

## **Information Communications Technologies and Regional Integration: Africa and South America**

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## **Information Communications Technologies and Regional Integration: Africa and South America**

### **Abstract**

This paper examines the relationship between information and communication technologies (ICTs) and regional integration as a pathway to socio-economic development in Africa and South America. Both regions face a colonial legacy often characterized by stronger external economic and political ties to the developed world than between the countries in the region. The transfer of technology and building of infrastructure networks are also influenced by this North-South relationship. However, regional organizations are currently involved in efforts to strengthen technological infrastructure such as ICTs, as well as the enhancement of economic and political ties. This paper suggests a framework with which to combine research on integration, ICTs and development, and provides a brief analysis for each region of some ICT initiatives and their potential impact on regional integration. The paper concludes with suggested applications of this theoretical framework for further research, particularly in order to assess the desired outcome of development.

# **Information Communications Technologies and Regional Integration: Africa and South America**

## **Introduction**

Information and Communication Technologies (ICTs) and regional integration are both seen independently as tools to foster socioeconomic and political development. ICTs are also critical for integration within and between countries to enhance the flow of communication, information, and production. In that process ICTs are both direct agents of development as well as facilitators of integration which in turn promotes socioeconomic development. While the linkages between ICTs and development on the one hand, and regional integration and development on the other hand are made intuitively, there is no organized theoretical model for explaining these connections. Research and policy have often proceeded independently; with claims made either for the utility of regional integration and cooperation for economic growth, or that of ICTs for socioeconomic development, especially in the context of Africa and South America.

Indeed, these regions are compelling cases for examining the relationship between ICT development, socioeconomic development and regional integration. Both regions share a colonial past which developed them in particular ways, resulting in a deficit of infrastructure for transportation and communication between countries in the region. As a result, many often have more efficient connections with Europe and North America than with each other. Regional integration is pivotal to regional development if only by reducing dependencies on the developed world for trade.

The absence of a theoretical framework that captures the interstices between these issues has significant implications for research and policy recommendations in Africa and South America. This paper addresses this deficit by suggesting an integrated theoretical framework that facilitates a conceptualization of the intersections of discourses in ICTs, regional integration and socioeconomic development in the two regions. Such a framework will enhance research, analysis and policy in these areas. To achieve our purpose, it is necessary that we briefly review the relevant theories of integration and development, and the theoretical linkages between ICTs and socioeconomic development.

This paper is organized in three major sections. In the first section following this introduction, we discuss some of the prevailing theories and suggest an integrated model that facilitates a deeper understanding and analysis of the processes of regional cooperation, economic development and ICT adoption in Africa and South America. In the second section, we apply our suggested theoretical model of integration, ICTs and development as a conceptual framework to examine some of the on-going projects in Africa and South America. The case study encapsulates the various programs and projects adopted by policymakers and other key actors in the regions to build economic capacity through regional integration and ICTs. We conclude in the final section with recommendations for further research.

## **A. Theoretical framework of integration, ICTs and development**

### **I. Comparative regional integration**

Theoretical and practical approaches to regional integration are largely based on the experience of European integration since the 1950s. (Laursen, 2004) The European model, for example, suggests that nation-states follow a series of linear steps, beginning with lower level

economic integration (such as in trade) and moving on to the integration of monetary systems and fiscal policies.

Almost four decades ago Nye (1968) warned of the difficulties in comparing regional integration, and that assuming each example would and should follow the European experience was flawed. With examples from Africa and Central America, he showed that the steps discernible in European integration are not necessarily followed in the same order in other regions, and that economic integration can occur even with weakening political integration. (Nye, 1968: 859) What is recommended, therefore, is an analysis of integration in layers, separating political, economic and social factors, before assessing how they might relate to each other. This approach would be useful in the African and South American cases, where arguably the main goal of integration is regional economic development, not political integration.

Neofunctionalism was the most frequently used theory of integration in research on South America during the 1960s and 1970. It however failed to show how economic integration links to political integration (Axline, 1981). Neofunctionalism, especially as developed by Ernst Haas in *The Uniting of Europe* focuses on the development of a supranational state via the interaction of interest groups and political elites (Pentland, 1973). The earlier theory of functionalism, attributed to David Mittrany, had as well the goal of political integration, with the rationale of achieving peaceful relations among warring nation-states, but with this global community emerging through “an administrative network which better serves human needs” (Pentland, 1973: 83). This network, it is suggested, would be driven by technological advances and the functional need to cooperate. Functionalism therefore best explains how ICTs can enhance regional economic integration in Africa and South America. Explicitly downplaying the role of national governments, in the functionalist model of integration technocrats and citizens utilizing networks of communications and transportation, for example, cooperate and integrate the systems across borders. It is then assumed that “creative association and cooperation in problem-solving provides a learning-situation in which participants are gradually weaned away from their allegedly irrational nationalistic impulses toward a self-reinforcing ethos of cooperation.” (Pentland, 1973: 84)

We suggest that a functionalist approach can facilitate an examination of integrative efforts at infrastructure development, as well as going beyond infrastructure to see how citizens and groups are interacting to achieve and utilize this development. However, by itself, it fails to provide adequate explanations for the relationships between regional integration, ICTs and development. For one thing, its emphasis on technocrats as key agents of change contradicts our concept of development as socioeconomic growth that benefits the greater number of people, especially the most vulnerable. Secondly, the experiences of Africa and South America differ significantly from that of Europe, the context in which functionalism was developed. With an emphasis on reduction of foreign dependence, and regional economic development at the forefront of integration initiatives in these regions, the expected outcome of international integration is problem-solving for national and regional development issues, rather than a shift in the legitimacy of political institutions. Indeed, political institutions might be strengthened during this stage of integration until adequate infrastructure capacity is built to increase non-state interactions.

## II. Development Theory

Development theory can be defined as the body of theories that focus on issues of economic, social and political development in countries in the periphery. It “seeks to account for the

uneven pattern of development worldwide and to recommend measures to overcome underdevelopment” (Martinussen, 1997:8). Modernization theory was the prevailing theory of development up to the 1970s. It considered internal factors in its explanation of underdevelopment and therefore prescribed internal (or structural) changes to facilitate growth. However, in focusing on internal constraints to development, modernization theorists overlooked the structure of the international political economy and the ways in which it adversely affected the development efforts of countries in the South. And it was to correct this “oversight” that dependency theory emerged in the late 1960s and 1970s, and redirected attention to external factors of underdevelopment. Dependency theorists such as André Gunder Frank (1967) and Dos Santos (1970) argued that underdevelopment is created by the unequal relationship of exchange and dependence that exists between core countries and those in the periphery.

By the 1980s, dependency theory was itself virtually dead (Chilcote, 1994). But some of its assumptions re-surfaced in Castells’s analysis of the factors that continue to hinder development in the South, particularly sub-Saharan Africa (Castells, 1996: 83-95). According to him, the causes of the region’s marginalization and poverty are attributable to over-reliance on the export of primary commodities, negative terms of trade which, "as a result of the structure of exports, make it extremely difficult for Africa to grow on the basis of outward orientation of its economies." (p.83)

Theories, policy prescriptions and initiatives based on the classical understanding of development have since moved in different directions. Rather than top-down economic policies, other programs promoting decentralized patterns of development have become prominent, and emphasis has at various times shifted to projects which directly target the poor, especially in rural areas (Brohman, 1996). One such perspective focused on basic-needs strategy as a more useful approach to achieving the kind of economic growth that benefits the majority of people in developing countries. Toward the end of the 1970s, African countries, for instance, began to adopt a basic-needs strategy of development especially one that included regional and continental integration in ways that would allow African countries to be both producers and consumers of their products. In other words, the continent wanted to take advantage of its huge market rather than produce what it did not consume for the external market and consume what it did not produce.

This strategy became formalized in 1980 when 50 African heads of state met in Lagos under the auspices of the Organization for African Unity. At the end of the conference, the leaders signed the Lagos Plan of Action (LPA), aimed at focusing on internally driven strategies for development and collective self reliance. The plan called on the continent to “use its extensive resource base primarily for its own development rather than for export, to expand its industry primarily for home consumption and only secondarily for export” (Browne, 1984: 803). It was however short-lived because of the debt crisis and the consequent involvement of the Bretton Woods institutions in African economies. In the midst of the expanding neoliberal orthodoxy there emerged a new global discourse on ICTs and development.

### **III. Theories of ICT and development**

There are no explicit theories of ICTs in the context of development. The literature consists of accounts of prescriptive statements on the impacts of ICTs on socio-economic development. In recent years there is a budding body of evaluative research on the utilization of ICTs in various sectors of the society. (Examples include Ciborra and Navarra, 2005 and Thioune, 2003.) The closest to a systematic theory of ICT and development is framed around five indicators of development proposed by the United Nations Commission on Science and

Technology in collaboration with the Canadian International Development for Research Center (IDRC): education, health, income, governance and technology (Crede and Mansell, 1998).

Howkins and Valantin (1997) present a method of examining the relationship between ICTs and development through scenario modelling. They identify four scenarios – march of follies, the cargo cult, net blocs and network – which represent the directions that countries are likely to take in the adoption of ICTs for development.

In the march of follies, the global community is exclusive and fragmented and most developing countries tend to “respond only partially and reactively to the use and acquisition of ICTs.” (Howkins and Valantin, 1997: 29) The market is competitive and cooperation manifests only in mergers and concentration to maximize profits. In the cargo cult, most developing countries assume that the global community is inclusive and supportive, but they respond only partially and reactively to the acquisition and use of ICTs. In net blocs, the world slides into regional blocs such that the global system becomes exclusive and fragmented, prompting “developing countries (to) take an active approach to the acquisition and use of ICTs and develop a complete set of policies.” (Ibid., p. 38) But these policies lead to a world of regional blocs based on shared cultures and languages with each bloc pursuing competitive economic goals without much cooperation with other blocs. The final scenario, Net world, approximates the ideal end point because the global community is perceived by all to be inclusive and supportive. “Developing countries have a complete and proactive set of policies toward the acquisition and use of ICTs.” (Ibid., p.41) They treat information and communication as the starting point for development.

Net blocs and net world represent current realities where countries struggle between the simultaneous imperatives to become fully engaged with the global community and to forge closer regional ties to secure their positions in a globalized world. For instance, the EU has expanded even as it is becoming more integrated socially, legislatively, politically and economically. African countries are seeking closer relationships with each other through the reconstituted African Union, while the regional blocs are becoming stronger and more integrated. In South America regional trading blocs exist alongside bilateral and multilateral agreements with the United States and other developed countries. The ultimate goal is economic development, or economic security in the case of regions where “development” (in its connotation as an initial stage in the journey to industrialization) has since been achieved.

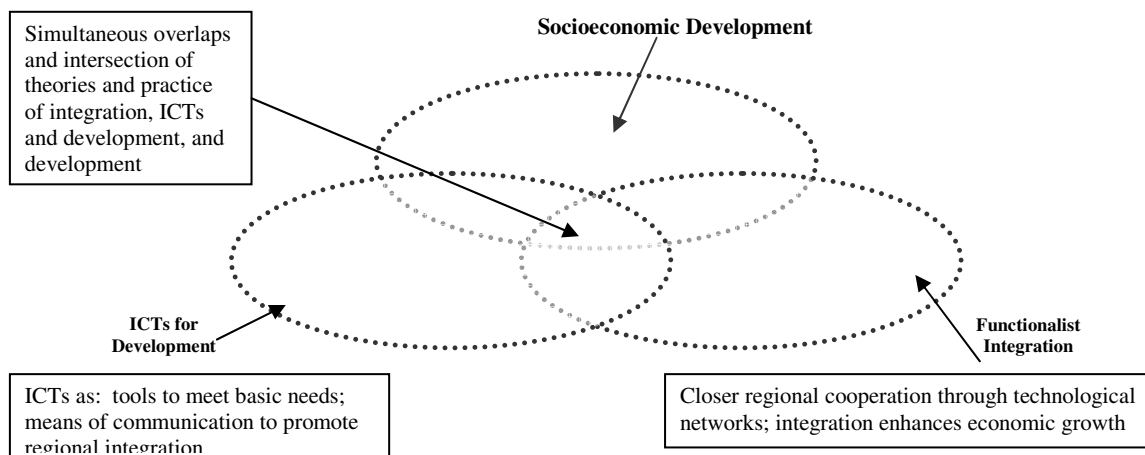
#### **IV. Toward a theory of integration, development and ICTs**

The increasing imperative to cooperate in the pursuit of economic objectives calls for a closer examination of the relationship between regional integration and cooperation, development, and ICTs. The technologies have become a key variable because all regions, including the industrialized EU, are deepening their integration through these technologies as well as using them as tools for economic growth. Indeed, ICTs have facilitated closer linkages in unprecedented ways. As a result, it is no longer possible (or indeed useful) to approach the questions of regional integration, economic development and ICTs as discrete research fields. An integrated theory that fuses these areas becomes a useful tool for understanding the impacts of each on the other. In other words, in the context of Sub-Saharan Africa and South America, we must see the increasing integration and adoption of ICTs as processes toward a single goal: economic growth. These processes mutually impact each other: ICTs facilitate regional integration and together they promote national and regional economic development.

Furthermore, an integrated theoretical framework of regional cooperation, development and ICTs assists in the understanding of the various programs and projects of ICTs on one hand, and regional cooperation and integration on the other in South America and Africa. It integrates theorization in each field in recognition of the well-researched argument that lack of regional cooperation and poor communications infrastructure are part of the problems of underdevelopment in the two regions. Thus, it advances research in the field, as well as facilitates a more purposeful policymaking in the regions.

A brief model illustrates how these three theoretical perspectives intersect and guide future research. The bullet points below suggest the main research questions for each theoretical element of the model. The diagram shows how the processes of regional integration and ICT adoption in Africa and South America are expected to ultimately promote socioeconomic development. There are also overlaps in these processes that reject the analysis of the different domains as discrete fields of theory, research and practice.

- *Functionalism* as integration theory: closer cooperation among countries in each region; integration as means to economic growth through regional trade; development of technological infrastructure and uses of this system by various groups for societal needs; what are the needs and are they being met?
- *ICTs for development*: utilization of ICTs as tools for the achievement of the five indicators of development; ICTs as means of communication and information sharing to enhance regional integration and cooperation; are development and integration needs being met?
- *Development theory*: socio-economic development fosters local development, reduces dependencies but also expands national and regional opportunities, connecting people, countries and regions with the global community; are development indicators improving?



**Diagram 1: An integrated theoretical model representing the interrelationships between regional integration, ICTs and development, socioeconomic development**

## B. Integration and Development in Africa and South America

In this section, we employ this theoretical model in examining and identifying some of the processes currently underway to pursue goals of integration, particularly using the first part of the model, functionalism, to build regional capacity and implement integrated development

strategies with ICTs in Africa and South America. We address each region and its unique challenges separately.

## **I. Regional integration and ICTs as tools for development in Africa**

African countries continue to face enormous development problems resulting from various factors. The 1980s, generally referred to as the “lost decade,” were characterized by the oil shocks and debt crisis which threw many African countries into abject poverty. This opened the door for the Bretton Woods Institutions to intervene in their economies leading to a new era of intensive neo-liberal internationalism, thus scuttling the Lagos Plan of Action, a program of self-reliance and cooperation. However, the LPA was not completely sidetracked in the lost decade. African leaders rallied back, picked up the document and reworked it in Abuja, Nigeria in 1991 at another meeting of African heads of state. The blueprint of the earlier plan of action provided the framework for the establishment of the African Economic Community (AEC) which became effective in 1994. (AEC) The AEC is a conglomerate of all the regional blocs in Africa. It aims at facilitating the creation of free trade areas, a single market and common currency, and the overarching objective of promoting economic integration and cooperation among African countries. The African Union (formerly Organization of African Unity) also stresses the need for closer economic ties between and among African countries. The AU specifically works to facilitate the acceleration of the political and socioeconomic integration of the continent. It also coordinates and harmonizes policies between existing and future regional economic communities (E-Africa Commission).

A major first step to achieving integration and cooperation in Africa is infrastructural development. Therefore in the following section, we explore current initiatives in Africa aimed at creating a communication infrastructure conducive for achieving the continental goals of increased integration and cooperation. Many of these initiatives occur within various frameworks such as UNECA’s African Information Society Initiative (AISI), but we will focus on those implemented by the New Partnership for African Development (NEPAD) as expressed through its e-Africa Commission. We will therefore consider two specific projects that the e-Africa Commission is undertaking under the auspices of NEPAD to connect Africa through the development of continental and regional information and communication infrastructures.

The emphasis on communications infrastructure as a strategy for development arises from the fact that the sector has always been problematic especially posing major obstacles in efforts at continental integration and cooperation. The telecommunications infrastructure in Africa was historically developed in a colonial context where communication was not considered a tool for the socioeconomic development of the colonies. Rather, communication infrastructure facilitated the administration of the colony and extraction of colonial resources to the colonizer’s country. They were therefore developed skeletally for this basic utilitarian purpose. While many African countries have been politically independent for several decades, those colonial networks remain the backbones of telecommunications in many parts of the continent.

There are even places where telephone communications still must be routed via Europe, despite relative proximity of the caller and the called. Such clumsy linkages are not only expensive and time consuming (but) they constitute a palpable barrier to the development of any meaningful business relationships among neighboring countries (E-Africa Commission).

This pattern also prevails even with the “new” ICTs. In the first place, many of the mobile telephone networks in African countries rarely interconnect with one another even within the same region. Thus, in highly populated countries with multi-service providers, individuals simultaneously subscribe to different mobile telephone carriers and carry around between two and three cellular phones. The choice of what phone to use for each call depends on what network the other party subscribes to. Each initiated call is routed out of the country before terminating locally. E-mail exchanges follow similar patterns: a sent e-mail travels out of the continent before being routed back to perhaps someone next door. This increases bandwidth cost and time.

### *Networks of integration*

NEPAD, through the e-Africa Commission, has therefore devoted much of its resources to tackling these connectivity issues. The 2001 NEPAD document includes a section on the digital divide, and ICT development has since become a priority action area to promote conditions suitable not only for national socioeconomic development but also to facilitate regional integration, cooperation and trade.

In 2003, at a meeting of NEPAD heads of state in Abuja, Nigeria, a resolution was reached to build an open access broadband network to connect African countries with each other as well as with the global society. In August 2006, a protocol to build one of those networks was approved in Kigali, Rwanda. The network derived its legal mandate from the African Union constitutive Act. It becomes a NEPAD flagship project and there are plans to build similar networks in other parts of the continent.

The ICT broadband will be operated as a “public good” and charged on a cost-recovery basis. It will lease network capacity to other operators in the region, thus becoming a “carrier’s carrier” (E-Africa Commission). Construction of the broadband began in the last quarter of 2006 and was expected to be completed early 2008.

Eassy is a terrestrial cable project with a similar purpose but facilitates information and communication infrastructure for countries along the eastern and southern coast of Africa. Sponsored by 22 “licensed telecommunications operators in Eastern and Southern African region,” the project in March 2007 contracted Alcatel-Lucent to build 10,000 kilometers of 320 Gigabits submarine cable to link eight countries between Sudan and South Africa (Optical Networks Daily, 2007).

Different countries are also working on developing local internet exchange points (IXPs) to further facilitate domestic and regional connectivity. For instance, in 2006, about 30 internet service providers (ISPs) in Mali met to discuss the possibilities of setting up a domestic IXP in the country. Also in 2006, the Nigerian Communications Commission hired a consultant to begin work on the construction of an IXP in Lagos (Ovia, 2006). A national IXP is crucial to reducing cost and improving the communication process because in its absence, an ISP must send all outbound traffic through its international links, most commonly via satellite (E-Africa Commission).

### *Beyond infrastructure*

The inadequacy of transportation and communication infrastructure is usually cited as a major hindrance to effective integration and cooperation among African countries. Insufficient integration and cooperation is in turn considered as significant factors in African

underdevelopment. The prevailing assumption is that African countries have a better chance of non-dependent development if they focus more on economic integration and cooperation rather than compete with each other to produce the same kinds of commodities for a raw-material saturated global market. Infrastructural development in different regions and continent provides a break in this vicious cycle.

While we agree with this proposition, we however argue that this position ignores the political and cultural barriers to integration and cooperation in postcolonial countries. The mandates of the African Economic Community and the reconstitution of the Organization of African Unity as African Union are similar to the European Economic Community and the European Union. Africans may be deliberately or unwittingly attempting to replicate the results of the deeply integrated European initiatives. We argue that an integration of this nature goes beyond the building of communication infrastructure. In this section therefore, we highlight social and political factors that may reduce the capacity of a developed ICT infrastructure to increase integration and cooperation.

Socially, many Africans suffer from “colonial mentality” – the idea that only products and services “imported from abroad” are good enough. And “abroad” is anywhere outside Africa. In the years before the rise of multinational corporations and export-processing zones, only Made-in-England or Made-in-France products were good enough. In Nigeria, “Made-in-Taiwan” was synonymous with low-quality goods while Made-in-Aba referred to all locally made products and these were “touch-nots,” especially by the newly rich of the oil-boom years. With structural adjustment programs and the attendant economic hardships, the intensification of globalization and globalized production and outsourcing, many Africans now know that many Made-in-England products are actually produced in factories in Taiwan and other Asian countries. However, Made-in-Aba remains a metaphor for locally-made products and services that must be shunned by the rich.

This colonial consumption pattern surfaces in the societal usage of ICTs as acceptance and usage are still considered in relations with the external world – outside Africa. This may be an outcome of the fact that the technologies – both as physical and cultural objects – are imported from elsewhere. Perhaps then NEPAD’s efforts and those of some countries to develop national IXPs and local content would create a sense of ownership of the technologies and therefore generate internally-oriented imperatives.

Politically, many African countries still struggle with ethnic conflicts and rivalries. Nearly all of these countries are amalgams of different nationalities and ethnicities that were “artificially” integrated and mandated to “become” nation states by the structures of colonialism. These artificial constructs have been the roots of many internal and cross-border conflicts on the continent as different groups of people view each other with suspicion and hostility. Recent conflicts on the continent have arisen from the inability of the different groups that constitute each country to find common grounds and goals. Also, there are many regional blocs on the continents with different dynamics of suspicion and hostility.

In West Africa, the Economic Community of West African States (ECOWAS) has been relatively cohesive, but many of the most violent conflicts on the continent in recent decades have occurred in this region (Liberia and Sierra Leone). Economically, Nigeria, the largest country in the region, is perceived as an overbearing, albeit incompetent, giant by other countries. South Africa is similarly viewed by its land-locked neighbors in the Southern African Development Community (SADC). At a different level, North Africans ally themselves more politically and culturally with the Middle East than with Africa, and there is now a distinction between “sub-Saharan Africa” and “Africa” as research and policy

concepts. Within and between countries, within and between regional blocs and within Africa, there are divisions and formations that are conceptually resistant to cooperation and integration. Given the expansive land mass, the number of countries and people, getting Africa integrated appears a challenge that ICTs may not adequately mediate without the intervention of other processes.

We argue that a developed ICT infrastructure will not by itself create continental integration and cooperation in Africa given these social and political impediments. However, we do not suggest that NEPAD's ICT broadband projects and other national projects in ICT self-sufficiency are futile. If the infrastructural communication barriers in Africa are removed, then the continent has one less problem to deal with. But more importantly, we argue that these issues cannot be examined in isolation of each other. A vigorous analysis of the integration of issues of regional cooperation, development and ICT will provide a more nuanced understanding of the complexities of the processes through which African countries and others in the developing world will promote their economies via integration, regional cooperation and ICTs.

## **II. Integration and Development in South America**

Current issues in South American regional integration and development must also be understood within the context of colonization of the region and its historical relationship with Europe and North America. In the early centuries of conquest, as in Africa and other regions, development consisted of transportation and technologies for the extraction of natural resources and military control. Brazil, for example, was developed along its coastline with sugar plantations for the export of cash crops to Europe. Colonial development and geographical features including mountains and dense jungle in the interior all contributed to the lack of regional infrastructure development. Independence movements resulted in the establishment of individual nation-states, most of whom had stronger socioeconomic ties to Europe, and later the United States, than to each other. This colonial and postcolonial legacy of resource extraction for export to the North created a dependence upon these markets and a vulnerability to changes in demand and price. This was made dramatically clear in the 1930s when the global economic depression curtailed demand from the developed countries for South American primary commodities (Chasteen, 2006: 229).

Economic nationalism prevailed during the 1930s, and throughout much of the 20<sup>th</sup> century, in part as a reaction to this reliance on foreign markets, and foreign control of much of the region's natural resources. Dependency theory itself was influenced and developed within this context, created by South Americans such as Prebisch, Frank, and Cardoso. Economic nationalism was manifested in the political economy of the region in varying forms, from Marxism to state capitalism, but a common theme was development via greater self sufficiency to break dependent economic relationships. The prevailing policy for economic development in the latter half of the 20<sup>th</sup> century of Import Substitution Industrialization (ISI), in which states invested heavily in the manufacturing of consumer goods, was a resistance to the reliance on imported manufactured goods from the developed countries.

The current era of globalization and the neoliberal policies of Bretton Woods Institutions over the past fifteen years have presented some challenges for South America. There have been policy shifts away from government directed development and towards freer markets, institutionalized by the so-called Washington Consensus (consisting of the IMF, the World Bank, and the United States). The debt crisis in South America underscored the region's dependency on capital from the developed countries, and at the same time reinforced the

Consensus' policies towards the region: privatization of industries, de-regulation of the economy, removal of subsidies and trade barriers, and budget-tightening (Gwynne and Kay, 2004, p. 12).

International integration initiatives and agreements in South America have been influenced by both of these tendencies. Dependency theorists recommended "de-linking" from the global economy to eliminate reliance, influencing policies of ISI, but also suggesting that closer economic ties within the region would be a way to develop self-sufficiency. Neoliberalism, with its faith in free market economics, advocates international integration to remove barriers to the flow of trade and investment. The earliest and arguably the most significant effort in the region, the Mercado Comun del Sur (MERCOSUR/MERCOSUL), which includes all the Southern Cone countries, was founded to facilitate trade in the continent, with the goal of "desarrollo economico con justicia social en la region, afrontando con urgencia el desafio que plantea la pobreza, la desigualdad, el desamparo y la exclusion social" [economic development with social justice in the region, urgently confronting the challenge posed by poverty, inequity, marginalization, and social exclusion] (Comunicado).

Information communications technologies (ICTs) are now, as in Africa, considered an integral tool for socioeconomic and political development in South America. There are national, international and multinational plans and projects on paper and in process to bridge the digital divide, improve citizens' access to ICTs, and utilize the technologies in improving the region's global competitiveness as well as solve persistent problems of poverty and income inequality. Thus, regional integration and ICTs are both pursued as in the quest to bring South America along the path of development. Moreover, ICTs are viewed as a necessity for integration, particularly in a region characterized by weak infrastructure in transportation and communication (Malkin, 2006).

### *Networks of integration*

This development of infrastructure for ICTs is a critical necessity for the region, which currently only has three IXPs, compared to 38 in the United States. In comparison to Africa, there have not been any significant region-wide efforts to build ICT infrastructure at the governmental level. Also, efforts to implement major infrastructure improvements for connectivity, such as broadband and wireless capabilities are still in the early stages and not widespread. (See, for example, Malkin, 2006: 53 and New Models for Universal Access) There have, however, been a growing number of ICT development projects within countries, initiated by outside multilateral organizations and the private sector. Regional ICT development for integration depends upon the growth of national information systems and connectivity within countries, as well as international integration of systems. The World Bank's *infoDEV* program, for example, has funded "incubator" projects in eight South American countries, with the goal to enhance research and development by local companies in ICT development (Incubator Network).

Connectivity within countries is vital to avoid integrating urban areas at the expense of rural areas, deepening the digital divide and reinforcing dual economies in the region. An Inter-American Development Bank report in 2005 warns of the dangers of "asymmetries" in all facets of development with the tendencies of global capitalism to further polarize socioeconomic conditions, one cause of which is uneven infrastructure development, including ICTs (Giordano, 2005). In fact, careful simultaneous national and international ICT capability is required in order to create a system that integrates the various sectors in a way which contributes to regional development. The IBD report suggests "bottom-up approaches that build upon the efforts of civil society organizations and local governments to

forge new international networks that facilitate regional and global integration” (Giordano, 2005: vi).

### *Beyond Infrastructure*

As we saw in Africa, the social and political barriers are as significant as the lack of physical infrastructure. In 2000 the Iniciativa para la Integracion de la Infraestructura Region Suramericana (IIRSA) (Initiative for the Integration of Regional Infrastructure in South America) was established as a regional multinational organization to enhance the development and interregional connections in the areas of transportation, energy and communication. For the latter, it was noted in a report to IIRSA by the Inter-American Development Bank in 2003 that “the formation of public-private-civil society alliances is a key element in any strategy that aims to provide for universal access and ICT development in South America.” In the same report it was also noted that despite many conferences and forums, to date, “not much has been accomplished” (Information and Communications Technologies in Support of South American Competitiveness and Integration).

Accomplishments, however, are perhaps more easily assessed by considering the varying levels and sectors at which integration takes place, as recommended by Nye (1968). For instance, another South American initiative, the Institute for Connectivity in the Americas (ICA), states as its focus the connecting of citizens between different countries, but its projects do so by identifying varying layers of society. In 2006 ICA reports the creation of La Red Sudamericana de Portales Educativos (South American System of Education Portals), connecting educators, as well as a similar system connecting government leaders (Institute for Connectivity in the Americas).

Another regional organization exists which focuses on specific areas of integration. The Asociacion Latinoamericana de Integracion (ALADI), established in 1980 with membership of most of the region, has as its main goal the establishment of a regional common market (free flow of trade, capital and labor). To this end, it sponsors technical conferences and workshops in ICT application to issues of intraregional trade and commerce, bringing together experts in specialized areas. For example, in 2006 a technical conference was organized on the creation of a regional statistical information system for the purposes of tracking and making available trade and commerce data, with participants from national banks and government data offices (ALADI). The Latin American Forum on Telecommunications Bodies was founded in 2005 and now contains most of the countries in South America, for the purpose of harmonizing national regulations in telecommunications (Regulatel).

A 2004 agreement to connect MERCOSUR and the Andean Community, which would join the Andean countries with the Southern Cone countries (Argentina, Uruguay, Brazil, Paraguay, Bolivia, Peru, Chile, Ecuador, Colombia and Venezuela) focuses on “the convergence of economic complementation agreements among countries of South America” (Andean Community). The South American Community of Nations (SACNA), as it is called, recognizes the need for a coherent policy on infrastructure development and integration. And while initiating this effort at the ministerial level of government, it has called for the establishment of:

A technical work group with the participation of government agencies responsible for formulating the policies, rules and regulations governing communications and Internet services, with a view to examining the possibility of stimulating the development of an infrastructure network, which is an indispensable feature of a regional information society, that includes Internet exchange points, regional networks and primary servers,

while taking into account the specific situation and needs of the region. (Andean Community)

Canada's International Development Research Centre (IDRC) has funded an information network to facilitate the sharing of economic indicators, trade and investment regulations, and other data pertinent to international trade and investment within MERCOSUR (MERCOSUR).

It is clear from this review and sampling of ICT and integration policies in the region that there are projects in different sectors in South America, and many of them seem to be top and middle level efforts, to encourage ICT development nationally and create regional information systems. Two of the most pressing issues for ICT development and regional integration are the lack of technological infrastructure and severe socioeconomic disparity, which tends to fall along ethnic and rural/urban lines. Both must be addressed in order to achieve the "universal access" that is a requisite for regional development and integration.

## Conclusion

It is evident from both cases of Africa and South America that there is a complexity of factors, issues, and systems in the application of ICTs for regional integration as a pathway to socioeconomic development. It is useful to distinguish between technological factors and sociopolitical factors, as either one can present a significant barrier to integration. The international integration theory of functionalism could be a useful tool with which to examine the development of the ICT infrastructure and the attendant social and policy interactions. The functional interaction of technologists and mid-level policymakers is descriptive of some of the integrative efforts we have seen in both regions – governmental agreements on infrastructure, harmonization efforts between regulatory bodies, information sharing among academic institutions, and technical groups working on Internet connectivity. In fact, integration takes place via many different political, social and economic layers. The framework suggested in this paper, for example, could be utilized to analyze evidence of integration by sector, or interest area: state ministers, state regulators, technical groups, private businesses, education, health, etc. This type of analysis could help to explore the results for development of these efforts. For example, state-level agreements might hold little significance if integrative processes do not take place below that level. Thus how these sectors, or layers of integration, interact with each other is critical for understanding the process through which ICTs can foster integration in Africa and South America in ways that promote socioeconomic development in the two regions.

Furthermore, a significant point for both cases of ICTs and development is the expansion and integration of these technologies within countries in the two continents. For if this does not occur, integration between countries will be at a stratum of elites in the urban areas of Buenos Aires and Sao Paulo, Nairobi and Lagos, risking the further marginalization of the unconnected areas. Thus, for meaningful regional development to occur there must also be ICT diffusion and integration within countries, including rural and poorer regions.

In conclusion, we argue that the integrated theoretical approach that is suggested for conducting much needed research in this area of ICTs and development helps us to focus on the construction of technological systems, and specifically, the interactions of the people implementing and utilizing the systems. By using this framework, research can be conducted on the integrative efforts briefly reviewed above, as well as projects on many different levels, that link the development of the regional ICT infrastructure with socioeconomic development

of the citizens. Further research must identify development indicators utilizing the concept of development most associated currently with the United Nations, often called the “people-based approach” to development. This approach calls on regions to develop their own national and regional “information societies” (Mansel and Wehn, 1998) to meet the needs of their own people. The ICT-for-development model that the UN recommends fits with this notion as well, both offering regions the possibilities of technological adaptation and innovation to meet regional needs and reduce external dependency. Given the concept of networking that ICTs connote, research in the ways that the technologies enhance regional integration and together promote socioeconomic development is equally vital to a holistic understanding of the processes and as well as generating useful policy recommendations.

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