

Effects of Globalization on Developing Economies with Emphasis on Human Immunodeficiency and Computer Virus

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Abstract

The aim of this paper is to examine the effects of globalization on developing economies with emphasis on the origin, nature and relationship between Human Immunodeficiency Virus [HIV] and Computer Viruses [CV's]. The paper begins with introduction where the concept of globalization was reviewed with focus on developing economies. The finding of the paper reveals that Human Immunodeficiency and Computer Virus as part of globalization do more harms than good in all aspects of socio-economic and technological development in developing economies. Economically, HIV/AIDS and computer/digital related virus has been described as a billion dollar disease through which billions of dollars are being generated from developing economies to developed countries like America and Japan thereby contributing to the under-development of the developing economies. More especially through the production, monopoly and sell of condoms, retro-viral drugs, computer/digital related anti-virus systems. It is also discovered that the developed countries like America and Japan are scientifically and technologically far developed than developing countries which are backward in that respect. The methodology utilized in this paper is secondary source of data. The paper conclude that knowledge about science and technology within the context of globalization are definitely static and obsolete in developing countries compared to developed capitalist countries that operates with exploitation and imperialism. The developing economies found themselves in a quagmire due to total dependence on developed countries for almost everything.

Keywords: Globalization, Computer, Digital, Virus, Human, Immunodeficiency, Effects, Underdevelopment, Relationship

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INTRODUCTION

Globalization is a multidimensional concept. To Abadan [1] globalization is “the increasing interconnectedness and interdependence amongst the world, regions, nations, governments, business, institutions, communities, families and individuals”. This definition which seems to be a neutralist view does not concretely take side of whether it has advantage or disadvantage among the components parts that form the whole within the context of globalization. To its champions as cited by Fayam [2] “globalization is the fulfillment of dreams of an interconnected world replete with free-flowing peoples, ideas, capital and commodities. Globalization therefore, can be seen as the liberalization and

interconnectivity of the social, economic, political and technological advantage among nations. As further cited in Fayam [2] “in contrast, globalization stands for all ills of (late) capitalism, the global inequalities of the world markets, the uneven distribution of power, the usurpation of government by corporate interest, the unprecedented potential for ecological harm and the resurrection of empire in the guise of the new world order”. In regard to this view, globalization is perceived in the context of the Third World Countries as another form of imperialism or neo-colonialism which do harm than good.

The aim of this paper is to examine the origin, nature and relationship between Human

Immunodeficiency Virus [HIV] and Computer Viruses [CV's] as agents of globalization and their effects on developing economies.

Historical Review of the Evolution and Development of HIV/AIDS and Computer Virus

HIV/AIDS

The historical evolution of HIV/AIDS is controversial. Some sources such as; McSweeney, [3] said that no one knows where HIV/AIDS actually started. Chidozie in Ogundowole [4] and McSweeney [3] both sources quoted the World Health Organization (WHO) report which stated that "it is a virus of undetermined geographic origin". In other sources it is established that the origin can be traced to periods between 1950's and 1960's in which a virus of related nature was used and sent through several mediums including medicine (Weekly Trust and Chidozie in Ogundowole) [4,5]. However, in the 1980's there been various pronouncement and charges from different sources reporting that HIV/AIDS was first identified in the United States of America [3]. And that it was genetically engineered at the United State's Army's Biological warfare laboratory at Fort Detrick which was established in 1946 as a complex for biological warfare and Winstar Institute in Philadelphia (The Patriots and Sunday Express) [6,7].

Scholar E. K. Ogundowole [8] was of the view that, "AIDS is a disease that emerged through unnatural scientific artificial genetic engineering". Chidozie cited in Ogundowole [4] also is of the view that "certain pronouncements made some time ago by American politicians and legislators on CNN (Cable News Network) give credence to the view that AIDS virus is being spread deliberately in Africa through several mediums including medicine". Also, a medical hypothesis report on the linkage between polio virus and the origin of HIV was published in 1994 and shows that renown scientists and researchers from across the world that gathered at the 8th annual Houston conference on AIDS, confirm that monkeys used for the production of polio vaccine are also natural carriers of a virus called SIV (Simian Immune Deficiency Virus) which look and behave like HIV. Some of them even believe that it was

SIV that turned into HIV when it was introduced into human by way of polio vaccine (Weekly Trust) [9]. Similar to this report, also was another report that linked the contaminated polio-virus and the spread of HIV, R.B. striker in Brain Martins Website stated that "...the largest vaccine contamination in medical history occurred from 1954 through early 1963 when millions of people around the World received polio vaccines that had been contaminated with a monkey virus; that the story of AIDS teaches us that animal tissues should not be injected into humans, because the risk of introducing a new virus is likely (Weekly Trust) [5]. Similarly, according to "London Times" of May 11th 1987 under the title "**Small Pox Vaccine Triggers AIDS**" shows the correlation between the small pox vaccines and HIV/AIDS when the World Health Organization administered vaccines to an estimated 15 to 17 million people in different central African countries, the consequence of which was outbreak of AIDS in those countries" (Harun) [10]. Chidozie in Ogundowole [4] supported this fact by quoting Supo Arobiodun who once reported that; "AIDS – Contaminated polio vaccine was sent to Zaire from the United States of America in the form of assistance to facilitate immunization of children against polio". However, the "**Outreach**" the February 1986 edition during the apartheid reign of P.W Botha was quoted to have stated that:-

I wish to announce a number of new strategies that should be put to use to destroy this black bug (Referring to Africans). We should now make use of chemical weapon. I am sending out more researchers to the possible places where chemical weapons could be acquired and then employed to combat any further population increase, food supply should also be used. We have developed excellent slow killing poisons and fertility destroyers. My scientists have come up with a drug that could be smuggled into their brews to effect slow poisoning results and fertility destruction, working through drinks, which could promote the channel of reducing their population [10].

The questions are thus; does the above pronouncement have something in connection to the origin of HIV/AIDS? Does this mean

that HIV/AIDS is an artificial (man-made) infection? According to Harun:-

On July 4th 1984, the New Delhi Newspaper in India "**The Patriots**" published an article, making the first detailed charges of the AIDS (Virus) as being a counter biological warfare agent. An anonymous American anthropologist was quoted claiming that AIDS was genetically engineered at the United States Army's biological warfare laboratory at Fort Detrick. Then in October 30th 1985, the Soviet journal *litera* journal *gazzetta* repeated the charges. Though all these were dismissed as communist attempt to black mail the west. However, as Sunday Express of October 26th 1986 continued, as the first among the western Newspaper to confirmed that "AIDS MADE IN LABORATORY SHOP", as a title. The Paper published the conclusions of Dr. John Seal and Professor Jacob Seagal, a retired Director of the Institute of Biology at Berlin University, claiming that the AIDS virus was man-made [10].

These reports corroborated the revelation of the possibility of developing biological weaponry of the AIDS type as a subject of debate in the United States Congress during President Ronald Reagan's Regime [8]. Similarly, the regime of P. W. Botha in South Africa coincided with that of President Ronald Regan's regime in USA who at the same period reveals the possibility of creating a deadly weapon/virus.

In his book "**Tongues Of Conscience, The Dilemma Of The War Scientists**" R.W Reids a renowned author researched into the quest for a lethal weapon with the establishment of the Fort Detrick Maryland USA stated that:- Fort Detrick as it is now called, is today the center of biological warfare research in the United States... some of the research carried out at Detrick is of conventional micro-biological research nature and is published, but the greater part of the work undertaken by its 600 graduates in the 1300 acre complex has been and remain a closely guarded secret [10].

On the other hand he stated that "the source of the contaminated polio vaccines was traced to Winstar Institute in Philadelphia, United States of America (USA), the same place where the

origin of AIDS was been traced". In addition, Fort Detrick is also considered as another laboratory where the AIDS virus was genetically designed [10]. Among other research carried out there, is the Visna Theory Virus, which according to **International Affairs Magazine 1986** "...the visna theory virus was focus of studies in the late 50's in several centers including Fort Detrick, Maryland, USA. But what is visna? According to the same magazine:-

Visna is a virus, which affects the central nervous system of sheep, robbing their body of immunity with the accompanying symptoms of progressive weakness, shortness of breath, a sagging withers and a dropping head with a resultant paresis and paralysis of the skeletal muscles and then death. ... visna was used in the United States for genetic engineering work which resulted in creating HIV, a deadly virus causing an in curable infectious disease to man known as AIDS. Research into HIV at the molecular level shows that 60 percent of its genome is identical with that of visna and the rest is a built in nucleotide sequence isolated from the genome of another retro-virus, HIV – 1, HIV or the pathogen of AIDS, was designed in United States genetic laboratories on instruction from the pentagon. The purpose of this virus is to augment the United States germ (biological) warfare potentials [10].

It was also revealed that Boyd E. Graves, an AIDS activist, shocked the medical world in 1999 when he made public a discovery confirming the relationship between the quests of the American government, as revealed by Reids and the AIDS Virus.

He (Boyd E. Graves) said, the government of the United States initiated what is tagged "**The Special Virus Programme**" which ran between 1962 and 1978, and on which \$550 million was spent, specifically aimed at producing a virus that would affect solely non-whites. The aftermath of this programme was the production of 15,000 gallons of AIDS in 1977 (<http://www.boydgraves.com>). Supporting this revelation according to the report "Graves presented a flow chart and progress report of the said programme which he insisted had been hidden from the public before now". In Graves's words:-

We are certain we will compel government accountability of the 15,000 gallons of AIDS made in 1977. The AIDS virus has been engineered to have an affinity towards a “**blood deficiency**” in people of colour. The progress reports of the hidden program reveal a plethora of secret experiments on people of colour (<http://www.boydgraves.com>) [10].

According to Harun on the above case:-
Boyd E. Graves on this case indicted Dr. Gallo (The supposed discoverer of the AIDS virus) who represented the U.S government in the programme, and Dr. Novakhatsky represented the USSR. Subsequently, the (Graves) filled a suit against the US government after a notification served the clerk of the United States Supreme Court on April 11, 2001 on behalf of the 30 million innocent victims of the AIDS project.

The US department of justice thereafter named the office of the president of the United States to answer his petition following the submission of the 1971 flow chart document which coordinates thousands of secret experiments detailing the creation and mass production of a new Human Immunodeficiency Virus. Surprisingly, the petition was thrown out on November 7th 2000 without comment, having previously agreed to hear the case.

Unfortunately, with the power of information technologies the western world sold the idea that AIDS originated from African monkey! For instance, a team led by David Ho, Director of the Aaron Diamonds AIDS research center in New York claimed to have finally established evidences linking the origin to the Africans. According to them, the evidence had been fished out from an early HIV-1 genome from a 1959 blood sample, belonging to an indigene of Leopoldville now Kinshasa capital of Democratic Republic of Congo. This they claim establishes the period when the virus moved from monkey or chimpanzee to humans.

The matrix for this conclusion is a dead chimpanzee called Marilyn [10]. However, according to Okelo Oculi, the Executive Director, Africa Vision 525 in his article, **CHOGM And Bio-Terrorism** stated that:-

In the early 1970's, radical voices among American scholars and critics of American governments use of bio-technology, began making accusations about research by the Department of Defense using illegal immigrants from Haiti who were locked up in prisons in Miami in the American State of Florida as guinea pigs for tests with new virus created in their laboratories. The New virus, which come to be notoriously known as HIV/AIDS [11].

Similarly, according to Muammar Ghaddafi, in his **Speeches and Hutba:-**

The American intelligence services talk about biological bombs which are made specifically against the human race. There is a new virus, which they created secretly. They used them first on the Haitian prisoners in the United States and after sometime they released them from prison (and deported them back to Haiti) that is why AIDS appeared first in Haiti They have injected in them the new virus they have made... this was the beginning of AIDS. (But) they Americans say African monkeys cause AIDS. We challenge them to try African monkey and see for themselves. They will never prove that Africa is the source of AIDS. The American intelligence services are still preparing for more serious chemicals for AIDS. They are now preparing to produce a more dangerous small pox. It is only the United States that has this virus after eliminating small pox all over the world [12].

In fact, all these coincided with the previous allegation, that small pox vaccine and Polio-vaccines triggers AIDS! In Africa, more especially West African sub-region, and in Nigeria, stiff resistance was shown on the polio immunization programme in the Northern part of the country, after the World Health Organization (WHO) stated that, “there is a need for the eradication of polio, because its cases are on the increase and that it has recorded 328 persons infected”. The states affected according to the report include Kano State which has 84 cases, Kebbi state has 39 cases, Katsina state has 38 cases, followed by Bauchi state with 33 cases, Kaduna with 21 cases, Jigawa state has 25 cases and Lagos has 11 cases. Three states made entries into the list namely, Kwara, Ogun and Oyo which cumulatively have seven (7) cases. Four of the

infections were recorded in Oyo state, although all the states in South-East and South-South have not recorded any cases of the polio virus (New Nigerian) [13]. This however, generated debate from different scholars, organizations and individuals. The debate reached the extent of making series of test on polio vaccines in different laboratories by independent experts. In Kano state, a committee was set up by the state government led by Dr. Lawan Hassan Bichi, a pharmacologist from Bayero University, Kano testifying the result before the House of Representatives, Dr. Bichi said:-

Test carried out on some randomly selected polio vaccine samples, showed that they contain elements not reflected on their label; and among these elements are those capable of impacting negatively on fertility and causative agents for AIDS” (The Guardian) [14].

Another independent committee was also set up by Jama’atul Nasril Islam (JNI) and sent to India where they spent 28 days to conduct investigation in New Delhi, the result shows that:-

The test in India confirmed that the batches of Oral polio vaccine (OPV) taken from Kaduna and Zamfara states contained undeclared contaminants” which could cause malfunction of the testes in males and cause infertility in women as well as toxic substances (Daily Trust) [15].

It was also revealed that there was a report summary prepared for the Pentagon and written by one Gregory D. Foster of the National Defence University in Washington titled **“Global Demographic Trend to the year 2001: implications for the United States security”** in the 1989 edition of the magazine **Washington Quarterly** has it that “Nigeria with an estimated 103 million people in 1989, is expected to double its size by 2004, triple by 2009, and quadruple by 2035, adding 312 million people to the world’s population in 50 years, (when it) Nigeria is expected to surpass both the United States and the Soviet Union to become the third largest country in the World (Weekly Trust) [16].

However, the **Los Angeles Times** of April 5th 1994 quoted Cornell University Professor

David Pigmentel, speaking before the American Association for the Advancement of Science as saying that, “the total world populations should be no more than 2 billion, rather than the current 5.6 billion”. Similarly, Bertrand Russell in his book **“The Impact of Science on Society”** wrote that “at present, the population of the world is increasing. War so far has had no great effect on this increase... if a black death could be spread throughout the world once in every generation, survivors could procreate freely without making the world too full...” (Cited in Harun) [10]. My question is what does that Black Death refers to? Is it far from Biological warfare agents – Bio – terrorism? Because it is through it that a black death could be spread easily and widely around and in piece – meal throughout the world. For instance, between 1763 – 1850 white American settlers distributed small pox – infected blankets as gift to Native American Indians. This was part of the warfare against the Indians in order to wipe them out and grab their land. Again, in 1954, United States Special Forces dropped special yellow – fever-disseminating bombs over Korea in order to exterminate the enemy. In the 1960’s the same United States forces dropped Napalming, cancer – inducing defoliants over Vietnam (Daly and Weekly Trust) [17,16].

COMPUTER RELATED VIRUS

Just like the human Immunodeficiency Virus, the origin of computer virus is controversial. But like the HIV/AIDS, computer virus was said to be a product of scientific invention. As Wikipedia, the free Encyclopedia shows:-

The first academic work on the theory of computer viruses (although the term "computer virus" was not invented at that time) was done by John von Neumann in 1949, who held lectures at the University of Illinois about the "Theory and Organization of Complicated Automata". The work of Von Neumann was later published as the "Theory of self-reproducing automata". In his essay Von Neumann postulated that a computer program could reproduce. In 1972 Veith Risak published his article "Selbstreproduzierende Automaten mit minimaler Information übertragung" (Self-reproducing automata with minimal information exchange). The article describes a fully functional virus

written in assembler language for a SIEMENS 4004/35 computer system. In 1980 Jürgen Kraus wrote his diploma thesis "Selbstreproduktion bei Programmen" (Self-reproduction of programs) at the University of Dortmund. In his work Kraus postulated that computer programs can behave in a way similar to biological viruses. In 1984 Fred Cohen from the University of Southern California wrote his paper "Computer Viruses - Theory and Experiments". It was the first paper to explicitly call a self-reproducing program a "virus"; a term introduced by his mentor Leonard Adleman. An article that describes "useful virus functionalities" was published by J. B. Gunn under the title "Use of virus functions to provide a virtual APL interpreter under user control" in 1984 [18].

Some researchers on computer programs such as computer virus, like Sparfford [19], Bishop [20], Wikipedia, the free encyclopedia [18] were of the view that "the actual term "virus" was first used in David Gerrold's 1972 novel, *When HARLIE Was One*. In that novel, a sentient computer named HARLIE writes viral software to retrieve damaging personal information from other computers to blackmail the man who wants to turn him off". Even though, according to Bishop:-

The first use of the term virus to refer to unwanted computer code was by the science fiction author David Gerrold. He wrote a series of short stories about a fictional G.O.D. machine (super computer) in the early 1970s that were later merged into a novel in 1972 known as "*When HARLIE Was One*". The description of virus in that book does not fit the currently –accepted, popular definition of computer virus- a program that alters other programs to include a copy of itself.

Nevertheless, Fred Cohen was said to be the first person to formally define and design a computer virus in 1983 [19, 20]. Spafford ascertained that "at that time Cohen was a graduate student at the University of Southern Carolina attending a security seminar. Something discussed in class inspired him to think about self-reproducing code. He put together a simple example that he demonstrated to the class. His advisor, Professor Len Adleman, thinking about the behavior of this creation, suggested that Cohen

call his creation a computer virus. Dr. Cohen's Ph.D. thesis and later research were devoted to computer viruses".

However, some sources such as Wikipedia, the free encyclopedia [18] and Spafford [19] argued that the actual computer virus was written before the Cohen's breakthrough. For instance, Wikipedia, the free encyclopedia said "the Creeper virus was first detected on ARPANET, the forerunner of the Internet, in the early 1970s. Creeper was an experimental self-replicating program written by Bob Thomas at BBN Technologies in 1971. Creeper used the ARPANET to infect DEC PDP-10 computers running the TENEX operating system. Creeper gained access via the ARPANET and copied itself to the remote system where the message, "I'm the creeper, catch me if you can!" was displayed. The *Reaper* program was created to delete Creeper". However, the same Wikipedia, the free encyclopedia goes on to say "traditional computer viruses emerged in the 1980s, driven by the spread of personal computers and the resultant increase in BBS, modem use, and software sharing. Bulletin board-driven software sharing contributed directly to the spread of Trojan horse programs, and viruses were written to infect popularly traded software. Shareware and bootleg software were equally common vectors for viruses on BBS's". Also Wikipedia, the free encyclopedia further observed that:-

A program called "Elk Cloner" was the first computer virus to appear "in the wild"—that is, outside the single computer or lab where it was created. Written in 1981 by Richard Skrenta, it attached itself to the Apple DOS 3.3 operating system and spread via floppy disk. This virus, created as a practical joke when Skrenta was still in high school, was injected in a game on a floppy disk. On its 50th use the Elk Cloner virus would be activated, infecting the computer and displaying a short poem beginning "Elk Cloner: The program with a personality".

However, "the first PC virus in the world was a boot sector virus dubbed (c) Brain, created in January, 1986 by the Farooq Alvi Brothers in Lahore, Pakistan, reportedly to deter piracy of the software they had written" (Wikipedia, the free encyclopedia; Spafford) [18,19]. Then in

1987, Tom Duff wrote another virus in a language used by a command interpreter common to most UNIX systems, by so doing he disapproves the saying that computer viruses are intrinsically machine dependent that cannot spread or transmit to systems of the varying architectures (Bishop [20]. According to Bishop:-

On November 2, 1988, a program combining elements of a computer worm and a computer virus targeting Berkeley and Sun UNIX-based computers entered the internet; within hours, it had rendered several thousand computers unusable. Among other techniques, this program used a virus-like attack to spread; it inserted some instructions into a running process on the target machine and arranged for those instructions to be executed.

Moreover, viruses continued to spread in different shapes and forms based on how they are created, from micro to macro. Macro viruses have become common since the mid-1990s as Wikipedia, the free encyclopedia confirmed:-

Most of these viruses are written in the scripting languages for Microsoft programs such as Word and Excel and spread throughout Microsoft Office by infecting documents and spreadsheets. Since Word and Excel were also available for Mac OS, most could also spread to Macintosh computers. Although most of these viruses did not have the ability to send infected email messages, those viruses which did take advantage of the Microsoft Outlook COM interface. Some old versions of Microsoft Word allow macros to replicate themselves with additional blank lines. If two macro viruses simultaneously infect a document, the combination of the two, if also self-replicating, can appear as a "mating" of the two and would likely be detected as a virus unique from the "parents". A virus may also send a web address link as an instant message to all the contacts on an infected machine. If the recipient, thinking the link is from a friend (a trusted source) follows the link to the website, the virus hosted at the site may be able to infect this new computer and continue propagating. Viruses that spread using cross-site scripting were first reported in 2002, and were academically demonstrated in 2005. There have been multiple instances of the

cross-site scripting viruses in the world, exploiting websites such as MySpace and Yahoo.

CONCEPTUAL ISSUES, NATURE AND RELATIONSHIP BETWEEN HUMAN AND COMPUTER VIRUS

Human Virus (HIV/AIDS)

The three letters "HIV" stand for Human Immuno-deficiency Syndrome. It is the germ/virus which enters the human body and destroys the defense (immune) system resulting AIDS (CEDPA [21]. According to CEDPA:-

The virus is found only in human beings and weakens the immune system of the body, which normally protects a person against diseases. The virus is a small germ/organism that multiplies rapidly and damages certain cells in the body called T-4 white blood cells. These are the cells that fight infections. Within weeks to 6 months of HIV infection, the person produces antibodies (substance that the body produces in the blood to fight a disease). This process is called ser-conversion. The period between when a person is infected with HIV and when the person's immune system produces enough antibodies to be detected by antibody-based HIV tests is called the "window period". The window period for HIV is usually 3 weeks to 6 months.

While the four letters "AIDS" stand for Acquired Immune Deficiency Syndrome. According to McSweeney [3] "the word "Immune" refers to the Defence System of the body which helps the body fight all kinds of sickness. This system does not work well in AIDS". In a specific term AIDS according to CEDPA:-

Stand for Acquired (a person gets the illness from someone else), Immune (the body's defence system that helps to fight a disease), Deficiency (the body's immune system is deficient or weaken, Syndrome (a group or collection of illnesses that occur together). These are common (and sometimes unusual) illnesses, which become more frequent and hard to treat because the defence system is being destroyed by HIV.

However, the word "ACQUIRED" according to Heinemann English Dictionary it refers "to

get or obtain or something which is acquired". This means that the virus is not naturally originated but it was scientifically and artificial genetically created/engineered by man.

COMPUTER VIRUS AND OTHER RELATED PROGRAMS

The term "Computer Virus" is derived from and is in some sense analogous to a biological virus [19]. According to Spafford:-

The word virus itself is Latin for poison. Simplistically, biological viral infections are spread by the virus (a small shell containing genetic material) injecting its contents into a far larger organism's cell. The cell then is infected and converted into a biological factory producing replicants of the virus. Similarly, a computer virus is a segment of machine code (typically 200-4000 bytes) that will copy itself (or a modified version of itself) into one or more larger "host" programs when it is activated. When these infected programs are run, the viral code is executed and the virus spreads further. Sometimes, what constitutes "programs" is more than simply applications: boot code, device drivers, and command interpreters also can be infected.

According to Wikipedia, the free encyclopedia:-

A computer virus is a computer program that can copy itself and infect a computer. The term "virus" is also commonly but erroneously used to refer to other types of malware, including but not limited to adware and spyware programs that do not have the reproductive ability. A true virus can spread from one computer to another (in some form of executable code) when its host is taken to the target computer; for instance because a user sent it over a network or the Internet, or carried it on a removable medium such as a floppy disk, CD, DVD, or USB Drive. Viruses can increase their chances of spreading to other computers by infecting files on a network file system or a file system that is accessed by another computer.

Computer virus is scientific and engineered by man (a programmer). Heinemann English Dictionary defined a programmer as "a person who prepares computer program".

There are two categories of computer virus, and these are resident and non-resident viruses. Non-resident viruses, according to Wikipedia, the free encyclopedia [18] "can be thought of as consisting of a *finder module* and a *replication module*; the finder module is responsible for finding new files to infect. For each new executable file the finder module encounters, it calls the replication module to infect that file". Similarly, the same Wikipedia stated that:-

Resident viruses contain a replication module that is similar to the one that is employed by nonresident viruses. This module, however, is not called by a finder module. The virus loads the replication module into memory when it is executed instead and ensures that this module is executed each time the operating system is called to perform a certain operation. The replication module can be called, for example, each time the operating system executes a file. In this case the virus infects every suitable program that is executed on the computer. Resident viruses are sometimes subdivided into a category of *fast infectors* and a category of *slow infectors*. Fast infectors are designed to infect as many files as possible. A fast infector, for instance, can infect every potential host file that is accessed. This poses a special problem when using anti-virus software, since a virus scanner will access every potential host file on a computer when it performs a system-wide scan. If the virus scanner fails to notice that such a virus is present in memory the virus can "piggy-back" on the virus scanner and in this way infect all files that are scanned. Fast infectors rely on their fast infection rate to spread. The disadvantage of this method is that infecting many files may make detection more likely, because the virus may slow down a computer or perform many suspicious actions that can be noticed by anti-virus software. Slow infectors, on the other hand, are designed to infect hosts infrequently. Some slow infectors, for instance, only infect files when they are copied. Slow infectors are designed to avoid detection by limiting their actions: they are less likely to slow down a computer noticeably and will, at most, infrequently trigger anti-virus software that detects suspicious behavior by programs. The slow infector approach, however, does not seem very successful.

Human and Computer virus share some characteristics. Computer virus is called virus because it share some of the traits of biological virus. A computer virus passes from computer to computer like a biological virus passes from person to person [22]. As Brain has it that:- There are similarities at a deeper level, as well (between computer virus and biological virus). A biological virus is not a living thing. A virus is a fragment of DNA inside a protective jacket. Unlike a cell, a virus has no way to do anything or to reproduce by itself... it is not alive. Instead, a biological virus must inject its DNA into a cell. The viral DNA then uses the cells existing machinery to reproduce itself. In some cases, the cell fills with new viral particles until it burst, releasing the virus. In other cases, the new virus particles bud off the cell one at a time, and the cell remains alive.

In terms of infection, a computer virus (even though depend on the type of virus) shares some of those traits (mentioned above). A computer virus must piggy back on top of some other program or document in order to get executed. Once it is running, it is then able to infect other programs or documents. Obviously, the analogy according to Brain between computer and biological viruses stretches things a bit, but there are enough similarities that the name sticks to (Brain) [22]. The same thing applies to computer worms and biological parasite which replicate on documents in computer and on cells in human (biological) system. Just like the different modes of spread of HIV, Computer viruses also spread through different modes including removable media, such as floppy disks, USB, flash drive etc. (Wikipedia, the free encyclopedia) [18]. In the early days of the personal computer, many users regularly exchanged information and programs on floppies. Some viruses spread by infecting programs stored on these disks, while others installed themselves into the disk boot sector, ensuring that they would be run when the user booted the computer from the disk, usually inadvertently. PCs of the era would attempt to boot first from a floppy if one had been left in the drive. Until floppy disks fell out of use, this was the most successful infection strategy and boot sector viruses were the most common in the wild for many years (Wikipedia, the free

encyclopedia) [18]. As there are different types of viruses that cause diseases/infections in computer system as cited by Wikipedia above, so is to human system. For instance, according to CEDPA:-

Like other viruses, HIV has diversified and the virus is constantly changing. There are about two (categories) types of HIV- HIV 1 and HIV 2. Both types cause AIDS, but type 2 seems to be less transmissible because the period between initial infection and illness is not long. HIV 1 and HIV 2 also have subtypes, which are different strains of the virus.

According to Chidozie [4] in addition to the HIV 1 and HIV 2 there is "SIV which also fall into two categories; the transforming viruses and the cytopathic viruses [8]. While for computer virus as Wikipedia observed:-

The term "computer virus" is sometimes used as a catch-all phrase to include all types of malware, even those that do not have the reproductive ability. Malware includes computer viruses, computer worms, Trojan horses, most root-kits, spyware, dishonest adware and other malicious and unwanted software, including true viruses. Viruses are sometimes confused with worms and Trojan horses, which are technically different. A worm can exploit security vulnerabilities to spread itself automatically to other computers through networks, while a Trojan horse is a program that appears harmless but hides malicious functions. Worms and Trojan horses, like viruses, may harm a computer system's data or performance. Some viruses and other malware have symptoms noticeable to the computer user, but many are surreptitious or simply do nothing to call attention to themselves. Some viruses do nothing beyond reproducing themselves [18].

The host of attack in both human and computer is another area of relationship between the two. In human system before targeting the host of attack it goes through different mode of transmission which include (1) Sexual transmission through unprotected vaginal, anal or oral sex with an infected person; (2) Blood transmission from unsafe or infected blood or blood products; (3) transmission (from an infected mother to an unborn or new baby) through three ways (i)

Transmission in the womb of the mother; (ii) Transmission during birth; and (iii) Transmission through breast feeding (CEDPA) [23]. From each of these ways the virus directly attack the human immune system as host and weakens it (the immune system of the body, which normally protects a person against diseases). Just like the human, computer viruses also have various target areas or types of transmission media which include:-

(1) Binary executable files (such as COM files and EXE files in MS-DOS, portable Executable files in Microsoft Windows, the Mach-O format in OSX, and ELF files in Linux); (2) Volume Boot Records of floppy disks and hard disk partitions; (3) The master boot record (MBR) of a hard disk; (4) General-purpose script files (such as; batch files in MS-DOS and Microsoft Windows, VBScript files, and shell script files on Unix-like platforms); (5) Application-specific script files (such as; Telix-scripts); (6) System specific autorun script files (such as; Autorun.inf file needed by Windows to automatically run software stored on USB Memory Storage Devices); (7) Documents that can contain macros (such as; Microsoft Word documents, Microsoft Excel spreadsheets, AmiPro documents, and Microsoft Access database files); (8) Cross-site scripting vulnerabilities in web applications (see XSS Worm); (9) Arbitrary computer files. An exploitable buffer overflow, format string, race condition or other exploitable bug in a program which reads the file could be used to trigger the execution of code hidden within it. Most bugs of this type can be made more difficult to exploit in computer architectures with protection features such as an execute disable bit and/or address space layout randomization (Wikipedia, the free encyclopedia) [18].

THEIR EFFECTS ON DEVELOPING COUNTRIES

Both computer virus and HIV virus are man-made infections, an epidemic and pandemic that has bedeviled the demographic and economic spheres of the developing countries, to living below poverty line in GDP, GNP and per capita income due to poverty and underdevelopment. Some of the effects of HIV/AIDS in developing countries like the sub-Saharan Africa where HIV is the leading

cause of death (lost of productive forces) estimated in 2005, 25.8 million Africans (adults and children) live with HIV, and by 2010, 106 million children under age 15 are projected to have lost one or both parents, with 25 million of this group orphaned due to HIV/AIDS (CEDPA) [21]. These numbers would have helped to increase the per-capita, GDP and GNP in Sub-Saharan Africa contributing to the development of the economy. However, population is an asset. Even the World Bank admitted that population growth has long-term advantages especially for African development; where rapid growth of the labor force does not necessarily lead to unemployment and poverty, if investment in capital is adequate, and expanding economy could absorb additional labor (The World Bank 1990 Development Report quoted in Weekly Trust) [24]. For instance many countries such as China, India, and Bangladesh etc. depended on population as asset of economic development.

China is one of the rapidly developing economies in the World today and the only country that was not prone to the Global Economic Meltdown that had melted down the economic growth and development of the most powerful economy in the world- The United State of America (USA). Similarly, computer viruses have devastating economic effects as lots of money is being squandered for the maintenance and purchase of antivirus software. The World Bank estimated that 1.2 billion impoverished people who are living below 1.25 dollar a day [25]. Most of these people live in developing countries where education is static and backward.

Knowledge about science and technology is dormant in developing countries compared to the type of system they found themselves under Globalization, which lead them into total dependence on developed countries for almost everything. The design of biological and computer viruses are advantageous to developed countries economy and detrimental to the developing countries economy.

The production of condoms and retro-viral drugs against AIDS is an advantage to American economy because they realize huge profit from it. Economically, AIDS has been

described as a billion dollar disease. As such, AIDS was targeted to achieve some goals which centered on exploitation, serving the interest of western powers such as United State of America. As Chidozie stated:-

Western powers, particularly, the United States of America, have suddenly realized that so much billions of dollars could be made from the management of information concerning the origin and treatment of AIDS, producing and controlling the formula for detecting the HIV virus in the laboratory and also by promoting the sale of condoms [8].

Condoms were initially produced to prevent the spread and transmission of Sexually Transmitted Infections such as Gonorrhea and Syphilis, the discovery of HIV has led to the production of millions of condoms which are shipped to Africa and other third World countries generating billions of dollars for the developed countries who are manufacturing it. Even when it was discovered that many people in developing countries don't know or are not following the proper instructions of condom usage which instead of protecting them from, increase the rate and dangers of transmission of HIV, but still the sale of condoms have gain momentum.

The same thing applies to the computer virus. The anti-virus devices are being produced and sold out, through which the developed countries sap the Third World of millions of dollars. This tells much about globalization. As a front, the United States of America is on top, "like a lion among the predators" in the hierarchical ladder of globalization, and others follow. Therefore, there is no doubt about what Vassilev said:-

If one admits that the world structure has acquired a hierarchical nature, it is the USA that is at the top of the hierarchy. It is there that the headquarters of most of the strongest corporations including TNCs, (Transnational Corporations) are based. The largest capital market is also there. USA is the most advanced country in the field of R and D, informatics, computerization, Internet development and application of the recent scientific achievements, which form a new stage of scientific and technological revolution [8].

In summary, HIV/AIDS and computer viruses are products of globalization; therefore, there is nothing globalization would do to benefit the developing and underdeveloped parts of the world as it does for the developed countries. In a nutshell, globalization is a trap, an impasse in all ramifications for the underdeveloped countries.

CONCLUSION

Both computer virus and HIV virus are man-made infections, an epidemic and pandemic that has bedeviled the demographic and economic spheres of the developing countries. Globalization has created another atmosphere in developed countries in almost everything. The design of biological and computer viruses is an advantage to developed countries economy and detrimental to the developing countries economy [26]. Economically, AIDS has been described as a billion dollar disease, benefiting mainly the developed economies.

RECOMMENDATION

- 1) The developing countries should radically break from the chain of dependence and move toward self reliance on the indigenous and comparative knowledge for research in science and technology.
- 2) An equal representation should be given to all the countries in the world without distinction between the developed and developing countries in the United Nation Security Council.
- 3) An international law should be enacted to deal with those countries that develop at the expense of others through political and economic exploitation, domination and illegality.

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