

## The Effects of Information Technology on Global Economy

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**Abstract:** The effects of information technology in every facet of human endeavour have become very tremendous as information technology tool keep redefining and restructuring society. It is, therefore obvious that its impact on the global economy is tremendous as it has redefined world economic concept. The impact of industrial revolution and many previous technologies cannot be compared to that of information technology revolution. The major aim of this study is not just to eulogise the great effects of information technology on world economy but to also bring to the fore the attendant divide the use and access to the tool is creating between less developed and developing communities, nations and continents. In order to achieve this objective, researchers did review the various testimonies about the impact of information technology in different human endeavours and by extension world economy. The data used are basically secondary data with which researchers surveyed, narrated, explained and drew inferences. The result shows that apart from the digital divide that exists between the technologically advanced and technological less advanced, information technology is a great enabler of development and therefore has impacted positively to world economy through increase in productivity, educational advancement and access, community development, creation of empowerment and enhanced economic growth.

**Key words:** Information technology, economy, productivity, knowledge economy, digital economy

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### INTRODUCTION

In April 2000, at a new economic summit convened by Bill Clinton, it was declared that technology is the engine behind the new economy. That is to say that information technology, the leading technology globally is the engine behind the new world economy termed digital economy. It is pertinent to note that information technology has affected the way the world is shaped economically as it affects health, information creation and dissemination, political discuss, meetings, trade, business, education, job creation, security and so on. Worthy of note is the fact that communities and by extension countries that have little or no access to modern information technology tools are basically shut out of modern political, social and economic discuss and are referred to as being developing or underdeveloped economically.

Educational institutions are not left out in the drive as schools are now adjudged by the level of their technological acquisition, dissemination of information through the internet and use of information technology tools among their staff and students. In world ranking of

universities, it is a known fact that world best institutions are ranked based on Webometrics, the availability and accessibility of the institution around the world. Distance education or open universities as the case may be in recent times are only feasible through the internet. The list is endless on the great impact of information technology tools in redefining human life in recent times around the world.

The level of job creation brought about by information technology is tremendous through technology outsourcing, software design and knowledge creation. Countries are re-strategising by including information technology education in their curriculum starting from early childhood education. In recent years, researchers have documented the influence of technology on individual workers, organisation and industries, market places and wages (Tushman and Anderson, 1986; Bartel and Sicherman, 1998, 1999). This shows that information technology has affected communities, countries and transformed economies. This study tends to re-examine and bring to the fore the positive impacts of information technology on world economy and its attendant challenges to technologically less advantaged countries by the way of digital exclusion.

## LITERATURE REVIEW

Information Technology (IT), defined as computers and related digital communication technology has the broader power to reduce the cost of coordination, communications and information processing (Osuagwu, 2012). Thus, it is not surprising that the massive reduction of computing and communications cost have engendered the substantial restructuring of the economy. There is therefore no modern industry, human endeavours and settings that are not being affected by modern information technology. Information technology is an enabler of growth. Technological advancement in information technology has helped in the advancement of economic, social and political growth of the world.

### **Information technology and community development:**

Robinson (2000) in his study, the role of information technology in the economic development of inner city communities, argued that by bridging the digital divide, information technology has the potential of transforming the inner city economy and by extension the rural communities to the statue of new economy. The new economy has two major components: e-Commerce and technical jobs. In e-Commerce, defined as the use of internet to perform business transactions, he posited that it is the most powerful business tool to be developed, since the invention of computer. That e-Commerce either as business-to-business or business-to-consumer has its real power in its ability to utilise and maintain elaborate databases on customer preferences and inventory, thereby eliminating the need for data entry and manual collection. In the most advanced circumstances, fully integrated systems of e-Commerce streamline the purchase, manufacturing and delivery of products thereby saving millions of dollars in salaries, benefits and training. In terms of technical jobs, he argued that with the provision of new economy by information technology, it becomes obvious to note that information technology has redefined job opportunities. These jobs range from the highly skilled like computer system engineering, communication technology, programming, etc., to less skilled as data entry operators, computer equipment operators and so on.

Further, he argued that information technology has provided access to new market by penetrating the rural communities with the technology. It has also created more opportunities for entrepreneurs, redefined education through e-Learning and brought with it new investment opportunities for investors.

**Information technology and economic growth:** Among the three strings of technology advancement, information

technology is much more powerful than the rest in deciding the magnitude and quality of economic production argued Achimugu *et al.* (2009) in their study adoption of information and communication technologies in developing countries; an impact analysis. Information, together with capital and labour is a critical and essential production factor. It is a major contributor to labour productivity and total factor productivity. An increase in information content has significantly changed the concept of production, signifying the importance of timely information flows. They argued that firms that do not incorporate new information technology tool can be left behind in gaining productivity and competitiveness, given that the scope of impact of new information technology is much broader than the rest technologies. Information technology also changes corporate behaviours and organisational structure which should increase productivity.

### **Information technology in workplace and labour market:**

Computers and communication technologies allow individuals to communicate with one another in ways complementary to traditional face-to-face, telephonic and written modes (Lee, 2010). Information technologies enable collaborative work involving distributed communities of actors who seldom, if ever meet physically. This bridge in distance and connection has brought about a lot of savings in terms of transportation cost, labour and infrastructure. As workers find that they can work at home rather than a centralised workplace, the demand for homes in a climatically and physically attractive regions increase. The consequences of such a shift in employment from suburbs to remote areas become profound. This paradigm shift in no small way increases economic activities in a non-traditional way and at the same time becomes more profitable by reducing cost and improving productivity.

**Information technology and education:** The advances in information technology will affect the craft of teaching by complementing rather than eliminating traditional classroom instruction (Lee, 2010). He further argued that the effective instructor acts in a mixture of roles. In one role, the instructor is a supplier of services to the students who might be regarded as its customers. But, the effective instructor occupies another role, as well as a supervisor of students and plays a role in motivating, encouraging, evaluating and developing students. He also posited that though information technology provides computer assisted instruction to the majority of students, however the presence of a live instructor will continue to be far more effective than a computer assisted counterpart in facilitating positive educational outcomes. But, the

greatest potential for new information technology lies in improving the productivity of time spent outside the classroom by providing solutions to the set and assigned reading material available on the internet as it offers a lot of convenience. Also, the e-mail vastly simplifies communication between students and faculty and among students who may be engaged in group projects.

Another way information technology has greatly performed wonders is in the area of distance learning. Although, distance learning has existed for some time, Lee (2010) argued that the internet has made possible a large expansion in coverage and better delivery of instruction. Text can be combined with audio/video and students can interact in real time via e-mail and discussion groups. Such technical improvements coincide with a general demand for retraining and upgrading the skill of those who due to work and family demands cannot attend traditional courses.

Osuagwu (2012) in his book, Advanced Internet Technology for PhD students stated that the paucity of teachers in the field of science and technology in secondary schools and tertiary institutions, especially in the developing world can be solved through the deployment of virtual classrooms. He argued that this is possible due to the fact that the internet provides person-to-person chat through chat facilities available on the internet which allows for project supervision, discussions and taking of quizzes. Examination can be taken later in a physically designated places that is most convenient such as in a conventional classroom.

#### Information technology and national development:

Ahiakwo (2011) in his study, the role of internet connectivity in Nigeria argued that the internet is a catalyst for national development because internet provides a medium for exchange of technical and scientific ideas and these are relevant for developing nations. He further stated that by the use of internet facilities, development experiences in one country can be of use in another country which in this case what the recipient country requires is to discover similar projects and relevant information that will be of use to them in relation to their local environment. His argument was further strengthened by the fact that knowledge and exchange of ideas are the major drivers of world technology and economy. The internet provides this platform easily.

#### THE EFFECTS OF INFORMATION TECHNOLOGIES IN WORLD ECONOMY

**Positive effects:** Jorgenson and Vu (2005) outlined in their work information technology and world economy the positive impacts of information technology on the world most advanced economies G7 nations. They stated that

Table 1: Levels of output and input per capita and productivity

Years	US	Canada	UK	France	Germany	Italy	Japan
<b>Levels of output per capita</b>							
1980	63.9	67.6	45.0	45.9	49.3	45.9	39.6
1989	79.7	78.8	56.5	54.1	58.1	57.3	56.0
1995	85.6	79.6	61.4	57.0	65.0	62.1	64.0
2001	100.3	9.8	71.3	64.0	69.2	68.8	70.6
<b>Levels of input per capita</b>							
1980	70.5	64.2	50.2	46.5	61.0	43.0	57.7
1989	83.9	74.4	61.2	53.3	71.1	55.5	72.0
1995	88.8	75.2	67.0	57.0	73.7	58.8	77.8
2001	100.8	83.7	73.6	61.7	79.0	67.2	80.9
<b>Levels of productivity per capita</b>							
1980	90.6	105.4	89.5	98.6	80.8	106.6	68.7
1989	94.4	105.9	92.3	101.5	82.4	103.2	77.7
1995	96.4	105.9	91.7	99.9	88.1	105.6	82.3
2001	99.5	109.7	96.9	103.6	87.6	102.5	87.2

Jorgenson and Vu (2005)

the resurgence of economic growth in the USA during the 1990's was due to heavy information technology investments. Information technology was found to have increased productivity in the G7 nation for the period of 1980-2001. There is therefore, a correlation between information technology investments with economic growth. In 1998, the G7 nations accounts for about 60% of world's output and a larger proportion of world investments in information technology. Thus, the large economic growth experienced by the G7 nations is proportionate to their level of information technology investment, thus resulting to heavy productivity, output, labour provision and high economic growth (Table 1).

It is noteworthy to mention that the use and utilisation of information technology has revolutionised education system through e-Learning, virtual classrooms, digital presentations and webinars. The business of distance education has become more widely spread, utilised and well administered. These are possible owing to the various internet facilities, such as chat facilities, voice over internet protocol, world wide web, e-mail and newsgroups. Banking, industrial and trade are not left out in the revolution. The use of internet banking, automated teller machines, point-of-sales shops have turned around the state of banking in the world. They have made banking easy and access to money just by a click on the mouse. These have in turn increased return on investment by reducing labour force, increasing productivity and linkages. The positive impacts of information technology cannot be exhaustively discussed here. But, also worthy of mention is the creation of digital economy-an economy based on knowledge creation, dissemination and outsourcing. The Asian tigers are strong emerging economies due to their strong and elaborate knowledge of information technology use, development and applications at home, offices and public institutions.

**Information technology and productivity:** Productivity increase determines the living standards and the wealth of nations. This is because the amount, a nation can consume is closely tied to what it can produce. Also, the success of a business generally depends on its ability to deliver more real values for consumers with less labour, capital and other inputs (Brynjolfsson and Hitt, 1998). In as much, it was easy to measure productivity in the industrial era, it is not same in today's information economy. Productivity these days can simply be seen as adopting new technologies and techniques for production.

The question now is whether productivity has increased with the introduction of information economy. The billions of dollars being transacted by information technology firms like Microsoft, Dell, Cisco, Zinox, MTN, Zain, Glo Mobile and the rest of them testify that information technology has greatly increased productivity of nations and has helped in giving countries like the Asian tigers a great leap to the new emerging world class information economy.

#### **NEGATIVE EFFECTS OF INFORMATION TECHNOLOGIES IN WORLD ECONOMY**

**The digital divide:** Since the emergence of information economy, there exist disparity between those who are able to access and use the technology and those who were not able to do so. It has been discovered that since technology requires skills and some level of educational attainment and capital, it is therefore, obvious that people with lower standards of education and capital may not be able to access technology. This has created a lot of social, educational, technological and political divide. The USA telecommunication Act of 1996 (Robinson, 2000), recognised that the divide is real and therefore provided for it, so as to ensure the general universal service goal of promoting the availability of quality service at just, reasonable and affordable rate. This is because non-access to the internet would limit the citizens' opportunities to obtain quality education, find jobs or access market or government information. Conversely, access to the network would create opportunities to convene, regardless of geographic distance, physical or financial constraints and participate in political dialogue.

The following assertion makes it obvious that the digital divide creates with it, political, educational, social, financial and information divides between the technological advanced and less advanced economies.

#### **CONCLUSION**

Information technology has redefined the world economic concepts through the introduction of digital

economy. Information technology, therefore has improved and redefined productivity, education, social and political landscape of the world. These in turn have greatly affected the world's economy. Though, it brings with it a divide between the technological advanced and less advanced economies, efforts should be made by comity of nations to bridge the gap through increase in investment in information technology. The need for a conscious political framework that will necessitate the growth of information technology in the less advanced information technology countries is overdue. This will in no doubt recreate their environment and help the society harness this new economic landscape.

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