

## **The Technological, Legal and Economic Framework of the Information Age**

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### **Abstract**

There is no question that the information age, propelled by ongoing innovation in the development and use of information technologies, provides an unprecedented opportunity to transform existing patterns of global production and the corresponding disproportionate diffusion of technical knowledge, wealth and inequality among nations and peoples. The profound opportunities presented by the information revolution have been recognized by international agencies, governmental organizations, nongovernmental organizations and the public as a whole.

**Keywords:** Information technology, Global Marketing, Computers , Hardware , Internet, Software developers.

### **1. Introduction**

One of profound effects of the Internet is the connectivity that is possible for millions of users worldwide. In terms of supply, the Internet offers access to services, products and information that otherwise would be unavailable without the physical movement of persons. Internet applications offer an unprecedented possibility for access and delivery of important socio-economic Inputs such as education, medical information, and, in a more limited fashion, health care and associated services. It also offers opportunities for domestic cultural industries to penetrate global markets. Given the fact that inadequate or ill-functioning infrastructure constitute principal barriers to access and delivery of social goods, the potential of the Internet to overcome these difficulties in developing countries is singularly important. To effectively participate and enjoy the benefits of the information economy, however, developing countries will

need to make investments in the .soft. infrastructure of their domestic economies by adopting policies to deal with illiteracy, promote tertiary education, and investments . The success of development strategies and the attainment of development goals require attention to these foundational requisites for accessing, utilizing, and facilitating productivity in the information economy.

The following important factors that policy makers should keep in mind in formulating information policies with a development focus.

1. Exploiting the potential of the Internet to facilitate development objectives requires access to hardware (computers), software and content. Competition and deregulation in the telecommunications industry will enhance the opportunities for access to digital content by citizens.
2. Cooperation among various industries and enterprises is an indispensable aspect of successful technology platforms. It is important to encourage the use of computer networks in identified sectors in order to experience net gains and to facilitate integration into the global supply chain. Countries must evaluate areas of comparative advantage and determine how information technology can enhance such advantage while improving competitive advantage in other areas.
3. Institutions of higher learning are an important aspect of developing a strong technology base in any society. This includes training software developers, mathematicians and telecommunications experts. Education should occupy a central place in development strategies for the information age.

This will require implementation of copyright treaties in a way that ensures that proprietary rights are balanced with public policy limitations that permit use and access for educational purposes.

4. Economic growth in the information age has a strong correlation with medium to highly skilled labour. With respect to investments in education, the cost of educational materials has been significant. Given the wealth of information available on the Internet, dissemination of educational content over computer networks is an invaluable opportunity for improving access to, and the quality of, education in developing countries.
5. The cumulative effects of expansive proprietary rights must be carefully weighed in order to develop policies that can effectively encourage domestic creativity while simultaneously facilitating access to existing content online. In this regard, countries must carefully determine the relative costs and benefits of accession to multilateral copyright agreements. More specifically, the method of domestic implementation of these agreements is critically important for fashioning the appropriate domestic environment needed to ensure sustained access to informational works.
6. Given high population numbers in the developing world, the gradual introduction of information technology may cause initial worker dislocation. Any use of information technology must therefore consider labour implications.

7. Social, economic and legal institutions must function well in order to support economic growth in the information age. In leading developing countries such as India, Korea, China, and Brazil, the existence of macroeconomic stability has greatly facilitated the opportunities for economic development utilizing information products and information technology. While other indicators such as use of technology and technology penetration are important indices of the potential for development progress in the information age, the experience of some developing countries suggest that there are ways to capitalize on existing strengths to build up domestic firms.

opportunities to service the information economy. For example, the software sector of the Indian economy is developing its own technology and content for export and domestic use. In other words, this industry is dynamically pursuing opportunities for growth that are not dependent solely on outsourcing. Even the nature of the out sourced products has changed to reflect greater sophistication.

8. Despite the emphasis in many studies on the need for a strong telecommunications infrastructure for greater physical access to the Internet, the development of third generation Internet technologies through satellite suggests that eventually, this major barrier may not be as significant for access to the Internet, particular in rural areas. An important task, then, is to develop guidelines as to how much developing country resources should be invested in adapting to the current technological state of art, given the on-going rate of innovation.

These are issues that require careful and sustained empirical analysis to ensure that developing countries are not persistently left behind in the information age.

## **2. Characteristics and Challenges of the Digital Economy**

In the new global economy, information is simultaneously an intrinsic characteristic of markets as well as a product for sale in markets. Intellectual property subjects such as copyrights, trademarks, and patents, as well as new subjects of proprietary protection such as databases, are all paradigmatic examples of information products.

At the same time, the Internet has made information about comparative prices for goods and services readily and easily available through software agents that aggregate data from various Internet sites. Indeed, orthodox price setting and price distribution theories require reconsideration given the comparative ease with which product prices can be compared on the Internet. Efficient price comparisons represent one example of how the Internet has affected markets through reduced transaction costs.

Further, in this new economy, markets can straddle both the digital environment of the Internet and .real time. Markets when the relationship between on-line or electronic commerce and traditional commerce is simply a continuum with producers converting certain aspects of business transactions (*e.g.*, selection and payment) to the Internet, while retaining labour for other aspects such as customer service. Alternatively, some markets in services may exist solely online such as data management and electronic

share trading, while other markets capitalize fully on the savings in labour, space and time enabled by information technology.

Electronic commerce encompasses all these different markets and uses of technology for economic and commercial purposes. At the very least, electronic commerce implies the use of digital information technology to transform existing business models and practices, and to improve, replace, renew or recreate products and services utilizing computer networks.

The potential for economic growth that is made possible by information technology has also engendered new challenges over what rules are necessary to govern the information market. For example, there is an unremitting demand for legal rules that will introduce limits on -

- ? how consumers access and use digital content, and
- ? how producers collect and use personal data.

The range and diversity of new products, new services, And new production, distribution and pricing strategies occasioned by the information age engenders regulatory concerns ranging from access to the Internet, the effects of broader and stronger intellectual property rights, to jurisdiction over disputes that arise from interaction on the Internet, the significant costs of treating. Viruses that damage and destroy technology infrastructure, the security of personal information, and many more challenges.

It is clear that the global reach of the Internet requires a multilateral approach to these continuously evolving complex issues. However, as developed countries seek to create new rules, or to adapt old rules to the new economy, most developing and least developed countries remain at the periphery of this new era both in terms of access to the technological tools as well as participation in setting the global agenda. In sum, the current geo-political and economic trends of the information economy reflect those that characterized the international division of labour after the industrial revolution in that labour intensive phases of production were relocated to regions with surplus low-cost labour.

Similarly in the information age, major developing countries have participated in the technological environment primarily by serving as important harbours for outsourcing. While this has resulted in important gains for such countries, particularly India and China, the pertinent question is whether a model based mainly on servicing foreign markets can sustain long-term economic growth.

For developed countries, empirical studies have explored trends and policies, and suggested guidelines to encourage the continued growth of productivity through electronic commerce and associated information communication technologies.

The results of these studies confirm the importance of investments in information technology as a key factor of domestic growth. Macroeconomic conditions necessary for sustained growth in this new environment in developed countries are equally applicable to developing countries with the exception of intellectual property regulation. In this regard, the current strategies of some developed countries are in tension with the open regulatory approach that engendered the initial technologies of

the information age. Constructing a balanced regime for the competing interests and concerns of owners, users and creators nationally is difficult and costly; doing so globally is a daunting challenge. At the minimum, it will require a reconsideration of some core assumptions and inherent tensions in existing global regulatory frameworks ranging from free trade, antitrust, international communications standards as well as intellectual property rights. Despite increasing domestic and global concern about the effects of expansive intellectual property rights on the competition and innovation environments, efforts by owners to strengthen intellectual property rights have continued unabated. Emerging impediments to development goals in the specific context of new information technologies are evident in various regional and multilateral negotiations over intellectual property rights that require developing countries to adopt strong rights with minimum attention to countervailing access mechanisms for consumers. Efforts from academic and policy quarters of some developed countries emphasizing the importance of encouraging the broadest possible exploitation of information goods are an important factor in this regard. Developing countries have much to gain by harnessing this public concern in the context of multilateral and bilateral negotiations over intellectual property rights.

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