Information Superhighway As A Driving Force For Nation Building

Engr. Oluwajobi Festus Idowu¹, Olawoye Taiwo Oluwafemi²

¹Electrical Electronics Engineering Department, Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria.
²Computer Engineering Department, Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria.

Abstract-- Information Superhighway is such an important technology needed for the development of any nation and therefore must be embraced by both the developed and developing nations of the world. In this paper, we have looked at the origin and benefits of information superhighway as a key driving force in the economy of a nation. Also presented is a brief discussion of the Internet and the World-Wide Web.

Keywords-- Information, Superhighway, Communication, Internet, World Wide Web (WWW), Network.

I. INTRODUCTION

The term Information Superhighway was coined by US vice-president Al Gore, as a metaphoric reference to an infrastructure transportation program launched many years before by his father Fluckiger (1996). Initially, the metaphor referred in practice to a national initiative called the National Information Infrastructure (NII) which aims at "building a nation—wide system" that will allow all Americans to take advantage of our rich resources in information, communication and computing technology? A few months after the initial US NII ideas had been laid down, a number of other countries decided to initiate comparable programs Fluckiger (1995).

Over the past two decades, the information revolution has changed the lives of most people forever. New technologies have made it possible for people all over the world to have access to and/or disseminate information on a global basis, even in the most unusual circumstances. Allen and Scott (1994)

Today computers, the Internet, and the information superhighway are the magical elements, and even the basic rules of etiquette are unformed, reminiscent of the early days of the telephone.

Like the coming of the railroad a century ago and the arrival of the interstate highway system in the 1950s, telecommunication is dramatically rearranging rural life. Such developments as fiber optics and data compression are shaking up everything from business to rural education to medicine. And perhaps as important as its influence on how people live, the new technology is starting to affect where they live. During the 1980s, farm consolidations, plummeting land prices and declining services drove many people out of rural areas.

Almost unnoticed are recent census figures showing an abrupt turnabout in the rural diaspora: more than 400 rural counties whose populations shrank during the 1980s are now growing. Hundreds of others have either stabilized or slowed their population loss since 1990. In all, during the first two years of the 1990s, rural counties gained nearly 900,000 new residents. That is a sharp contrast to the previous decade, when the future looked so bleak that some planners suggested turning the Great Plains back over to the buffalo.

II. LIFELONG LEARNING

Broadband networks and multimedia education also improve the lifelong learning process, which is especially important now, since employees no longer work for one company for their entire career, and few companies provide employee development education. Today’s workforce faces the need to continually update their skills and education as they move from one employer to another.

III. TELEWORKING

In-Stat/MDR put the number of "remote and mobile workers" at 63.9 million in 2001, increasing to 85 million by 2005, Wayne (2005). That number includes mobile workers, frequent business travelers, people who work from home part-time, those who toggle between two corporate work sites, and even "non-office" workers who work in production, facilities and warehouses. Interestingly, the number does not include full-time teleworkers since they work in only one place, the home. And it does not include people who run a home-based business. So let’s just agree that there are many people working from home, and more will do so in the future. For years, advocates have argued that teleworking reduces traffic, saves time and gas, helps the environment, makes it easier for companies to find and employ qualified workers, and generally improves the quality of life for employees. So, why don’t we do more of it? For one, telework usually requires broadband connections equal in speed to office networks and that can support applications like video conferencing. But there are also other factors, including management fears and political barriers.
While teleworking does offer many opportunities, it also poses a threat to building owners and cities unwilling to change, not to mention the car manufacturers, oil industry, and others that fear they may be affected, Wayne (2005).

IV. THE IMPACT ON BUILDINGS AND CITIES

The merger of computers and telecommunications systems has profoundly altered the physical design of office buildings and the type of activities occurring inside. The newest buildings feature advanced networking infrastructure built into hollow walls, hung ceilings, and raised floors, to connect data and video transmission equipment. And when older office buildings are unable to meet today’s networking needs, they become obsolete and generate demand for new buildings, which are often located outside of the city. So, just as electricity enabled the elevators and air conditioning needed to draw workers together into tall office buildings in big cities, high-speed telecom networks are enabling a move away from cities. Broadband networks also let workers move out of offices in tall buildings and into ones at home, at their customer, or in their car. And this trend has attracted as many opponents as champions.

V. THE ROLE OF INFORMATION IN EarLIER ‘REVOLUTIONS’

Classical economic theory postulates that there are three prime factors of production: land, labour and capital. Changing the proportion of one of these factors against the others can have a significant effect on productivity. In particular, increasing the proportion of capital to labour and land has had an explosive impact on total output and on the productivity of the other factors. The optimal creation and distribution of wealth was, classical economics asserted, the work of the ‘hidden hand’ of market forces. Underlying this assertion was the assumption of a market in which all participants, suppliers and buyers, had perfect information. The model of perfect information, however, was merely an idealized version of what takes place in a street market. No account was taken of the mechanisms which would be necessary for perfect information to flourish in the far more complex economic systems of advanced civilizations.

VI. THE INFORMATION REVOLUTION: DRIVING FORCES

There are two principal driving forces behind the information revolution which began in the 1970s. The first of these was the growing demand for information. This in turn has two sources: first, the growing demand from the business sector to enable management to cope with turbulent markets, the need for shorter production cycles and the demands of an interdependent global economy; and second, and the revolution in the political sphere. Frank (2001). The collapse of the totalitarian command economies of eastern Europe and the Soviet Union, and movements in the democratic world, have led to a shift towards more open government and freedom of information. The possibility of involving the citizen in political decision making has been discussed and is beginning to be practised in some localities; but for this to happen, information has to be readily available. This revolution is still in its infancy, and overall progress towards full freedom of information has been patchy. There is a long way to go, even in some of the more developed nations and in countries with a long history of democratic government. The second and perhaps most revolutionary driving force has been the incredibly rapid advance in information technology, based on the electronic computer. The computer was first developed in the 1940s in the UK and the USA, primarily to provide calculating power for military computations such as the calculation of ballistic trajectories. These machines did not get beyond the experimental stage before the Second World War ended, and made little contribution to the Allied war effort. However, a different application, that of breaking enemy codes, led to the development of special purpose code-breaking machines such as Colossus in the UK.

VII. THE ROLE OF COMMUNICATIONS

Originally, from their first appearance in the 1940s, electronic computers had relied on digital technology. Telecommunication technology, on the other hand, had relied from the beginning on analogue methods. The same semi-conductor technology which had boosted the performance and versatility of computers began to be used for telecommunications, replacing the older analogue types of telephone switching circuits and exchanges, thus permitting the use of the same technology already used in computers. This convergence of digital techniques, starting in the late 1960s, led directly to the modern notion of information technology, a single technology capable of being used for receiving and transmitting information over the communication network, and processing and storing the information through computers.

In earlier decades, one limitation on the telecommunication network was the constraint on bandwidth, the capacity of a communication channel to carry signals.
The development of fiber optics for terrestrial channels and of satellite communications using radio signals released information technology from the bandwidth constraint. However, the cost of providing an infrastructure of fiber optics and communication satellites is high, and in many parts of the world it is not clear whether private capital or government, or perhaps some combination of the two, should pay for such an infrastructure.

VIII. ENHANCING DEMOCRACY AND ECONOMIC GROWTH

In a sense, the GII will be a metaphor for democracy itself. Representative democracy does not work with an all-powerful central government, arrogating all decisions to itself. That is why communism collapsed and apartheid fell. Instead, representative democracy relies on the assumption that the best way for a nation to make its political decisions is for each citizen to have the power to control his or her own life. To do that, people must have available the information they need.

IX. THE INTERNET IS A TREMENDOUS, UNDISPUTED FORCE FOR ECONOMIC GROWTH AND SOCIAL CHANGE.

The internet has not only unleashed new forms of connectivity, but it has also provided an outlet for new forms of innovation, entrepreneurship and social good. The Internet has also proven a dynamic tool for stimulating economic growth in developing countries, with the World Bank reporting that a 10% increase in broadband correlates to a 1.38% increase in GDP growth Qiang (2009). Beyond GDP growth, the Internet also provides opportunities to pursue social and developmental objectives Qiang (2009). Throughout the developing world, the Internet is connecting remote populations to markets and strengthening the overall efficiency of service delivery in areas such as health, education, livelihoods and financial inclusion, as well as creating access to government services for the most marginalised populations. In 2013 for instance, over 2.7 billion people are using the Internet, which corresponds to 39% of the world’s population. ICT Facts and Figures (2013).

X. THE INTERNET IS DRIVING ECONOMIC GROWTH

From an obscure network of researchers and technology experts three decade ago, the Internet has become a day-to-day reality for more than a quarter of the world’s people. Today two billion people are connected to the Internet, and almost $8 trillion exchange hands each year through e-commerce. Strong contribution to GDP growth Across a range of large and developed economies, the Internet exerts a strong influence on economic growth rates.

Research shows that the Internet accounts for, on average, of 3.4 percent of GDP across the large economies that make up 70 percent of global GDP. James and Charles (2011). If Internet consumption and expenditures were a sector, its weight in GDP would be bigger than the energy of agriculture industry James and Charles (2011). The Internet’s total contribution to global GDP is bigger than the GDP of Spain or Canada, and it is growing faster than the GDP of Brazil.

The Internet drives business transformation and economic modernization, Rejuvenating traditional activities has been the Internet’s main impact. The Internet has enabled fundamental business transformations that span the entire value chain in virtually all sectors and types of companies, not just online ones. These shifts include wholesale changes not only in how products are bought and sold but also in how products and services are designed, produced, and distributed. Even a tiny business today can operate with a dynamically managed supply chain that spans geographies and operates with a global workforce. Our global Small and Medium Enterprise (SME) survey found that 75 percent of the economic impact of the Internet accrued to traditional companies that would not define themselves as pure Internet players. These businesses have benefited from the higher productivity the Internet enables. The Internet can also serve as a powerful catalyst for job creation. Of course the Internet has made some jobs obsolete. However, early evidence suggests the Internet can be a net job creator. Jobs are created in the Internet ecosystem itself, as Internet companies hire workers ranging from engineers to sales and service personnel who design and deliver Internet products and services. However, the Internet also has helped create jobs in other industries. A detailed analysis of the French economy, for example, showed that while the Internet is reported to have destroyed 500,000 jobs over the past 15 years, it created 1.2 million new ones, a net addition of 2.4 jobs for every one destroyed James and Charles (2011).

XI. CONCLUSION

The information superhighway of which the internet is a core path has already made it impact that it will be a very strong force resolutely shaping the economy and society of the 21st century. It is be a positive player and the engines of growth to regions of the world that have been disadvantaged in the past, creating whole new industries that rely on the power and use of computers and software code, and offering hope and opportunity to millions with its ability to spread knowledge, empower consumers, and organize social interactions.
As the aftermath of the global financial crisis challenge us in our government and our business leaders’ quest to innovate as never before, we should not lose sight of the enormous value that the information superhighway and Internet has brought to the rich and poor nations of the world alike and its potential to boost growth across the globe if properly harnessed.

REFERENCES