The Internet and effects on Papua New Guinea

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Internet has come to Papua New Guinea. On March 12 1997 this technology, referred to by many as the "Information Superhighway", was launched by the sole carrier of communications traffic, Papua New Guinea Post and Telikom. A few weeks after this very important event in the history of telecommunications development in the country, the first of any Internet Seminar was held at the Gateway Hotel in Port Moresby. During this seminar the first of the Internet Service Provider (ISP) DataNets was launched. One day after this seminar, in fact after the weekend, two ISPs, one of which was DataNets, were advertising in the National and Post Courier. On the 19th of August, The Vice-Chancellor of The University of Papua New Guinea (UPNG), Dr. Rodney Hills launched the first UPNG Website. Today there are about five ISPs operating in the country competing to have a share in the marketplace for Internet service.

It is very interesting to follow these developments and to learn and find out answers to many questions which the citizens of this country need to ask. Such questions as, what is the internet, who owns the internet, who has the right to use information on the internet, who is allowed access, how can one have access, who funds and maintains network infrastructure, what are the rules regarding the use of information obtained from the internet, does the government has a policy or law on the establishment, ownership and the use of the internet, what are the benefits of this technology, what kinds of impacts can this technology have on the current social, economic and political problems of Papua New Guinea.

This paper sets out to look at some of the benefits which the internet can bring to Papua New Guinea, and at the same time address some of the many issues of the Internet. Broadly the benefits are: benefits for research, benefits for commerce and industry, and benefits for the Government and the wider community. The issues are; Government Policy, Ownership, Control and Access and Network Management.

It is an issue paper with less emphasis on the technicalities of the Internet. The benefits and issues are not exclusive to Internet and are taken from examples of countries which now use the Internet, especially Australia, Canada, the USA, and the United Kingdom. This is because, as I discovered, no empirical research

has been undertaken to determine the impact of the Internet in Papua New Guinea. It is my experience to date on Internet research in the country to say that it is very hard to obtain statistical data and other information on the use of Internet. Internet Service Providers cannot give such valuable information about this country to researchers free of charge. For much of what is to be discussed in this paper is based on my collection of information from available printed and electronic sources.

Introduction

Internet has become popular in the western world and is widely used at large by the community. For example, in the US, Talbot stated that by 1992 Internet has become a tool for academic research, computer scientists, and students, and has transformed the American social policy, educational practice and dreams of new generation entrepreneurs.

Chartrend mentioned that the medium or process of electronic technology is reshaping and restructuring patterns of social interdependence and every aspect of our personal life. It is forcing people to reconsider and re-evaluate practically every thought, action and institution formerly taken for granted.

Like many technologies from the industrialised countries, the Internet has come to the developing countries. Many so-called Third World Countries are beginning to feel the impact of the Internet, however, many of these countries do not have the capabilities in terms of human resources and financial resources to explore the benefits of the Internet. Despite this fact, the speed at which the Internet develops is very fast, and many of these countries have been forced to hook up to the Internet.

Papua New Guinea is one of these countries. Some sections of the private sector and the academia are already benefiting from the use of electronic mail and the World Wide Web (WWW). People or users find it fascinating to use this service. It is unbelievable to send messages across the globe, from PNG to Australia or the US or the UK. As mentioned, the University of Papua New Guinea now has a website, The National Newspaper Company has a website, the Post-Courier, and The School of Journalism are some of the institutions which have full Internet access. These are examples of positive developments which the Internet can bring to Papua New Guinea.

The other side of the story is that there issues which the people (including politicians) of this country need to addressed. Some of these issues have been alluded to and these are policy as well as legal, economic, social and political issues. There are also user-end issues. For example, the use of Electronic Mail

here at The University of Papua New Guinea. Each faculty is allocated a network PC and one address for the Department or Faculty. This practically means that there is no place for confidentiality of the messages or documents sent to one particular staff as all staff have access to the same address and anyone can read anybody's secret messages.

The year 1997 can be remembered for the introduction of full Internet service to Papua New Guinea. The private sector, especially the computer companies are getting ahead with the provision of Internet service. Some Government Departments, statutory bodies and the two Universities are hooking up to the Internet. Many people are beginning to realise the importance of this technology. For many people the Internet is still mind boggling, scary, strange, and something new. Also for the first time many people will come to know what the Internet is and the 22nd Waigani Seminar today provides such opportunities where people are introduced to the Internet.

Definition

Liu stated that although the Internet gets lots of attention in the press these days, it is commonly misinterpreted. The Internet is a very complex concept for me. I try to conceptualise it as a big net of computers connected by wires and cables. Many people know it as a technology, some think it is made up of bunch of people and others think it is some kind of a fruit. Ask an ordinary person in the street of Port Moresby what the Internet is and I bet you will get some very interesting definitions.

He (Liu) went on to define Internet as a federation of computer networks that speak the same protocol, particularly, TCP/IP. The networks that make up the Internet are connected to each other with high-speed telephone circuits. The protocols or language used on the Internet are computer networking protocols. These enable computers to communicate with one another just like human beings. By 1994, there were three million computers linking 24 million people across the world using Internet. In early 1995 more than 50,000 networks and 5 million computers were connected via the Internet, with a computer growth rate of about 9 percent per month. By 1996 there are about 60 million people using to the Internet.

The Australian Science and Technology Council [1] defines Internet as global networks of networks. It is not a single network but a collection of services available across a number of interconnected networks. It started as a research data network but is now changing into a public information and communication

[1]Australian Science and Technology Council (ASTEC), 1994., p.9

network. It is the international network of networks which is made up of research and education networks, commercial networks, and other networks.

What can the Internet offer Papua New Guinea

Benefits for ordinary Citizens

Government services such as libraries, archives, galleries and schools in the developed countries are in the forefront providing information to the community from the Internet. These are services for the ordinary citizens who cannot afford a computer or the network costs. For example, school children in public schools in Australia use the internet to collect information which help them learn, they also communicate with school children in the United States and other countries who have access to the Internet. University Libraries are equipped with microcomputers that are connected to the Internet. This gives the students access to valuable and useful information, which supplements printed information.

Similarly, Government public services in Papua New Guinea can deliver the same for its citizens. The National Library of Papua New Guinea, The National Museum and Art Gallery, and The National Research Institute of Papua Guinea, The Medical Research Institute, The University Libraries, to name a few, can deliver useful and valuable information to the community.

The University libraries in Papua New Guinea so far have done well in terms of using computers to deliver information to their clients. The framework is in place, which makes it easier for the introduction of the Internet.

The schools can greatly learn from the Internet. Children from PNG can share and learn from children in other parts of the world. Internet is a good prospect for distance education in the country too. The country is geographically diversified and the transport system is poor. Internet can deliver lessons to remote places. The Internet can foster the spread of literacy and education to parts of Papua New Guinea where it was impossible with other forms of technology. For example, the people in Oksapmin can receive news from their station manager through his computer without waiting for it to come from Tabubil or Mt. Hagen by plane. They also can receive from the health department important information on such things as family planning, aids, malaria etc. Other government departments can provide valuable information to the local community where it was taught impossible in the past. (This may take a long time to be realised).

Benefits for Business Development

The Internet plays a very important role in commerce and industry and marketing in the developed countries. Business is taking a new turn and many companies are already making millions of dollars on the Internet. Gillespie and Hepworth [2] stated that such developments as Internet are eroding the tyranny of geography that historically limited industries from operating out of their localities. These days industries use the Internet to explore the market and establish markets in other parts of the world as well as using Internet for information to further develop themselves.

Commercial activities in the country can be greatly improved by linking businesses in Papua New Guinea to the businesses in other parts of the world to access information and to create a market for some the unique products and services from Papua New Guinea.

Information sharing between commercial counter parts in other countries can assist Papua New Guinea businessmen to improve their enterprises to be competitive in world trade. Industries in the country can use the Internet to do business of selling and buying from one another. Advertising on the Internet can see Papua New Guinea products and services selling in America and Europe. The tourism industry can boom with the use of the Internet. The Internet is quickly becoming the preferred communication link between commercial industries in countries like the US and Australia. For example, CommerceNet in the US which has links to other companies and also customers. Up to the minute data and information on stock exchange can easily be obtained from the Internet. Papua New Guinea can utilise such service for the growth in local industries.

Commercial organisations in the developed world are growing and responding to changes in communications development. They are building up information that can help them to learn about themselves and to identify where they stand in relation to their competitors. For example Dialog database in the US started as an internal information system to support the Lockheed Manufacturing Operation and is now expanding to one of US biggest online database network and can be accessed anywhere in the world on the Internet. These commercial databanks can help Papua New Guinea industries to tap into very useful information which can help them to improve on their strategies for production and marketing.

The rate of growth for Papua New Guinea industries can improve with the use of the Internet. This in turn can result in economic growth. This development will mean a lot for the small businessman as well as the giant mining companies. For example, crocodile skins from the Sepik can sell in the markets of Europe.

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[2]Gillespie, A.E., and Hepworth, M.E., 1988, p.1

Benefits for Academic Research

Research data and information put on the Internet provides a useful source of information, which can assist many researchers in Papua New Guinea. Research data networks provide a range of information and communication services. Among these services are, a) one-to-one communication such as e-mail, document transfer and voice-mail, b) personal access to databases such as citations and full-text databases, experimental data, virtual libraries and tools such as World Wide Web, Gopher and Dialog, c) personal access to processing services, including modelling and visualisation online to remote computers, d) person-with group communications such as group conferencing and telemeeting services, mailing list and news, and e) access to computers and other research facilities at distant sites.

Papua New Guinea research capacity can improve greatly by the Internet. For a long time many researchers in the country cannot proceed with their research proposals and projects because geographical terrain and financial resources limit them. It is very crucial for the country politically, socially and economically, because research is the engine for development. Unless the research opportunities such as the one provided by Internet is seriously considered and the government investing in it, the country will still be the way it is or go backward in development.

Research sites and data banks on the Internet provide the opportunity for Papua New Guineans interested in research to explore and utilise. This will contribute, firstly, to the quality of research being carried out. It will change the nature of research being done, i.e.; broader interaction can change questions and scope of enquiries for researchers within the country, in the region and abroad. For example, results of findings put on the Internet can supplement research undertaken by researchers in similar fields in Papua New Guinea. Secondly, it can contribute the growth in researchers and research projects, which in turn can lead to solutions for social, economic and political problems. Researchers can share ideas and increase the speed and efficiency of research. Researchers can also share software and communication facilities.

The Research Institutions in all areas of discipline can benefit greatly from the research networks and sites such as that of The CSIRO in Australia, huge databanks such as DIALOG in the United States and many others around the world. Researchers in Papua New Guinea can learn a great deal from other countries faster through research networks on the Internet. Research networks constitute a powerful means of interaction between researchers from Papua New Guinea and their colleagues in Australia, UK other developed countries and US.

Again, this interaction can take place in the South Pacific where many of our problems are similar.

Research and development is a critical component of an information economy. In many aspects it is a primary driver to innovation, economic growth and prosperity. It is essential to the development of new industries, expansion of markets and the viability of existing industries. Papua New Guinea must realise this opportunity provided by the Internet.

Issues

Ownership and Accessibility

Ownership of the Internet Service Providers and accessibility to information on the Internet is an important issue. Owning the infrastructure in which the Internet is connected to have been a problem for the Government of United States, Canada and Australia. The question is, should the government or the private sector own this infrastructure. For many of these countries the private sector owns the infrastructure but the state controls it in terms of passing laws to control the ownership and access. For some the state takes full control of the service.

Papua New Guinea has not come to the stage where the potential of the Internet for economic, social and political growth has been realised. This is highlighted later in this paper under government policy, that is, the government does not know what the internet can do to this country, positively as wells negatively and therefore does not have a national policy on the internet. Currently, the Internet service providers are private firms. Thus, the government, at this stage, does not have control over the ownership of the Internet service providers.

Accessing information from the Internet is related to ownership of the infrastructure, in fact, you cannot get one without the other. In Papua New Guinea today, access is limited to those who have the money to get connected to the infrastructure. Those who have the money now have access to the Internet. The Internet service providers are controlled to some extent by PANGTEL but the government does not know the social issues, which the Internet can generate.

Such questions which need to be asked by the people and the government are, should the Government censored certain information and how can it control the access to the information which is harmful to the public. Television in Papua New Guinea illustrates inequality of access to information. Most Papua New Guineans have access to one local television station while some have access to more than one station. The government censored all the programs rated R on its

local television station, but people with satellite disc are hooking up with foreign TV stations and watch these censored programs from their homes.

This is likely to happen to information from Internet. It is obvious that there will be unequal access to Internet. It is likely that there will be information poor and information rich, there will be people who will be privileged to have access and there will be those who will be disadvantaged. This points to the fact that those who own the service will have access to the Internet.

The local television station, EMTV is partly owned by Kerry Packer, a millionaire in the media industry, who is an Australian. PNG's number one daily newspaper, another owns The Post Courier heavy in media industry, Rupert Murdoch. These are cases of multinationals running businesses in Papua New Guinea. What about the Internet? Currently, Compuserve, an Australian Company, is providing the electronic mail service to users in the country.

Thus, the issue of ownership and access is an important one for Papua New Guinea. The bottomline is who owns the infrastructure, is it the Government or the private sector, and is it PANGTEL. If it is the private sector, do Papua New Guinean firms or foreigners own the Internet Service Providers? If it is own by transnational corporations, is it the desperate need for the designers and owners of the Internet for the markets of the developing countries? I discovered that foreign companies own all the Internet Service Providers in Papua New Guinea.

Having the skills to search the Internet is a very vital question too. If 95% of the people of Papua New Guinea are computer illiterate, then how do we see them using the Internet? My observations show that only a few University of Papua New Guinea students can use the Online Public Access Catalogue in the library. Knowing how the vocabulary of the Internet is constructed, the data structure of many of the data banks and the way these are indexed is a very important skill that one needs to maximise the use of the Internet. This is because one has to be trained to be able to search the Internet with less time to minimise access time and telecommunication charges. The vacuum in the skill to search the Internet has been misused by the Internet Service Providers to train Papua New Guineans at very high fees. For example, one ISP is charging a massive K100.00 per hour for an introduction to the Internet.

Mechanisms to control the charges are also another question. Who sets the price and what are the laws governing the charges.

What about the kinds of information accessible by the users. For example, pornographic materials. I attended an Internet seminar and was told that only 5% of the Internet are pornographic. The question is 5% of what, is 5% equivalent

to 50 gigabyte of pornographic material? This is dangerous enough to pollute the minds of all the citizens of Port Moresby if this information ends up in the wrong or right hands whichever way you want to see it. And who is going to police the ISP to make sure that they are not delivering this kind of information. And what about information on how to make hand grenades or guns for terrorism? . These and other questions are very crucial to the use of the Internet in Papua New Guinea.

Thus, ownership of the infrastructure and enabling access to information from the Internet needs government attention.

Network Management

The physical network provides a path from the service to the user. It may be multiple networks interconnected through gateways and operated by different network operators and managed by experts in network technology. How can the computer illiterate Papua New Guineans understand this physical network fully so that there is maximum benefits gained from Internet.

Managing the network infrastructure is very important for many reasons. It is technical as well as non-technical. The problem is that, many people do not technically know how to run these networks successfully for maximum benefits. Also there are not that many people trained in network management in the country to do the job. Most of the local area networks in the country are managed by expertise from abroad.

There is the problem of charging users and at affordable fees, i.e., appropriate charging mechanism should be established. How can the user know that he or she is being ripped off by the use of information on Internet by the Internet Service Providers? The management task of monitoring the use of the networks requires policy formulation and execution by the parent institutions. The issue of the different levels of users and level of services. The problem of using the right interface and software to capture information from Internet. There is the problem of security and privacy. And how can the managers make sure that the information, which get to the users is valid, reliable and not distorted. There is also the issue of running the networks with fewer faults. Technical problems can really minimise the use of the Internet.

Human resources development for the management of the networks is also important. The expatriate managers of these networks will one day go back to their countries and the job of training indigenous network managers have to be taken seriously. Training of manpower in this area is very important. Internet will raise people's expectations, i.e., the access to these networks is as transparent

and instantaneous, and the service management must be able to provide this sort of service.

There is also the problem of hackers riding Internet into PNG and causing damages to the information stored in the country. It is likely that we will have home grown hackers and stalkers. The financial institutions and their clients are at risk. Even if the network managers set up security systems, there is no guarantee that a high-powered firewall computer security software will be installed for Papua New Guinea domain and the gateways. Therefore, network management is as vital is ownership and access.

Government Policy

The global change in information technology requires speedy response by governments to these changes. Government's response to these developments includes key decisions in the areas of telecommunication planning and development, which rest heavily on new legislation.

In 1993 the Government of Papua New Guinea passed the National Policy on Information and Communication under the ministry of Information and Communication headed by Martin Thompson (deceased). The Ministry of Information and Communication no longer exist as a Ministry or a government department on its own since it was abolished in 1994.

The National Policy on Information and Communication has all necessary instruments to be used to develop the country's information and communications infrastructure, however, since the department is just a section within the Prime Ministers Department, it just does not have the resources and manpower to implement this policy.

The National Policy on Information and Communication does not have a clear statement on the Internet. The policy can be reviewed in light of the changes and sections on the Internet can be added to chapter 3.4 on information technology.

This scenario points to many things of which one is that the government does not place high priority on the development of information and communications infrastructure, which includes the Internet. It will take sometime for the Government to make a coherent policy, a national policy on the Internet.

The first and foremost issue for the country is to legislate on electronic information, especially information transmitted across international borders. All the other issues discussed in this paper can only be minimised and controlled if, in the first place, the government had passed laws to control the making and the

use of electronic information. Freese [6] stated that governments around the world must be aware that electronic information has no limits, neither political nor geographical and is racing at incredible speed between countries and continents.

Papua New Guinea does not have a coherent policy on the Internet and this is very serious as the technology is already here and without proper policies, people can use it for the purposes in which it was not designed for. It is serious, as there are no rules regarding the establishment, the use, the kinds of information obtained, the kinds of charges and so on. This is a legal question, which the lawyers and the policy makers of Papua New Guinea should address.

Conclusion

The Internet has a lot to offer Papua New Guinea. It is a tool for which Papua New Guinea can utilise for development. Some of the benefits pointed out in this paper can help Papua New Guinea on its way to becoming an information society, and at the same time contribute to economic growth however, there are serious issues and problems with Internet. Some of these problems can be so complicated for Papua New Guinea.

In conclusion, Papua New Guinea should be very careful with this technology because we have seen the side effects of earlier information and telecommunications technologies such as the television, videocassettes, and the audio systems. By the time television, videocassettes, communication satellites appear on the scene, traditional cultures the world over had been wearing away.

The fact of the matter is that the Internet has been launched without proper policy and legislation. The country should, firstly, set up laws to control the ownership, access and use of information on the Internet. It should also look into training its manpower to handle the complexities of Internet in all aspects. Technically, it should established on-going training programs for network managers and users. Legally, the judicial system should be well acquainted with laws regarding communications and information. Papua New Guinea lawyers should be trained in these aspects, for example, how to handle cases of computer crime and how to deal with criminals such as hackers and stalkers. There are lot of questions that need to be answered and issues to be addressed and we have to do it now or we will see the Internet being used as a tool by the those who invent it to exploit the underprivileged for their own gains.

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[6] Freese, Jan. 1979., p.7

If the Papua New Guinea Government put in place the necessary policies and legislation and can able to manage the infrastructure for Internet, then there is hope for Papua New Guinea to benefit socially, politically and economically.

Finally, the Government has to invest in the Internet. Government commitment is a must. Al Gore, elected U.S. senator and Vice President states that a high-capacity network will not be built without government investment.