



HOW SECURED ARE ADVANCED ECONOMIES IF ADVANCING ECONOMIES ARE LESS SECURED?

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Abstract. The modern world economies are today threatened with insecurity throughout every aspect of business, technology, health care, public resources and more increasingly governments and policies structures. The philosophy that a secure premise can be adequately protected and give maximum security to the ringed-occupants can no longer hold. Borders have become porous; the ring of steel and castle-style high walls can no longer protect any economy. The environment under which they operate can be influenced so much by other factors such as neighbours, economics of existence, technologies and relationships to name a few. This paper analysis ICT issues in relation to economics of security and development, and highlights the adage that, ‘No man is an Island’, i.e. no system can exist in isolation. And with the world becoming a global village, (in)security of any nation must be the concern of one and every nation in the global equation. Can ICT ‘balance the act’ and provide solutions to the many global questions?

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Reikšminiai žodžiai: saugumo ekonomika, plėtra ir tolydumas, informacinės technologijos, išvystyta ir besivystanti ekonomika.

Introduction

Nowadays, economic survivability of every nation depends so much on security; security of resources – information, personnel, physical assets, transport networks and of national borders. The systems that drive economies in today’s world are being taken over by digitization and cyber-communication. This means that economies and communities that trail behind the pace of digitization and cyber-communication are likely to be excluded from vital information resources, commercial societies, international trade and more at risk of economic downturn. This is because stronger economies conduct business and trade by employing electronic business systems and new technologies as tools that facilitate business processes. In the paper bridging the digital divide “Linking and closing the gap between advanced and devel-

oping economies”, D. Anderson (2005) presents a historical analysis of how a “bridge” literally links communities together to drive trade and commerce. ICT, digitization and cyber-communication are the frontiers that form this bridge in this era. In the paper assessing the economics of electronic security Arreymbi and Williams (2005) assert the need to evaluate non-technological factors which they believe influence economies of developing countries. Some of their views contrast findings of OECD with regards to technological studies. This paper applies some analysis in exploiting economic survivability of emerging economies and attempt to link it with some of the issues of insecurity that exists both within advancing and advanced economies.

The paper is organised as follows: Section one provides the background to this work, Section 2 is an overview of ICT activities that drive the digi-

tal economy, Section 3 is an evaluation of the findings drawn from the application of the SWOT framework, Section 4 discussions and conclusions.

1.1. Background

Economies thrive on availability of resources and how these resources are managed (Anderson, 2005). Many political land borders are fast becoming eroded, more especially in Europe than anywhere else in the world. This also leaves room for (in)security debates. Historically economies have been driven by factors, such as resource availability, political environment and sometimes culture in societies. The latter is least exploited as an engine for propelling an economy to success. In this era we face the challenge of managing technology as a catalyst to economic development and transformation. It can also determine the success or failure of any business in modern society. According to DeLong and Froomkin (2000), non rivalry and absence of excludability among services and products makes Adams Smith's principle of "invisible hand" at the market place unstable. This is because the nature of services and products available to consumers on the market has radically changed as a result of the systems that support commercial activities. In other words systems that support e-commerce and e-business activities suppress the concept of excludability as a means of protecting the value a service provider, seller and product manufacturer place on products and services at the market place. Organisations in both private and government sectors historically played important roles. We have passed through a metamorphosis of organisational structures and management styles. This permeates from the ancient hierarchical structure style of organisation, the human relations in the 1950's to 1960's driven by management gurus such as Rosemary Stewart of Ford Motors and the Information age which has now evolved to the digital and cyber-communication age. Organisational culture within private and public sectors also drive economies. Section two explores electronic commerce and business activities which have become central to economic activities in developing and advanced economies.

1.2. The effect of ICT in emerging economies

Globalization has drastically improved access of advanced technologies to most deprived economies of the world. Technological upgrading is important for development, to an extent that it provides a unique opportunity for advanc-

ing economies to raise per capita income, and also improves the demand for skilled labour. Nagy (1991) reported the Malaysian Prime Minister Mahathir Mohammed as saying: "It can be no accident that there is today no wealthy developed country that is information poor, and no information rich country that is poor and underdeveloped". This statement emphasizes the importance of the Internet for emerging economies. From an international perspective access to and use of the Internet is unbalanced due to factors which will be highlighted later in this paper. There are obvious gaps between developed and developing economies in terms of the numbers of nets, hosts and users. John (1995) agrees and quotes a study from the Panos Institute which indicated that, there is a danger of a new information elitism which excludes the majority of the world's population.

Many see the ICT as an opportunity to gain access to knowledge and services from around the world in a way that would have been unimaginable previously. For example, Internet kiosks, Telephone call boxes (phone booths) mostly facilitating email and phone calls to overseas relatives, are springing up in many parts of Europe, Africa, Asia and Middle East. Meanwhile poor land line telephone systems in most of Africa and Asia are rapidly being bypassed by mobile phones, some of which have internet access or Internet Cafes with Voice Over Internet Protocol (VOIP) enabled technologies.

ICT has also significantly changed information management in developed economies through creating pressures to improve communication systems and develop more user friendly environments for information sharing. Now the Internet is penetrating developing economies, and changing information practices in various sectors. The web for example, is also changing traditional ways of conducting information business in developing economies by establishing new sources of information and new modes of communication. It has created pressure to update information/technology infrastructures and has similarly created competition by bringing many international and indigenous information technology vendors on to the same platform, and providing policy makers in these economies, the opportunity to take advantage of access to global information resources.

2. Overview of ICT activities that drive the digital economy

In Europe, the USA, Japan and most advanced economies, the Internet and World Wide Web drives these economies at very high speeds.

The Internet is now a complex Web of networks connected with high-speed links cutting across countries. There are no set boundaries for the Internet in cyberspace. It is estimated that the rate of growth in Internet use is around 20 per cent a month and with over 50 million users (MIDS Press). Presently the Internet is not proprietary and is available to anyone with computer access connecting to the vast information market in many countries. Internet allows information to flow through many different interconnected computer networks worldwide.

Aguolu (1997) defines “developing” or “emerging” economies as the less industrialized and economically developing nations of the world, usually with less than \$500 per capita income. In essence, such economies have a great desire for rapid growth and industrialization and are striving to provide adequate basic infrastructures that foster development and promote information accessibility, such as health, education and library services, steady supply of electricity, good roads and transportation, and postal and telecommunication networks, etc. The relevance of Internet access to such economies is the degree to which the lives of those who do not have access could be improved by having it. Clearly, in such calculations, the role of the nation is very important, because the result of lack of ICT or Internet access affects the entire country (Sadowsky, 1996).

2.1. Developing Economies and ICT-web

Many applications exist on the Internet. However, it is the web which has the most significant capability and momentum in the commercial use of the Internet (Berners-Lee et al., 1993; Cockburn and Wilson, 1996; Semich, 1995). The rapid expansion of the worldwide web holds substantial promise for developing economies, often referred to as “information have-nots” (Arunachalam, 1998) and are considered as “the “lost continent” of information technology” (Odedra et al., 1993), and which can benefit greatly from its communication and information delivery capabilities. The accelerating transition of information to electronic media is making information resources of the world available to an increasingly global audience through the ICT-web. Developing economies have much to gain from that revolution in communication and information access. In contrast to the situation in the developed world, where transport and communications infrastructures for delivery of both physical goods and information services are well established, the alternatives available within developing countries are generally slow, expensive, or nonexistent.

Increasingly, many analysts agree that, the impact of the ICT-Web and its resources in emerging economies (Bhatnagar, 2000; Jimba and Atinmo, 2000; Madon, 2000; Morales-Gomez and Melesse, 1998; Talero and Gaudette, 1996), have generally provided avenues supportive of the development process by making information and knowledge more accessible, and more directly useful in applications such as distance learning, telemedicine and geographic information systems. Its role is considered crucial to the provision of people’s basic needs, such as healthcare, food, and shelter, both in emergency situations and in the longer term, directly in social economic terms and indirectly by enabling research activities (Avgerou, 1998; OECD, 2000). The resources of the web are increasingly playing a crucial role in developing economies’ capacities to produce access and apply information, and thereby to enhance the process of acquisition and sharing of knowledge (Morales-Gomez and Melesse, 1998).

The correlation between information, communication, and economic growth is well-known, making the usefulness of the Internet nearly self-evident. Electronic networking is a powerful, rapid, and inexpensive way to communicate and to exchange information. When networks are available, previously unanticipated collaboration seems to come into being almost spontaneously. The underlying cause seems to involve a latent demand that remains latent as long as joint work requires either the disruption of waiting for the mail, the continual retyping of texts transmitted by mail or fax, or the need to secure large budgets and approvals for extensive international travel.

The Worldwide web is also crucial to scientific research and development efforts, many of which yield tangible economic benefits. Commercial economic growth is enhanced by access to information and improved contact with support personnel. Although academic research institutions in advancing countries may be using the resources of the web for these purposes, very few studies have explored this phenomenon. A rare exception is a study by Jimba and Atinmo (2000), which found that Internet accessibility had no positive impact on the number of publications in five research institutions in Africa. Jimba and Atinmo list several reasons for this surprising result, such as low productivity in general, the content of the electronic databases not being relevant to the researchers in question, and that African knowledge was not integrated with the services.

And as has been demonstrated in a number of countries including Cameroon, the link between the free flow of information and movement

toward democratization cannot be downplayed. Access to information affects political democratization efforts at the global level as well as within nations. In advancing economies where much of the media is controlled by the state, and individual access to the web is currently limited, the need to decentralize control over information and over networks themselves is clear in this regard.

2.2. Barriers and challenges for developing and advanced economies

A major problem facing emerging economies is the problem of information (in)accessibility. Though information is widely recognized as a catalyst for both personal and national development (IFLA, 1988), many people, especially in the developing economies, are still unaware of the need for information and fail to exploit it even when information materials are available for free as in libraries and information centres. This is because the availability of information does not necessarily mean its accessibility. The wealth of information available or in existence in the world today is tremendous and the sheer volume of it, in a myriad formats, makes it impossible for one to have complete access to it.

Other obstacles to information accessibility in developing economies as enumerated by Doob (1961), Schramm (1964) and Turner (1988), includes illiteracy and lack of awareness of the need for information; geographical distances; poverty and underdevelopment. These constraints hardly exist in developed or advanced and industrialized economies, where basic infrastructures and facilities exist and the majority of the populace, about 96 per cent according to UNESCO (1991), is literate and educated and are able to exploit information resources systematically.

However, the developed economies constitute only about 20 per cent of the estimated six billion people who populate the world today (UNESCO, 1991). The rest, comprising about four billion people, live in developing economies. And 70 per cent of these people are illiterate and cannot exploit the information stored in print and other media formats. These people are generally peasant farmers, craftsmen and women who are in most cases, unaware of the need for information and live their lives routinely, using whatever little information they may stumble on, or is passed to them orally by relatives, friends, colleagues, community and religious workers.

Unemployment is also very prevalent characteristic of most advancing economies. And issues of poverty tend to breed contempt in these societies, which may lead to individuals wanting to

flee the system to find prosperity in advanced economies. While advanced economies such as the UK and USA can afford to spend over 10 per cent of its national resources (GDP) on information services alone (Garfield, 2001), advancing economies often spend less than 1 per cent on them. Much of their scarce funds is allocated to other social services like health, government, education, housing, agriculture, transportation, etc., which are given priority over information systems such as libraries, documentation and information centres etc.

Poor communications and transportation facilities, which are regular features of advancing economies, also constrain information transfer and accessibility both locally and internationally. Poor infrastructure, transportation and postal and telecommunications services are a great impediment to the free flow of information, as Schram (1964) emphasized. Inefficient telecommunication and transportation systems by air, sea and land such as unreliable telephone and postal facilities, as well as irregular train, airplane, bus/car services, will greatly hinder information dissemination.

In Cameroon, for instance, most of its population is scattered in numerous communities of towns and villages often with great physical distances between them. The free flow of information among and beyond the communities requires sound developmental infrastructures such as regular electricity supply, good roads, vehicles, trains, aeroplanes, airports and steady postal and telecommunication services. Some of these amenities exist but their quantity and quality are generally inadequate and poor.

Khan (2001) identifies the major causes of poverty in developing economies as the political environment, systemic discrimination based on gender, race, ethnicity, religion, or caste, political inclinations or affiliations, ill-defined property rights to agricultural land and other natural resources, high concentration of land ownership giving unfair disadvantage to tenants, political corruption and/or bureaucratic red tape, large family sizes resulting in high dependency ratios, and national economic and social policy biases.

Information poverty in such situations, is one of the more significant and insidious obstacles to effective exploitation of information processing and other types of technology. Lack of adequate information regarding developments in other countries and other environments is often not noticed, and in the absence of new information, old techniques and procedures are continued without conscious knowledge of alternatives. In addition, even though developing nations may not be hurt in an absolute sense by lack of information,

they are certainly negatively affected by any relative measure (Sadowsky, 1996).

In general, within developing-economic environments, requisite specialized knowledge is often either missing or in short supply. There is generally substantial competition for the scarce, more talented individuals within both the public and the private sectors as well as between them. Emigration to better labour markets in the more advanced economies – the so-called ‘Brain Drain Syndrome’ – causes depletion of the resources necessary to exploit technology, in the face of countries having a limited set of human resources with which to work. Most but not all developing economies are financially poor relative to developed economies. They suffer from low levels of both Institutionalised financial assets and National income. Their economies are subject to wide-ranging performance fluctuations due to factors beyond their immediate control. Some are not viable without sustained development assistance.

Increasingly many emerging economies are benefiting from direct assistance in transferring technology to themselves. Involvement with private-sector firms in developed countries can have substantial benefits; with policies promoting domestic investment as well as taxation and profit repatriation incentives, can encourage firms to enter local markets and provide benefits for the economy. Private foreign investment in high-technology fields often brings with it significant flows of information and training opportunities.

3. Evaluation of findings from SWOT

This section assesses the findings derived from the SWOT analysis as indicated in appendix 1. The evaluation is based on a cross section of the strengths, weaknesses, opportunities and threats highlighted and central to the criteria of this study.

3.1. Labour

ICT is changing the labour market in developing economies. The pace of ICT development and deployment in developing economies is leap-frogging while skills required to drive and sustain this process seem to be relatively crawling. Transportation, outsourcing, subcontracting, accessibility, equality and new investment opportunities are all strengths that are likely to facilitate social progress (Zachaman, 2004). These strengths as highlighted by Zachamann had some bearing with our analysis. Untapped skills and capabilities within developing economies, is a “gold mine” to

explore. This could have economic value when properly natured and cultivated. A recent initiative by the AICE foundation in Ghana is exploring this avenue as a means of tapping into the technical capabilities of graduates in the local economy. There is also the strength of cheaper labour cost that could increase the demand for outsourcing and delocalization of services.

3.2. Cost of transportation

Cost of transportation is an area that could be explored with effective implementation of ICT and cyber-communication. This could speed up the transformation of rural communities among developing economies. Farmers in rural areas could take advantage of cyber-technology and ICT systems to assess the need and feasibility of transporting food stuffs to urban communities. This is opportunity could be hampered by the lack of technological infrastructure in rural areas. The application of wireless communication technologies seem to becoming the panacea for addressing this shortfall.

3.3. Moral and value system

The analysis shows that, high moral value is placed on ICT systems among developing economies. In contrast advanced economies do not place such moral value on ICT systems. This is drawn from the prevalence of internet and web pornography in advanced economies. However, one can not be absolutely sure whether such cyber morality adds any economic value. On the contrary there is evidence that internet pornography yields economic value in advanced economies.

3.4. Infrastructure

Infrastructure could serve as strength as well as a weakness. This implies there are opportunities that could be exploited given the fact that most technologies associated with mobile communication in advanced economies also exists in developing economies (Williams, 2004). This is also depicted by Figures 1, 2 and 3 from the International Telecommunication Union report. There are however impediments that suffocate the use and application of them. This range from poor leadership and management style, cultural attitudes, the lack of political will and commitment, government regulation, lack of policies and standards and inadequate know how as mentioned

previously. Such weaknesses could lead to capital losses that could cause economic collapse. ICT infrastructure and cyber-communication systems lack the security systems, policies and standards necessary in ensuring confidentiality, integrity and availability of systems essential in boosting confidence amongst investors within the international community. Government policies and regulations sometimes lack clarity among countries in developing economies. Activities of service providers are not rigorously regulated. Most Systems are by V-SAT communication networks through advanced economies. This becomes difficult to manage. These issues threaten the survivability of these economies in the digital world and economy. Until developing economies resolves to address these issues they stand the danger of being relegated to economies that survive on the edges of surpluses from advanced countries. There is also the danger that advanced economies will be forced to address these issues as a result of the nature of the global economy and its inherent principle of economic, social and moral dependency.

Emerging economies generally face problems: that impact on the capability to manage infrastructure. There is low level of education and literacy, and a wide gap between the disposable income of the relatively few “haves” and the more numerous “have-nots.” Use of the ICT requires a fairly complex set of skills that could be acquired through training. At the very least, one must have electricity, a communications line, a terminal capable of interacting across the communications lines, and (in most cases) a reasonable fluency in English (80 percent of the material on the web is written in English). All of these factors contribute to existence and sustenance of the digital infrastructure.

3.5. Capital funding and investment

Funding required in setting up ICT related businesses could be mobilized by SMEs in developing economies. Recently there have a proliferation of Internet Café’s among countries in Africa. This is not only due to the ability to mobilize capital fund. Awareness is also increasing, if not catapulting amongst these communities. This is creating a vehicle for creating partnerships between advanced and developing economies. In 2002 Ghana passed a bill governing Venture Capitalism to provide a regulatory framework for SMEs. This indicates the recognition of role SMEs and their role and contribution towards domestic economic growth.

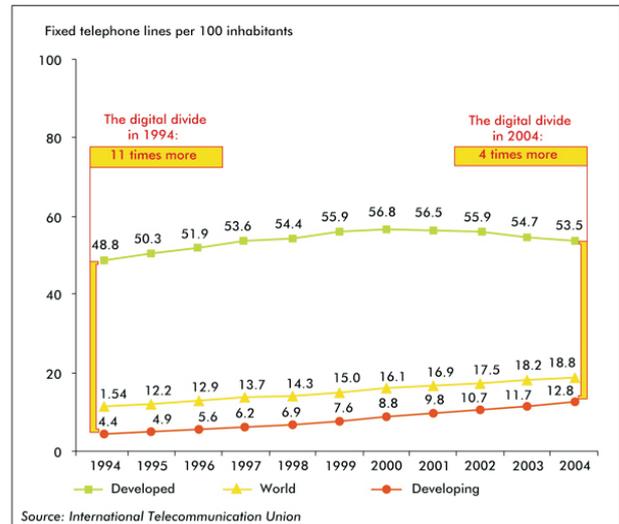


Figure 1. Depicts Fixed Line Penetration per 100 Inhabitants

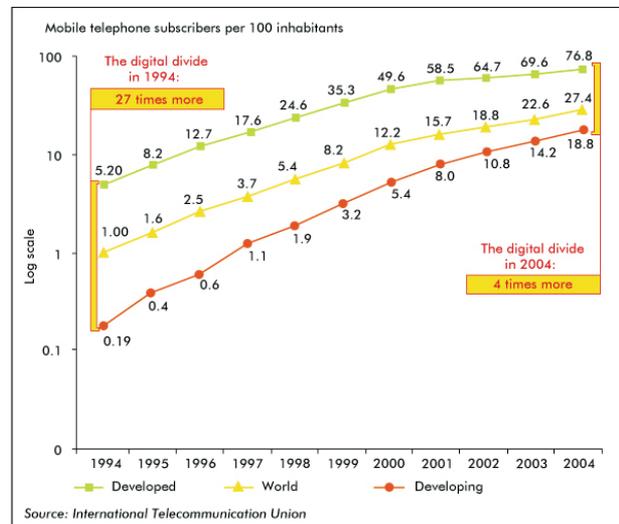


Figure 2. Depicts Penetration of Mobile and Cellular Communication Subscribers per 100 Inhabitants

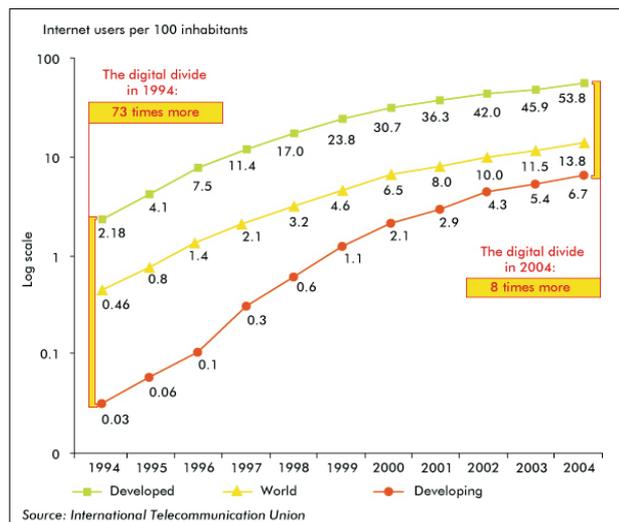


Figure 3. Depicts Penetration of Internet Users per 100 Inhabitants

3.6. Legal framework and legislation

Legal framework in emerging economies is weak. The judiciary can operate effectively as a result of numerous reasons. Laws and by laws enacted do not address legal current matters related to cyber communication. There is problem related to enforcement due to porous security systems and the non existence of cyber policing. These are legal issues that have to be addressed domestically in order for emerging and developing economies to adjust to the pace of electronic commerce and business activities on going in advanced economies. On the international scene legislation and directives within the European Union stifle ecommerce activities in emerging economies.

3.7. Self imposed economic sanctions

Specifically, in Afghanistan and other countries in the Middle East, government opposition to ICT has been a major factor in limiting Internet access. Many Middle Eastern leaders view the Internet as a Western-based agent of moral and political subversion. As a result, many countries strictly enforce limits on Internet connectivity. Whereas Egypt and Jordan have been relatively progressive in building Internet connections, countries such as Saudi Arabia have shown more resistance to allowing widespread access to the Net. Internet access is very limited in Syria, and Libya and Iraq prohibit any kind of Internet access. Bahrain and Tunisia openly monitor Internet traffic, and the United Arab Emirates and Yemen use proxy servers that can prevent users from accessing "undesirable" sites. Iran allows access, but the extent of the traffic monitoring in that country is uncertain (Alterman, 2000).

Conclusions

The importance of expanding the access of emerging economies to the Internet has been recognised by governments and international agencies with increasing consensus that the Internet and related telecommunications technology should be regarded as strategic national infrastructure (Kenney, 1995; Mansell and Wehn, 1998). This has led to significant rates of increase in the regional distribution of Internet host connections over the last few years (ITU, 1999; Arreyambi and Williams 2005; Williams, 2004).

The establishment of such strategic infrastructure is considered critical for the survivability of emerging economies where the marginal impact of improved network communications can lead to

improved economic productivity, governance, education, health and quality of life, particularly in rural areas (Adam, 1996; Press, 1996). For example, in Africa, the growth of small scale, low cost electronic networks has been influential in building an academic and research community within the continent that discusses and shares topics of concern (Adam, 1996; Panos, 1998; Williams, 2004).

Another example is the networking project launched by the Commonwealth Secretariat in 1990 called COMNET-IT. The project aims to improve government collaboration within the commonwealth group of countries using electronic networks to facilitate the sharing of data on administrative reform experiences (Qureshi and Cornford, 1994). These suggest that wider connectivity within developing economies would improve the overall information infrastructure and therefore promote positive changes in socio-economic and/or political development.

Despite increases in the provision of information services that are available through the Internet for users in emerging economies, there is considerable scepticism regarding the potential of the technology for socio-economic development. For example, most Internet diffusion statistics, although impressive, does not do justice to reports on Internet density and cyber communication penetration among emerging economies. This is sometimes as a result of the methodology applied in the studies. The studies do not take into factors such as size of population in each country or region in these economies.

The fear expressed in this paper is that the poor financial, technical and human resources and weaknesses highlighted in the analysis in emerging economies would perpetuate further ties of dependency on advanced economies and perpetuate further fears and alienation. There are no silver bullet type of answers to these weaknesses, but however believe that successful cases such as the tiger economies could be emulated by others countries in trailing behind the economic ladder. Our future studies will explore strategies and business models that could transform the emerging economies falling behind.

However, this does not imply that the security of advanced economies depends on the advancing economies. The two go hand in hand and must work in collaboration to formulate viable and feasible policies, adaptable to suit the variant local cultures of the world.

Criteria	Strengths	Weaknesses	Criteria
<p><i>Capabilities?</i></p> <p><i>Competitive advantages?</i></p> <p><i>USP s (unique selling points)?</i></p> <p><i>Resources, Assets, People?</i></p> <p><i>Experience, knowledge, data?</i></p> <p><i>Financial reserves, likely returns?</i></p> <p><i>Marketing – reach, distribution, awareness?</i></p> <p><i>Innovative aspects?</i></p> <p><i>Location and geographical?</i></p> <p><i>Price, value, quality?</i></p> <p><i>Accreditations, qualifications, certifications?</i></p> <p><i>Processes, systems, IT, communications?</i></p> <p><i>Cultural, attitudinal, behavioural?</i></p> <p><i>Management cover, succession?</i></p> <p><i>Philosophy and values?</i></p>	<p>• High moral values attached to ICT Infrastructures already exist (Wired-Wireless)</p> <p>• Cheap Labour /Cost effectiveness resulting to increase outsourcing to these areas, Cost Effective Services (Soft Tribe of Ghana in Africa), this is reflects in ASIA (India, Taiwan, Bangladesh)</p> <p>• Accessible to all</p> <p>• Attractive goods/services</p> <p>• Mostly up-to-date & high technologies deployment</p> <p>• Learn better & quickly from costly mistakes of the developed economies</p> <p>• Cellular technology is truly democratic</p> <p>• Faster movement of communication & information</p> <p>• Improve awareness & keeping in touch</p> <p>• Seen as a status symbol or social status</p> <p>• Culture (Serves as Driving force)</p> <p>• Untapped resources (Human power/labour)</p> <p>• New market entrants,</p> <p>• Reputation for Outsourcing, e.g. ASIA Market (India and China), Africa</p>	<p>• Inadequate resources available</p> <p>• Limited use of resources (digital library & Internet</p> <p>• Administrative bottlenecks</p> <p>• Poor existing Infrastructures</p> <p>• Lack of human-power for technical programming</p> <p>• ICT solutions from advanced economies do not always work in advancing economies</p> <p>• Technological imperialism to some extent</p> <p>• Lack of political will</p> <p>• Absence of adequate know-how</p> <p>• No structural policies in place</p> <p>• Development plans not adequately followed (inconsistencies)</p> <p>• Limited disposable income/purchasing power parity/low per capita income</p> <p>• Few financial institutions to support structural adjustments</p> <p>• Limited accessibilities to funding</p> <p>• Low capital investments</p> <p>• Insecurity of the domains</p> <p>• Leadership, Role of Government (Policy and Regulatory Role)</p> <p>• Non-Effective Implementation of Legislation</p> <p>• Tax systems</p> <p>• Legal framework (Domestic)</p> <p>• Infrastructure</p> <p>• Non standard Systems poorly accredited</p> <p>• No evidence of Certification of Software and Hardware</p> <p>• Poor attitudes to business</p> <p>• Poor Governance</p> <p>• Reputation of Market place (Africa)</p> <p>• Legislation, e.g. EU directives and other legislation on Developing economies market (Africa and some parts of ASIA)</p> <p>• Processes and information systems</p> <p>• Cost of Manpower</p>	<p><i>Gaps in capabilities?</i></p> <p><i>Lack of competitive strength?</i></p> <p><i>Reputation, presence and reach?</i></p> <p><i>Financials?</i></p> <p><i>Own known vulnerabilities?</i></p> <p><i>Timescales, deadlines and pressures?</i></p> <p><i>Cashflow, start-up cash-drain?</i></p> <p><i>Continuity, supply chain robustness?</i></p> <p><i>Effects on core activities, distraction?</i></p> <p><i>Reliability of data, plan predictability?</i></p> <p><i>Morale, commitment, leadership?</i></p> <p><i>Accreditations, etc?</i></p> <p><i>Processes and systems, etc?</i></p> <p><i>Management cover, succession?</i></p>

Criteria	Opportunities	Threats	Criteria
<p><i>Market developments?</i> <i>Competitors' vulnerabilities?</i> <i>Industry or lifestyle trends?</i> <i>Technology development and innovation?</i> <i>Global influences?</i> <i>New markets, vertical, horizontal?</i> <i>Niche target markets?</i> <i>Geographical, export, import?</i> <i>New USP's?</i> <i>Tactics: e.g. surprise, major contracts?</i> <i>Business and product development?</i> <i>Information and research?</i> <i>Partnerships, agencies, distribution?</i> <i>Volumes, production</i></p>	<p>Opportunities</p> <ul style="list-style-type: none"> • Vast market potentials • Empowering people with tools & techniques • Communalization • Large & unexploited population • Extremely poor people willing to make sacrifices in order to have access (e.g. some people will prefer airtime to food with their wages – Opportunity costs). • Low cost investments with high returns • Awareness is increasing at a faster than usual rate compared to western economies • Digitalisation is bringing the world ever more closer than expected • Improve & increasing number of accreditations • Many players coming in to give consumers more choice • Capital leverage • Opportunity for distance/e-learning education • Global village for resources & innovation • Distance and e-learning • New Market, Cheaper and more efficient means of disseminating market information • Advertising • Lower Capital Fund • Tourism • Internet Publishing • Investment and New ventures 	<p>Threats</p> <ul style="list-style-type: none"> • Political instability • Inadequate legal framework to support business • Embedded bureaucratic systems • Corrupt administrators/financiers • Inadequate insurance to cover for financial/ other capital losses • Sluggish ICT demand and/or affordability • Lack of motivational/incentives to learn/ perform • Severe/adverse environmental conditions, e. g. heavy rainfall • Inadequate market penetration/uptake of technology • Limited resources to meet demand or improve situations • Serious cultural dimensions • Lack of local constraints • Many trap in poverty • Failure to bridge digital divide may in time cost the world so much losses • World Trade Systems serves as trade barrier • Self-imposed economic sanctions (China, Korea etc.) • Segregated Communities (Information Haves and Have-nots) • Electronic Crime • Unstable/Poor Governance and impact on investments, Economic Collapse • Social exclusion from the E-Society • Segregation and from Cyber Market place 	<p>Criteria</p> <p><i>Political effects?</i> <i>Legislative effects?</i> <i>Environmental effects?</i> <i>IT developments?</i> <i>Competitor intentions – various?</i> <i>Market demand?</i> <i>New technologies, services, ideas?</i> <i>Vital contracts and partners?</i> <i>Sustaining internal capabilities?</i> <i>Obstacles faced?</i> <i>Insurmountable weaknesses?</i> <i>Loss of key staff?</i> <i>Sustainable financial backing?</i> <i>Economy – home, abroad?</i> <i>Seasonality, weather effects?</i></p>

References

1. IFLA Medium-term Program, 1986–1991, IFLA, The Hague, 1988. Quoted in: Aguolu, I. E. (1997) Accessibility of information: a myth for developing countries? *Journal of New Library World*, vol. 98, no. 1, p. 25–29.
2. UNESCO Statistical Yearbook, (1991) UNESCO, Paris. Quoted in: Aguolu, I. E. (1997) Accessibility of information: a myth for developing countries? *Journal of New Library World*, vol. 98, no. 1, p. 25–29.
3. Adam, L. 1996. Electronic communications technology and development of Internet in Africa. *Information Technology for Development*, vol. 7, no. p. 133–44.
4. Aguolu, I. E. 1997. Accessibility of information: a myth for developing countries? *Journal of New Library World*, vol. 98, no. 1, p. 25–29.
5. Alterman, J. B. 2000. The Middle East's Information Revolution. *Current History*, January, p. 21–26.
6. Annis, S. 1991. Giving voice to the poor. *Foreign Policy*. Quoted in Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
7. Arreymbi; and Williams. 2005. Economics of Electronic Security, Economics of Electronic Business Processes. Ed. Paulus, S., Pohlman, N., Vieweg R. H.
8. Arunachalam, S. 1998. Information age haves and have-nots. *Educom Review*, vol. 33, no. 6, p. 40–44. Quoted in: Okunoye, A. and Karsten, H. (2003) Global access to knowledge. *Journal of Information Technology & People*, vol. 16, no. 3, p. 353–373.
9. Avgerou, C. 1998. How can IT enable economic growth in developing countries? *Information Technology for Development*, vol. 8, no. 1, p.15–29. Quoted in: Okunoye, A. and Karsten, H. (2003) Global access to knowledge. *Journal of Information Technology & People* vol. 16, no. 3, p. 353–373.
10. Berners-Lee, T.; Cailliau, R.; Luotonen, A.; Nielsen, H.; and Secret, A. 1993. The World Wide Web, *Communications of the ACM*, vol. 37, no 8, p. 76–82. Quoted in: Cheun, W. (1998) *Journal of Industrial Management & Data Systems*, vol. 98, no. 4, p. 172–177.
11. Bhatnagar, S. 2000. Social implications of information and communication technology in developing countries: lessons from Asian success stories. *The Electronic Journal of Information Systems in Developing Countries*, vol. 1, no. 4, p. 1–10. Quoted in: Okunoye, A. and Karsten, H. (2003) Global access to knowledge. *Journal of Information Technology & People*, vol. 16, no. 3, p. 353–373.
12. Cockburn, C.; and Wilson, T. D. 1996. Business use of the World-Wide Web. *International Journal of Information Management*, vol. 16, no 2, p. 83–102. Quoted in: Cheun, W. (1998) *Journal of Industrial Management & Data Systems*, vol. 98, no. 4, p. 172–177.
13. Delong and Froomkin. 2000. Speculative Microeconomics for Tomorrow's Economy. Internet publishing and beyond. Kahin B. and Varian R. Hal.
14. Doob, L. W. 1961. *Communication in Africa: A Search for Boundaries*, Yale University Press, New Haven, CT. Sourced from: Aguolu, I. E. (1997) Accessibility of information: a myth for developing countries? *Journal of New Library World*, vol. 98, no. 1, p. 25–29.
15. Garfield, E. 1979. 2001: an information society? *Journal of Information Sciences*, vol. 1, no. 4, p. 209–215.
16. Harris, R. 1998. *Internet Hosts per Head of Population, by Region*. Faculty of IT, UNIMAS Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
17. International Telecommunication Union (ITU) (2004), African Telecommunication Indicators 2004. <http://www.itu.int/ITU-D/ict/publications/africa/2004>. [Accessed 10 March 2006]
18. ITU. 1999. *Challenges to the Network: Internet for Development*, International Telecommunication Union, Geneva. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
19. Jimba, S.; and Atinmo, M. 2000. The influence of information technology access on agricultural research in Cameroon. *Internet Research: Electronic Networking Applications and Policy*, vol. 10, no. 1, p. 63–71. Quoted in: Okunoye, A. and Karsten, H. (2003) Global access to knowledge. *Journal of Information Technology & People*, vol. 16, no. 3, p. 353–373.
20. John, M. 1995. Third world faces 'information poverty'. CD News Bank Comprehensive, Reuters America. In: Srikantaiah, T. K. and Xiaoying, D. (1998) The Internet and its Impact on Developing Countries: Examples from China and India. *Journal of Asian Libraries*, vol. 7, no 9, p. 199–209.
21. Jones, M.; and Marsden, G. 2004. Please turn ON your mobile phone – first impression of text-messaging in lectures. Proceedings of the 6th International Symposium on Mobile Human-Computer Interaction (Mobile HCI '04), LCNS, 3160, p. 436–440. Glasgow, UK: Springer.
22. Jones, M.; and Marsden, G. 2006. *Mobile Interaction Design*. England: Wiley & Sons Ltd.
23. Kenney, G. 1995. The missing link information. *Information technology for development*, vol. 6, p. 33–38.

24. Khan, M. H. 2001. Rural poverty in developing countries: implications for public policy. *International Monetary Fund Economic Issues Series 21*, 1–13. Quoted in: Dao, M. Q. (2004) Rural poverty in developing countries: an empirical analysis. *Journal of Economic Studies*, vol. 31, no. 6, p. 500–508.
25. Madon, S. 2000. The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
26. Mansell, R.; and Wehn, U. 1998. *Knowledge Societies: Information Technology for Sustainable Development*. Oxford University Press. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
27. MIDS Press Release: New data on the size of the Internet and the matrix, <http://www.mids.org/mids/pressbig.tml>>. Sourced from: Srikantaiah, T. K. and Xiaoying, D. (1998) The Internet and its Impact on Developing Countries: Examples from China and India. *Journal of Asian Libraries*, vol. 7, no. 9, p. 199–209.
28. Morales-Gomez, D.; and Melesse, M. 1998. Utilising information and communication technologies for development: the social dimensions. *Information Technology for Development*, vol. 8, no. 1, p. 3–14. Quoted in: Okunoye, A. and Karsten, H. (2003) Global access to knowledge. *Journal of Information Technology & People*, vol. 16, no. 3, p. 353–373.
29. Nagy, H. 1991. Information Technology in World Bank Lending: Increasing the Development and Development Impact. *World Bank Discussion Papers*, 120, World Bank, Washington, DC.
30. NRC. 1996. *Bridge Builders: African Experience with Information and Communication Technology*. National Academy Press. Quoted in Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
31. Odedra, M.; Lawrie, M.; Bennett, M.; and Goodman, S. 1993. International perspectives: sub-Saharan Africa: a technological desert. *Communications of the ACM*, vol. 36, no. 2, p. 25–29.
32. Okunoye, A.; and Karsten, H. 2003. Global access to knowledge. *Journal of Information Technology & People*, vol. 16, no. 3, p. 353–373.
33. PANOS. 1998. *The Internet and poverty*, Panos Media Briefing, 28, The Panos Institute, London. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
34. Press, L. 1996. The role of computer networks in development. *Communications of the ACM*, 39, 2. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
35. Qureshi, S.; and Cornford, T. 1994. *Networking and development: the Connet-It project*.
36. Smithson, S.; Ngwenyama, O.; and Degross, J. I. Transforming Organisations with Information Technology, Elsevier Science B.V. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
37. Sadowsky, G. 1996. The Internet Society and Developing Countries. Article sourced from <<http://www.isoc.org/>>.
38. Schramm, W. 1964. *Mass Media and National Development: The Role of Information in the Developing Countries*. Stanford, CT: Stanford University Press, Sourced from: Aguolu, I. E. (1997) Accessibility of information: a myth for developing countries? *Journal of New Library World*, vol. 98, no 1, p. 25–29.
39. Semich, J. W. 1995. The World Wide Web: Internet boomtown, *Datamation*, vol. 40, no. 1, p. 37–41. Quoted in: Cheun, W. (1998) *Journal of Industrial Management & Data Systems*, vol. 98, no. 4, p. 172–177.
40. Srikantaiah, T. K.; and Xiaoying, D. 1998. The Internet and its Impact on Developing Countries: Examples from China and India. *Journal of Asian Libraries*, vol. 7, no. 9, p. 199–209.
41. Talero, E.; and Gaudette, P. 2000. Harnessing information for development: a proposal for a World Bank group strategy. Finance and Private Sector Development, 13 April, Quoted in: Okunoye, A. and Karsten, H. (2003) Global access to knowledge. *Journal of Information Technology & People*, vol. 16, no. 3, p. 353–373.
42. Turner, C. 1988. *Organizing Information: Principles and Practice*. Clive Bingley, London. Sourced from: Aguolu, I. E. (1997) Accessibility of information: a myth for developing countries? *Journal of New Library World*, vol. 98, no. 1, p. 25–29.
43. UNESCO. 2002. Institute for statistics, Sub-Saharan Africa Regional Report. UNESCO, 19 April 2002.
44. Wehn, U. 1998. *Internet access for all: the obstacles and the signposts*. Development Research Insights, 25, Institute of Development Studies, University of Sussex. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.
45. Williams, G. 2004. *Synchronizing E-Security*. Kluwer.
46. World Bank. 1995. *Harnessing Information for Development*. World Bank Group Vision and Strategy, World Bank International Bank for Reconstruction and Development.
47. World Bank. 1999. *Knowledge for development*. The World Bank Development Report 1998/1999, Oxford University Press. Quoted in: Madon, S. (2000) The Internet and Socio-Economic Development: Exploring the Interaction. *Journal of Information Technology & People*, vol. 13, no. 2, p. 85–101.

opment: Exploring the Interaction, *Journal of Information Technology & People*, Vol. 13, No. 2, p. 85–101.

48. Zachaman, R. 2004. ICTs and the World of Work weaving a Bright New Fabric or a Tangled Web? Information Technologies and International Development MIT Press.

AR PAŽENGUSIOS EKONOMIKOS YRA SAUGIOS, JEIGU SIEKIANČIOS PAŽANGOS EKONOMIKOS YRA MAŽIAU APSAUGOTOS?

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Santrauka. Globalizacijos sąlygomis šiuolaikinei ekonomikai iškyla daug grėsmių, nuo kurių negali apsaugoti jokios valstybių sienos. Šios grėsmės neišvengiamai veikia atskirų šalių ir pasaulio ekonomiką. Straipsnyje aptariami klausimai, susiję su ekonomika ir jos plėtote, atsižvelgiama į tai, kad šiandien nė vienos šalies ekonominė sistema negali būti nepriklausoma. Vienas iš svarbiausių šiuolaikinės ekonomikos augimo veiksnių, autoriaus nuomone, yra jos kompiuterizacija ir kibernetiniai ryšiai, taigi ir jos elektroninis saugumas, todėl straipsnyje daugiausia dėmesio skiriama tokiam netechnologiniam veiksniai kaip elektroninis ekonomikos saugumas, kuris, autoriaus nuomone, dabar didžiausią įtaką daro ekonominei plėtrai. Autorius straipsnyje apžvelgia pagrindinius rezultatus, paskelbtus įvairiose publikacijose, kuriose kalbama apie elektroninį ekonomikos saugumą ir plėtotę.

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