India and China and their overwhelming country numbers, introductions of global programs for population control and family planning were employed to manage "excess fertility" (Lock, 2010). It is evident the world population has exploded and the forecast trend worrying as depicted in Figure 1.

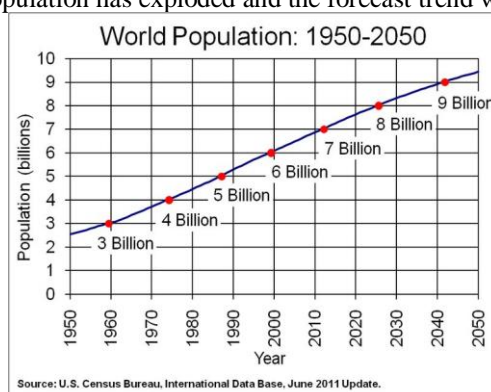


Figure 1: World population and forecast trend.



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Many nations are witnessing population explosion at an alarming rate, and if nothing is done to address the situation, the nation will be heading for chaos.

Overpopulation has an adverse effect on the economy of any nation especially developing countries, and on the social, economic and psychological life of its citizens. (Adewole, 2012) is of the view that population growth affects economic development in two ways: by promoting economic development, and this occurs in developed economies like USA, Great Britain, Germany etc., and by retarding economic development and this occurs in developing countries like Kenya, Nigeria, Zambia, Zimbabwe, among others. According to the United Nations Publication (2010), population growth is normally influenced by three main factors namely- birth, death and migration. Population is important in any society because the growth rate has implications for the village, town, city, state, country, region, and world.

In 2008, supplying firms around the world with IT infrastructure was a \$2.09 trillion industry when telecommunications, networking equipment, and telecommunications services (Internet, telephone, and data transmission) are included. In 2009, with the global economic crisis, global IT spending is expected to decline by about 6 percent to \$1.97 trillion. This is the first decline in global IT spending since 2002, immediately after the “dot-com bubble” burst. However, the 2010 predictions were that global IT spending, increase by between 6 percent and 15 percent (Woodie, 2009; Ortutay, 2009; Ogg, 2008). Investments in infrastructure account for between 25 and 35 percent of information technology expenditures. (Weill et al., 2002).

3. Objectives of the study

The main objective of this study is to describe the use of global information technology (IT) infrastructure in addressing the borderless problem of overpopulation. The specific objectives are:

1. To examine the causes and severity of overpopulation and efforts of addressing them globally
2. To assess the global information technology infrastructure readiness
3. To state the ways in which ICTs can be used to control population globally.
4. To make policy recommendations based on the findings of this study

4. Methodology

This will be accomplished by content analysis design that will involve collecting data from existing resources. This is because it is a low cost technique and time friendly as compared to field research whose main cost is involved is enormous. It is very effective, cheap, and quick and most of the basic information will be fetched and be used as benchmark in the research process.

The seven continents (Asia, Africa, North America, South America, Antarctica, Europe, and Australia) will be our target population. Stratified sampling technique will be used to select the region in each continent. Descriptive analysis will be employed.

5. Causes of overpopulation

It has already been stated in this work that due to improved medical care the birth rate has far outweighed death rate, thereby causing population explosion. But this is not the only cause of increase in population, other factors include: culture, religion, lack of education, old age social security, poverty, high unemployment rate, environmental degradation, famine and genocide.

5.1 Culture

In many cultures a man is rated and respected based on the number of children he has notwithstanding if he has the resources to take care of them. Also in rural communities, children are regarded as source of labour in the home and farm. So, the more children a man has the more helpers he has to take care of his domestic and farm work. In most societies in the world, male offspring's are more highly valued than females for a variety of reasons which leads to the common practice of continuous child birth in an attempt to have male children.



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5.2 Religion

Religion has played a prominent role in the increase of population. In the Islamic Nations Islamic religion promotes large families with the encouragement of early marriage and polygamous family system. The Christian religion in turn prohibits the most effective forms of contraception and most are anti-abortion (Oramah, 2006).

5.3 Lack of education

The lack of education especially as related to population education, sex education, the lowering of infant mortality and birth rates has contributed so much to population problems in the world. Women who married early have children all their productive years because they do not know what measures they could take to stop bearing children. Likewise, young ladies who engage in illicit sex also get pregnant and have children who contribute to the over flow. All these are possible because they have not received any instruction on sex education and the adverse effect of over population.

5.4 Poverty

On a wide dimension, there is poverty when a household or an individual is unable to meet what is considered as a minimum or basic requirement to sustain livelihood in a given society. Poverty is painful since the poor suffer physical, emotional and moral pains (Deepa, 2000), live without fundamental freedoms of action and choice. (Sen, 1999). They often lack adequate food and shelter, education and health deprivations that keep them from leading the kind of life that everyone values. They also face extreme vulnerability to ill health, economic dislocation, and natural disasters. And they are often exposed to ill treatment by institutions of the state and society and are powerless to influence key decisions affecting their lives. These are all dimensions of poverty (World Bank, 2001). A hungry man has a high likelihood to be idle and therefore a higher probability of giving birth to more children as his or her only business. A person who is alleviated from poverty must be empowered/helped to permanently overcome poverty by helping him or her to: secure a sustainable job, acquire skills that would provide regular source of income and actively contribute towards the national productivity level.

6. Effect of over population

Rapid population growth has economic, social and political effects and it also interacts with public education, health and welfare, and the quality of environment in which people live (Adewole, 2012). According to (Ehrlich, 1968) over population has been blamed for a variety of issues including poverty, high unemployment rate, environmental degradation, famine and genocide. Due to population explosion the resources of a country cannot satisfy the populace anymore. That is why many people struggle for very few available resources. The overflow is experienced in many other sectors, be it employment, medical care, fuel provision and even land tenure. In a country like Nigeria where according to (Adewole, 2012) and (Awe, 2009) population is playing an adverse role in all spheres of life, it has contributed in deteriorating the quality of lives of the masses thereby resulting into severe poverty, loss of value for life, various diseases, high rate of crime and slow development. These problems led Zuberger to post that, "A large population is a liability for most countries, especially one dependent on one source of income that offers limited employment. You have to control poverty, unemployment, mega corruption in all spheres of government, very serious security problems, serious diseases, everyone hates everyone else be it political, and religious or ethnic... it sure would not be a world one would want to bring a child into". In this direction, (Onyekwere, 2012) revealed that over population brought increasing unemployment, social and political unrest, increased pressure on agricultural population, high percentage of dependent children, high rate of rural urban migration, low returns on investment and low per capita income.



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The effects of over population are more severely felt by the poor in the society and that is why Malthus advocated for the education of the lower class about the use of moral restraint or voluntary abstinence, which he believed would slow the growth rate. As a result of the adverse effects of overpopulation on the economy of any nation, demographers and population experts advocate population control as the only cure for it. (Ehrlich, 1968) equated overpopulation to cancer. According to him, cancer is an uncontrolled multiplication of cells, while population explosion is an uncontrolled multiplication of people. Treating only the symptoms of cancer may make the victim comfortable at first, but eventually he dies often horribly. A similar fate awaits a world with population explosion, if only the symptoms are treated. He offers some solution to population problem in the way of outright sterilization and compulsory birth regulation through the addition of temporary sterility to water supplies or staple food. These may be extreme measures, but still we need to apply control to our teeming population or things may get out of hand.

Inadequate fresh water, depletion of natural resources, deforestation and loss of ecosystems that sustain global atmospheric oxygen and carbon dioxide balance with about eight million hectares of forest lost each year.

Environmental degradation is caused by population explosion when it exceeds the threshold limits of the support systems. Unless the relationship between the multiplying population and the life support system can be stabilized, development programs, howsoever, innovative are not likely to yield desired results. Population impacts on the environment primarily through the use of natural resources and production of wastes and it's associated with environmental stresses like loss of biodiversity, air and water pollution and increased pressure on arable land. Human population issues are extremely important when it comes to our way of life and our future on this planet.

Poverty is said to be both cause and effect of environmental degradation. The circular link between poverty and environment is an extremely complex phenomenon. Inequality may foster unsustainability because the poor, who rely on natural resources more than the rich, deplete natural resources faster as they have no real prospects of gaining access to other types of resources. Moreover, degraded environment can accelerate the process of impoverishment, again because the poor depend directly on natural assets.

Lack of opportunities for gainful employment in villages and the ecological stresses is leading to an ever-increasing movement of poor families to towns. Mega cities are emerging and urban slums are expanding. Such rapid and unplanned expansion of cities has resulted in degradation of urban environment. It has widened the gap between demand and supply of infrastructural services such as energy, housing, transport, communication, education, water supply and sewerage and recreational amenities, thus depleting the precious environmental resource base of the cities. The result is the growing trend in deterioration of air and water quality, generation of wastes, the proliferation of slums and undesirable land use changes, all of which contribute to urban poverty.

Direct impacts of agricultural development on the environment arise from farming activities which contribute to soil erosion, land salination and loss of nutrients. The spread of green revolution has been accompanied by over exploitation of land and water resources, and use of fertilizers and pesticides have increased many fold. Shifting cultivation has also been an important cause of land degradation. Leaching from extensive use of pesticides and fertilizers is an important source of contamination of water bodies. Intensive agriculture and irrigation contribute to land degradation particularly salination, alkalization and water logging.

7. World Population Control

Population control is the practice of artificially altering the rate of growth of human population. As a result of the problems associated with population explosion, many countries at one time or the other have embarked on population control programmes to improve the standard of living of the masses. Historically, human population control has been implemented by limiting the population's birth rate, usually by government mandate, and has been undertaken as a response to factors including, high or increasing levels of poverty, environmental concerns and overpopulation (Knudsen, 2006). Nations enact population policies for the sake of population control.



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7.1 Mitigation Measures

Population control is an age long phenomenon and it started from ancient times. In ancient Greece, Plato (427-347BCE) and Aristotle (348-322 BCE) discussed the best population size for Greek City states, such as Sparta and Athens, and concluded that cities should be small enough for efficient administration and direct citizen participation in public affairs, but at the same time needed to be large enough to defend themselves against hostile neighbouring city states. Immigration to colonies would be encouraged should the population become too large.

Aristotle advanced that a large increase in population would bring poverty on the citizenry, and poverty is the cause of sedition and evil. To control rapid population increase, Aristotle advocated the use of abortions and the exposure of new born babies. Chinese philosophers led by Confucius were interested in population of the best fit where food supply/resources would balance with number. To them excessive population growth will depress the living standards of the people (Onokerhoraye, 1984).

The means of controlling and regulating populations can be traced back to many cultures.

Infanticide or the killing of infants and young children has occurred since early times. In early civilizations like Rome and Greece, the father was given complete power to kill, abandon or even sell his child. In Hawaii, China and Japan, many female and disabled children were killed to maintain a strong race without overpopulation. Apart from these submissions, some early writers such as Malthus indicated that natural disasters like scourges, wars, earthquakes and flood can help to check population growth (Onyekwere, 2012; Stuart, 1992). In recent times, many countries of the world example, India, China, Singapore, Iran, and Uzbekistan etc have applied different types of population control measures to prune down their population. Instead of nations to allow wars (Boko Haram, Alshabbab, ISIS), extreme poverty will result into starvation and floods to act as population checks, they should strive to initiate a population control programmes that will benefit the masses. This is because the era when population increase is seen by many as the key to political power and resources should be discarded and proactive approach developed.

Government policy in societies like China, the government has put policies in place that regulate the number of children allowed to a couple. Other societies have already begun to implement social marketing strategies in order to educate the public on overpopulation effects. "The intervention can be widespread and done at a low cost. A variety of print materials (flyers, brochures, fact sheets, stickers) needs to be produced and distributed throughout the communities such as at local places of worships, sporting events, local food markets, schools and at car parks (taxi/bus stands). Such prompts work to introduce the problem so that social norms are easier to implement. Certain government policies are making it easier and more socially acceptable to use contraception and abortion methods.

Education and empowerment by educating people about overpopulation, family planning, birth control measures and intrauterine devices. Some 80 million pregnancies – nearly 40% of the total each year – are unplanned. An estimated 350 million women in the poorest countries of the world either did not want their last child, do not want another child or want to space their pregnancies, but they lack access to information, affordable means and services to determine the size and spacing of their families.

8. Global Information Technology Infrastructure Readiness

The readiness sub index, with a total of 12 variables, measures the degree to which a society is prepared to make good use of an affordable ICT infrastructure and digital content.

The infrastructure and digital content pillar (five variables) captures the development of ICT infrastructure (including mobile network coverage, international Internet bandwidth, secure Internet servers, and electricity production) as well as the accessibility of digital content.

The affordability pillar (three variables) assesses the cost of accessing ICTs, either via mobile telephony or fixed broadband Internet, as well as the level of competition in the Internet and telephony sectors that determine this cost.



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The skills pillar (four variables) gauges the ability of a society to make effective use of ICTs thanks to the existence of basic educational skills captured by the quality of the educational system, the level of adult literacy, and the rate of secondary education enrolment.

The information technology readiness landscape of the world as assessed by the Global Information Technology Report (World Economic forum, 2014) and the Networked Readiness the NRI 2014. It presents the results of the top 10 performers and selected countries by region, in the following order: Europe and the Commonwealth of Independent States, Asia and the Pacific, Latin America and the Caribbean, sub-Saharan Africa, and the Middle East and North Africa. According to the report the top 10 spots continue to be dominated by Northern European economies, the Asian Tigers, and some of the most advanced Western economies. Three Nordic economies - Finland, Sweden, and Norway lead the rankings and are positioned among the top 5. Denmark and Iceland, the remaining two Nordic economies, also perform strongly, and despite small slips this year they feature among the top 20. Overall, their performance in terms of ICT readiness, with excellent digital infrastructures and robust innovation systems, allows them to score very highly both in ICT use with almost universal Internet use, for example and in innovation performances.

8.1 Regional results

8.1.1 Europe

Europe has been at the forefront of developing a digital ecosystem as a key ingredient that fosters innovation and competitiveness. As a result, several European countries lead the NRI rankings, with six European economies - Finland, Sweden, the Netherlands, Norway, Switzerland, and the United Kingdom in the top 10. In addition, in order to maximize the positive impacts of ICTs throughout the European Union and create synergies and positive spill over effects, the European Commission has developed its Digital Agenda as one of seven flagship initiatives under its growth strategy Europe 2020. Despite these efforts, important differences remain across European economies, with Southern and Central and Eastern European economies continuing to lag behind. A deeper analysis of the root causes of these differences shows that, in general, ICT infrastructure and individual uptake is more homogeneous across EU Member States. However, less favourable conditions for innovation and entrepreneurship across European countries result in starker disparities in terms of the economic impacts for example, innovation performance accruing from their use, which illustrates the changing nature of the digital divide in Europe and in the rest of the world. The digital divide should not be regarded only in terms of access to ICT infrastructure, but also in terms of the impacts that using ICTs can provide for the economy and society in general.

Within the Commonwealth of Independent States, several countries improve their performances, reflecting the key importance and hopes they have placed on ICTs to diversify their economies and lead them toward more knowledge-intensive activities.

8.1.2 Asia and the Pacific

With three economies from the region in the top 10 of the NRI rankings and several countries showing improvement, Asia and the Pacific is very dynamic and active in developing its ICT agenda. Yet a significant digital divide persists between the most advanced economies such as the Asian Tigers and Japan and emerging economies and other trailing countries.

Regardless of their position on the development ladder, however, all Asian economies have much to gain from increased networked readiness. It will allow populations of the least advanced among them to gain access to much-needed basic services, to improve government transparency and efficiency, and for the most advanced it will contribute to boosting their innovation capacity and allow them to attain higher levels of competitiveness.

8.1.3 Latin America and the Caribbean

Improving the connectivity of Latin America and the Caribbean continues to represent one of the region's main challenges despite the recent efforts of many countries to develop and update their ICT infrastructures.



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Countries such as Chile, Panama, Uruguay, and Colombia have made significant progress in developing and ensuring more and better access to ICT infrastructure, ensuring higher ICT usage across stakeholders. However, persistent weaknesses in the broader innovation system hinder the overall capacity of the region to fully leverage ICTs to foster its competitiveness potential, highlighting the rise of the new digital divide that is, the divide between countries that are achieving positive economic and social impacts related to the use of ICTs and those that are not.

8.1.4 Middle East and North Africa

As in previous years, the Middle East and North Africa depicts a highly diversified outlook in terms of the capacity of countries to leverage ICTs to boost competitiveness and well-being. On the one hand, Israel and several Gulf Cooperation Council states have continued their efforts to improve ICT uptake and integrate ICTs better in more robust innovation ecosystems in order to obtain higher returns. On the other hand, many countries in North Africa continue to lag behind and suffer from important weaknesses in their framework conditions and overall innovation capacity that prevent them from fully leveraging ICTs and obtaining higher returns.

8.1.5 Sub Saharan Africa

Sub-Saharan Africa slowly continues to develop its ICT infrastructure, especially by expanding the share of the population covered by, and having access to, mobile telephony and by expanding the number of Internet users, which in some countries such as South Africa has almost doubled. These improvements have led to many important innovations that provide more and better services that were previously unavailable. Notwithstanding this progress, the region overall continues to suffer from a relatively poor ICT infrastructure, which remains costly to access, although some notable exceptions exist. More importantly, severe weaknesses persist in the region's business and innovation ecosystems, which result in very low positive economic and social impacts. Addressing these weaknesses, not only by developing a more solid ICT infrastructure but also by improving the framework conditions for innovation and entrepreneurship, will be crucial to avoid the emergence of a new digital divide that will be evident in a disparity of the economic and social impacts associated with what has been called the digital revolution.

The unequal access to information technology and communication increase the developmental gap between rich developed countries and poor developing countries. Economic power is vital to the accessibility. Many developing countries have become trapped in technologies that are obsolete. Therefore, it can take any economic sector a very long period of time to evolve and overcome the impact of intense investments in analogue communication system and landlines. Thus the rise of digital divide and its utility lies in ability of the communications sector to survive such unavoidable circumstances (Howard, 2007). The digital divide in developing countries in general and Africa in particular is closely tied to the contextual economic environment of the respective countries. Countries with thriving economies are largely associated with increased access to ICTs compared to those whose economies are doing badly. In addition, (Mutula, 2005) points out that economic development is increasingly being tied to the breadth and depth of digital gaps within and between nations. Countries with low digital gaps are more developed (developed world) than countries with high digital gaps (developing countries). (Mutula, 2002) reiterates that basic factors such as the electricity supply and the state of the economy can dictate the pace of development of a national network infrastructure. Bridging the digital divide in its multifaceted forms between Africa and the Western world may for now be a pipe-dream, given that economic gaps have never been effectively narrowed between developed and developing countries despite protracted interventions by multilateral financial institutions such as the International Monetary Fund (IMF) and the World Bank (Mutula, 2008). The World Bank report (2007) indicates that countries in the Eastern and Southern Africa lack direct terrestrial access to global information and communications infrastructure. They rely on expensive satellite connectivity to link up with the rest of the world resulting in the



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highest telecommunication costs in the world. The report further shows that, international wholesale bandwidth prices in the region are much higher up to 20-40 times than in the USA. In addition, international calls are estimated to be 10- 20 times costly than in other developing countries.

The distribution of computers, secure servers in the global world has not realistically improved over recent times. When weighted by population, distribution for other technology such as mobile phones have improved globally. The utility of technology and development in reality is increasing in developed countries because they have economic capacities to raise the share of their global ICT's (Howard, 2007). The idea of leap frogging seems to be more theoretical rather than practical. In third world countries leap frogging involves leaping through certain phases of technological advancement in order to bridge the digital divide between developed and developing countries. The process thus, explains the rapid use of mobile phones all over the regions of Asia and Africa. The practical application of this process has helped several developing countries advance in ICT's than others (Howard, 2007).

8.2 Strategy to the borderless problem of overpopulation

All countries of the world are going global. Global problems require global solutions and as they go global they are faced by a multitude of underpinning forces overpopulation included. As a result, it is imperative that a global information technology strategy be developed to overcome the complexities associated with the global problem of overpopulation. The strategy considers several levels from global, regional, national, corporate, and individual perspectives. To accomplish this, it is deemed important to look at the global information technology issues for four general categories of countries: developed, newly industrialized, developing, and underdeveloped, which we have already ascertained. The status of the global information technology infrastructure readiness index discussed.

One major solution to the global problem of overpopulation is prudent access to information worldwide. In this information age, access to information is a basic need. The biggest impacts on global needs has been the internet. The Internet is an open system that allows people of the world to interact with each other anytime from anywhere; all you need to have is connectivity. It influences on how people interact with each other have significantly minimized the importance of physical borders (borderless world)

The Internet is built on seven layers of the Open Systems Interconnection (OSI) model, enabling smooth communications across interconnected systems. Differences in hardware and software have not stopped the widespread use of the Internet. International standards have been one major factor contributing to the increased use of the Internet. Many not-for-profit organizations (e.g. the Organization for the Advancement of Structured Information Standards) are promoting universal standards to further increase the degree of our interdependence. These organizations are comprised of international organizations, regional and international coordinating bodies, as well as collaborative partnership of government, companies and nonprofit organizations. The American National Standards Institute (ANSI) develops global Internet infrastructural standards (e.g. data, transmission medium, protocol and topologies). The Organization for the Advancement of Structured Information Standards (OASIS), a nonprofit and international consortium, facilitates the development of interoperable web languages, such as HTML, XML and SGML, to improve communication efficiency. The Internet Corporation for Assigned Names and Numbers (ICANN), a private sector, nonprofit corporation, manages IP addresses, domain names, and root server systems. Many of these standards are evolving to meet the growing needs of diversified applications. A borderless world will be further distributed with a higher degree of standardization.

As a result, one can virtually meet with anyone who has access to the Internet. Those who do not have the basic IT infrastructure are disadvantaged. ICT is the latest in the series of continuing technological revolutions, and is argued to have significant influence on population control. Informed citizens according to World Bank report (2002) are better equipped to take advantage of opportunity, access services, exercise their rights, and hold state and non- state actors accountable.



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There is therefore the need for greater concentration on the use of ICT. For instance, United Nations Millennium Declaration (2005) resolved to ensure that globalization becomes a positive force for all the world's people as effective ways to combat poverty, hunger and disease and to stimulate development that is truly sustainable, and to ensure that the benefits of new technologies, especially information and communications technologies, are available to all. ICTs also provide options for women, including overcoming illiteracy, creating opportunities for entrepreneurship, allowing women to work from home and care for their families, accessing ICTs from rural locations, and enhancing and enriching their quality of life.

8.2.1 Global ICT approaches

All countries of the world are going global. As they do, they are challenged by a multitude of forces. To be successful in this, it is imperative that a global information system strategy be developed to overcome the complexities of global arena.

8.2.1.1 Geographical Information Systems

The potential for using any technology to support governmental decision making is driven by the match between the capabilities of the technology and the needs of its potential users.

The governmental decision makers can explore the pertinent capabilities of GIS in government decision making. To do this, governments must foster and manage the global community development factors supporting infrastructure, quality of life (Harman, 1990; Moriarty, 1980). To perform policy analyses effectively, however, all the countries in world need demographic information about both within their country and at broader scales. These analyses can be performed with the aid of information systems that address the following items:

1. An inventory of demographic data for the past, present, and forecasted data about the population.
2. Indicators used to measure and predict changes in population.
3. A decision support system (DSS) comprising of a method, process, or technology used to monitor population conditions and determine effective responses to changes.

Planning at the national level therefore requires the availability of accurate aggregated data pertinent to a wide range of national and global objectives coupled with tools to support analysis and decision making. Of interest here is the fact that modern GIS can be used as a decision support system and as a platform from which a data inventory and lead indicators can be collected, managed, and analyzed.

GIS is an appropriate administrative technology because, when utilized at both the global, national and local levels, its capabilities for managing attribute and spatial data can be used to better manage important global and national issues in the context of their location. In this way, GIS has great potential for use as a coordination tool that facilitates more efficient data collection, data management, and planning of population control. While GIS cannot address the entire range of strategic decisions faced by the governments, they do provide capabilities that make them suitable for this use without precluding the use of more traditional strategic decision support systems.

In fact, modern commercial GIS products can often be seamlessly integrated into existing information systems both at all levels.

8.2.1.2 Global Knowledgebase Systems (GKS)

At the societal level, information is essential in advancing education, culture, science, and technology, whereas at the individual level, information is instrumental in personal and professional development (Huang, 2006). At the individual, corporate, national, regional, and international level the effective use of ICT infrastructure to access information is of great importance. This can be accomplished by developing a global knowledgebase system to provide key information to be disseminated at all levels to make the world aware of the causes, challenges, and control mechanisms of population explosion in the world.



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8.2.1.3 Multi-purpose Community Telecentres (MCTs)

A telecentre is a public place where people can access computers, the Internet, and other digital technologies that enable them to gather information, create, learn, and communicate with others while they develop essential digital skills. Multi-purpose Community Telecentres (MCTs) owned by the communities and have the potential to address the needs of people in the world in a way that most empowers the communities they serve. MCTs are generally seen as structures that can encourage and support communities to manage their own development through access to appropriate facilities, resources, training and services. Telecentres may be used to provide access to distance education, employment opportunities, training and global awareness. Through the Internet beneficiaries anywhere in the world can access archival material or receive online instruction from central national services. Specialised services and information can be offered to healthcare workers and to obtain specialist advice for complex health problems. "Multi-purpose" means that a telecentre is able to provide a variety of services to different user groups within a community: for example, services relating to education and training; information; health; culture; the economy; welfare; social issues; safety and many more.

A telecentre that is designed to support community development should be stressed by all governments and in accordance with Collen (2000), it should be aggressive and creative in localizing its knowledge and information resources. Locations for telecentres must be carefully selected, and should take into consideration the "level of potential demand for communication and information services from a large number and wide range of users", its proximity to other organizations and institutions, infrastructural considerations and socio-cultural issues (Anderson 1999). The information systems established should be multi-sectoral to help address the problem of overpopulation, its causes and effects.

9. Conclusion

This paper concludes by providing a global platform on the use of information technology infrastructure to address the borderless problem of overpopulation.

First showed how GIS data has the inherent capability of serving as the basis for an integrated decision support system at the highest levels of government in these areas. The natural relationships created by the spatial elements of GIS data provide connectivity and a data organization schema that is not ordinarily available in conventional database management systems. Further, modern hardware and GIS software make this connectivity availability with relatively small investments in software and hardware. In combination, supporting a widespread national infrastructure of GIS data has benefits ranging from the individual, national, and global policy making levels.

Secondly it can also be accomplished by developing a global knowledgebase system to provide key information to be disseminated at all levels to make the world aware of the causes, challenges, and control mechanisms of population explosion in the world.

Governments are urged to invest more in the training of staff to enable them to stay in touch with the modern ways of population control and also how to be effective in the discharge of their responsibilities. Persistent weaknesses in the broader innovation system hinder the overall world capacity to fully leverage ICTs to foster its competitiveness potential, highlighting the rise of the new digital divide that is, the divide between countries that are achieving positive economic and social impacts related to the use of ICTs and those that are not.

Addressing these weaknesses, not only by developing a more solid ICT infrastructure but also by improving the framework conditions for innovation and entrepreneurship, will be crucial to avoid the emergence of a new digital divide that will be evident in a disparity of the economic and social impacts associated with what has been called the digital revolution.



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