
Editorial Board

Alan B. Albarran

Southern Methodist University,
Dallas/Texas, U.S.A.

Michael Dowling

University of Regensburg, Germany

Thomas R. Eisenmann

Havard Business School, U.S.A.

Peter Glotz

University of St. Gallen, Switzerland

Peter Gomez

University of St. Gallen, Switzerland

Rolf Hoyer

Norwegian School of Management,
Norway

Otfried Jarren

University of Zürich, Switzerland

Eli Noam

Columbia University, Columbia Institute
for Tele-Information, U.S.A.

Robert G. Picard

Turku School of Economics
and Business Administration, Finland

Arnold Picot

Ludwig-Maximilian-Universität München,
Germany

Beat F. Schmid

University of St. Gallen, Switzerland

Michael O. Wirth

University of Denver, U.S.A.

Mark Wössner

Bertelsmann-Foundation, Gütersloh,
Germany

Axel Zerdick

Freie Universität Berlin, Germany

Content

JMM – Vol. 2 – No. III/IV – 2000

Editors' Note

Beat F. Schmid, Peter Gomez, 115
Peter Glotz, Dörte Wittig

The Broadband Debate
– Legal and Business Implications

Bharat Rao 116
Polytechnic University of N.Y., U.S.A.
Ruth De Backer, McKinsey
& Company, Brussels, Belgium

Transparency, Accountability
and Good Governance
– Role of New Information and
Communication Technologies
and the Mass Media

Shahid Akthar, 124
Mahesh Kumar Malla, John Gregson
International Centre for Integrated
Mountain Development,
Kathmandu, Nepal

Investments in Telecommuni-
cations Infrastructure Are Not
the Panacea for Least Developed
Countries Leapfrogging Growth
of Teledensity

Victor W. Mbarika 133
Louisiana State University, U.S.A.
Terry Anthony Byrd, Jennie E.
Raymond, Patrick R. McMullen
Auburn University, U.S.A.

Media Internationalisation
– The Case of Poland

Tadeusz Kowalski 143
Warsaw University, Poland

Public Service Management
– Towards a Theory
of the Media Firm

Sune Tjernström 153
Umeå School of Business
and Economics, Sweden

A Framing Analysis: How did
three U.S. News Magazines
Frame about Mergers
or Acquisitions?

Sanghee Kweon 165
Southern Illinois University,
U.S.A.

Building Dynamic Capabilities.
The Wall Street Journal Inter-
active Edition: A successful
Online Subscription Model

Dan Steinbock 178
Columbia Institute for Tele-
Information (CITI), Columbia
Graduate School of Business, U.S.A.

Corporate Communication in
the New Media Environment
– A Survey of 150 Corporate
Communication Web Sites

Markus Will and Victor Porak 195
University of St. Gallen,
Switzerland

Calendar of Events

202

Impressum, Order Form

203

JMM – The International Journal on Media Management

Editorial

Dear Reader

Welcome to the new issue of JMM – The International Journal on Media Management.

The papers in this issue cluster around legal, regulatory and governmental themes. We are again happy to be able to present the work of a number of distinguished authors. Each of the contributions allows the reader to gain interesting insights and detailed information on different fields of concern in the above topics and within the general context of media management.

Broadband Internet infrastructure promises to revolutionize the range and variety of services available to consumers in accessing interactive media content. Ruth de Backer and Bharat Rao lead off this issue with an overview of legal and business issues related to broadband. In their contribution they discuss how it will impact future innovation in the industry.

Shahid Akhtar, Mahesh Kumar Malla and Jon Gregson analyze in their paper the role new information and communication technologies (ICTs) can play in achieving goals such as transparency, accountability and good governance. After a short outline of these concepts, the paper probes into both the advantages and disadvantages of the growing utilization of ICTs in the general framework of globalization and democratization, with a focus on the developing world and the Asian continent. It is argued that by increasingly using ICTs and taking on a role as spokespeople for civil society, the Asian media has the potential to promote good governance practices and values.

It is a known fact that there is a high correlation between the level of telecommunication infrastructure represented by teledensity and the level of economic

power represented by GDP per capita. The problems and actions for the growth of teledensity in 48 least developed countries (LDCs) are being discussed, as well as the opportunities for utilizing communication technologies to solve prior problems in those countries. However, the study submitted by Victor W. Mbarika suggests that increased investment in telecommunication technologies is not a major factor for growth of teledensity; higher GDP and higher contribution of the service sector share to GDP in the least developed countries play a more important role for growth of teledensity.

In his article, Tadeusz Kowalski delivers an in-depth examination of what happened to the media market in Poland in the process of the so called “media internationalization”. It is an example of the shift from a highly ideologically motivated concentration into an also high, but mainly capital driven concentration. The general development enabled diversity of expression but as the author points out, “there is no good dinner free of charge”: there are indications of conglomerates lead by foreign media, for which Poland is only a market of secondary meaning thus bringing along the danger of “recycled content”.

Drawing on results from a historical study of the Swedish Broadcasting Corporation, the article written by Sune Tjernström argues the need to develop present theories of the media firm for media management research. Doing this, agency theory is identified as a powerful tool for the analysis of the behavior in public service organizations.

The research paper written by Sanghee Kweon explores how news magazines deal with mergers and acquisitions in the 1990s unstable social phenomenon. One of many

findings of examining the coverage of mergers based on types of mergers, government policy, and news focus of three U.S. magazines was that news organs tend to cover media mergers differently than non media mergers.

In his essay “Building Dynamic Capabilities”, Dan Steinbock describes the development of the Wall Street Journal Interactive Edition. The paper aims to explain why the WSJE was able to launch and stabilize a successful subscription model, a feat that most of its direct and indirect rivals have failed to accomplish.

In the new media environment, communication has become an even more important factor for a company’s success. This issue of JMM is rounded out with a paper submitted by Markus Will and Victor Porak. Using a survey of 150 corporate communication web sites, they examine the question whether known offline communication models are also used for online communication. In addition, it is shown that in corporate communication web sites, content is distributed using a classical target group rather than a community driven approach.

We hope you will enjoy this collection of contributions. The JMM Editorial Team gives heartfelt thanks to all those who helped to make this journal a successful and internationally known publication since its foundation one year ago. We are proud of the JMM’s success and will give our best to provide our readers with interesting new findings in this research area in the future as we did in the past.

*Beat F. Schmid
Peter Glotz
Peter Gomez
Dörte Wittig*

Investments in Telecommunications Infrastructure Are Not the Panacea for Least Developed Countries Leapfrogging Growth of Teledensity

by Victor W. Mbarika, Department of Information Systems and Decision Sciences,
Louisiana State University, U.S.A.,
Terry Anthony Byrd, Jennie E. Raymond, Patrick McMullen, Auburn University, U.S.A.

Introduction

One of the major prerequisites of economic integration in a modern, complex society is the development of sound infrastructure in the telecommunications sector. The establishment of a modern, reliable, and rapidly expanding telecommunications infrastructure contributes considerably to the promotion of a variety of activities of economic expansion (World Bank Telecommunications Sector Reports, 1991). Some researchers have associated the level of a country's telecommunications infrastructure to teledensity. (Saunders et al, 1994; Gille, 1986).

Teledensity is used to refer to the number of main telephone lines for every one hundred inhabitants. Teledensity is also used to refer to the level of a country's telecommunications infrastructure. (Saunders et al, 1994; Gille, 1986).

Least Developed Countries (LDCs) are defined as low-income countries that are suffering from long-term constraints against growth. In particular, these growth constraints include low levels of human resource development and severe structural weaknesses: economic, social, and political (Austin, 1990). These countries are particularly ill-equipped to develop their domestic economies which are vulnerable to external shocks and natural disasters. Such socio-economic and political weaknesses are therefore reflected in

the telecommunications infrastructure of LDCs, particularly in terms of growth teledensity.

There exists a very wide gap between teledensity of LDCs and that of developed countries. The Maitland Commission (1984) described the teledensity gap as the unbalanced distribution of telephones across the world, with low teledensity, a shortage of exchange capacity, long waiting periods for acquiring a new telephone line, low quality of service, and imbalance of telecommunications infrastructure between urban and rural areas. The ITU (1994) uses national teledensity, which is the relationship between a country's population and the number of main telephone lines. Data from the International Telecommunications Union (ITU) included in this study show the average level of teledensity among the LDCs is 0.29. This means just over one telephone main line for every 350 people. The total number of telephone main lines in the 48 LDCs stand at about 1.5 million (just over one percent of the total number of lines in the United States, even though the United States population is less than half that of the LDCs combined).

LDCs are now gaining considerable international attention in terms of the state of their telecommunications infrastructure (Avgerou, 1998). Those residing in these countries have acknowl-

edged the tremendous impact of telecommunications on socio-economic development (Rorissa, 1996). A survey undertaken in Ethiopia, Uganda, Zambia and Senegal on the impact of electronic communications technology under a project funded by the United States Agency for International Development (USAID) shows that users in LDCs are realizing the potentials of full Internet connections for various uses including electronic commerce. For example, academic and research institutions have been able to conduct joint projects effectively, improve resource mobilization and carry out research between distant sites inexpensively (McClelland, 1998). In view of these findings the next section examines the importance of teledensity for a country's development.

Importance of Teledensity

It has been well documented that world-wide there is a high correlation between the level of telecommunications infrastructure represented by teledensity and the level of economic power represented by the national per capita Gross Domestic Product (GDP) (Saunders et al, 1994). This strong correlation was first pointed out by Jipp in 1963 (as cited in Gille, 1986). Since then many studies have examined the contributions of teledensity to economy and society.

Hardy (1980) found a causal relationship between the telecommunications infrastructure and the national economy in over 60 nations. He showed that the number of telephones per million people at a particular time had a significant relationship with GDP at a time one period in the future. Cronin, Parker, Colleran, and Gold (1991) statistically confirmed that the two variables representing overall US economic activity, the sum of the output of all industries and the annual Gross National Product, were causally associated with the annual amount of US telecommunications investment. Cronin,

Colleran, Herber, and Lewitzky (1993) further showed that investment in telecommunications infrastructure (represented by teledensity) was a reliable predictor of national productivity in the United States.

Another study in the United States conducted by Dholakia and Harlam (1994) looked at the influence of independent variables, such as the number of business access lines per employee, rural highway miles and energy consumption on economic development measured. The two dependent variables used in their study were average annual pay and per capita income. They found that teledensity was an important predictor of the two dependent variables when it was treated as a single independent variable. Even when teledensity was combined with the other independent variables, its effect on the dependent variables was higher than the others in all but one case.

Looking at teledensity in the French and Spanish economies, Berry (1983) concluded that growth of teledensity precede economic development and argued that the ultimate cost of underestimating the significance of teledensity would be quite high. Jussawalla (1988) supported the above claim in her study that shows how growth of teledensity promotes resource mobilization through improved division of labor, and hence, an agent of development. She further argues that in most economies, investment in information-oriented industries would give rise to overall demand in other sectors. Saunders (1982) discussed the benefits of teledensity in terms of financial and economic returns. He showed that the World Bank's teledensity investment projects brought an average financial rate of return of 18 percent and economic rate of returns ranging from 20 percent to 50 percent.

Clarke and Laufenberg (1983) showed that growth of teledensity brought a variety of social benefits in addition to

economic benefits in rural Sub-Saharan Africa. Social benefits were identified in health and social service delivery, education, development projects, the stabilization of migrants and the handling of natural and social disasters. Hudson (1984, 1989) also presented a number of social as well as economic benefits of telephone services in rural areas, both in LDCs and developed countries (DCs). Considering the importance of growth of teledensity, LDCs have been investing in their telecommunications infrastructures in a bid to enjoy the benefits of such modern telecommunications technologies (ITU, 1995). This study therefore examines those factors that influence growth of teledensity in LDCs. The two main research questions follow:

- Is continuous investment in telecommunications infrastructure the panacea to growth in teledensity for LDCs?
- What are other major socio-economic factors that would influence growth of teledensity for LDCs?

Research hypotheses

Hundreds of billions of dollars per year are spent on telecommunication technologies, reflecting a powerful global belief in the transformatory potential of these new technologies. For multinational corporations, certainly, telecommunications have become essential. Globalization demands such great flows of information and processing of information that it simply could not take place without telecommunications

(Heeks, 1999). Rizzoni (1976) stated that telecommunications investments stimulated the development in Honduras' rural telephony program.

Although the overall telecommunications investment in LDCs grew in the last 20 years at 10-12 percent per annum, in real terms to about US\$ 11 billion in late 1980's, this averaged only 0.4-0.6 percent of the GNP. Wellenius argues that industrialized countries that invested a much larger share of the

GNP succeeded more rapidly in the modernization of their telecommunications networks (Wellenius, 1992, p-2)

A Panos Institute study reported on the paramount importance of investments in telecommunications infrastructure (Panos Institute, 1997).

If effective telecommunications are essential to economic survival, then the outlook for many countries seems bleak indeed. Telecommunications is one of the most capital-intensive industries in the world. The ITU projected that a gargantuan US\$466 billion needed to have been spent in developing countries between 1993 and 2,000 if they were to meet projections of telecommunications growth. Even this spending surge will only raise world teledensity from 10.5 to 14 lines per 100 people, with teledensities of only 2.6 in Africa and 6.2 in Asia (Hudson, 1997).

As the UN body, which coordinates telecommunications, the ITU maintains that if countries are to create and maintain modern telecommunications infrastructures, at least 40 percent of their telecoms revenue should be ploughed back into investment. In the past, such investment has been chronically lacking. The resulting investment gap has become an increasing problem. As improvements in technology have gathered pace, they have spurred on runaway growth in services which rely on telecoms.

Eight billion dollars will need to be invested in Africa to achieve even a teledensity of one line per 100 people, says the ITU – and this assumes marked improvements in bringing down installation costs. Of this amount, only about US\$5 billion could be funded internally, leaving a shortfall of at least US\$3 billion to be found elsewhere (Hudson, 1997).

Bearing in mind the above findings on the fundamental importance of investments in telecommunications infrastructures, there exist a conflicting

finding by some development bodies such as the International Telecommunications Union (ITU).

In a study carried out by the ITU (ITU World Telecommunication Indicators, 1995), in spite of current investments in telecommunications infrastructures, LDCs were still represented to be among the least developed in terms of the state of their telecommunication networks and limited range of services offered. The study shows evidence that LDCs are falling farther behind other developing countries in the race to construct modern telecommunication networks. For example, as far back as 1984, among commonwealth countries, Singapore (a developing country) generated the fourth highest telecommunications traffic after the UK, Australia, and Canada (developed countries), as opposed to LDCs that currently have the lowest telecommunications traffic in the world. (ITU, 1999). Also LDCs still currently have less than one telephone for every 100 inhabitants (ITU, 1999).

The same ITU study mentioned above (ITU, 1995) shows further evidence of that being the reason why LDCs are falling behind other developing countries in the race to construct modern telecommunication networks. This is not because LDCs are not installing the latest equipment – in many cases the LDCs have modern, state-of-the-art digital networks – but rather that they are not expanding fast enough to close the teledensity gap with other developing countries. This implies that although these LDCs are investing in the latest equipment, there should be other reasons why they are not expanding fast enough to close the gap. This leads us to our first hypothesis:

H1: Increased investment in telecommunication technologies is not a major determinant for growth of teledensity in LDCs.

Several studies have been conducted which examine the link between teledensity and socio-economic factors.

In particular, the International Telecommunications Union's CCITT (International Consultative Committee on Telephone and Telegraph) has sponsored several studies which establish a strong correlation between teledensity and variables such as Gross Domestic Product (GDP), as well as a positive relationship between teledensity and economic development. Conversely the same studies found a negative correlation between teledensity and population size. The results indicated that as GDP increases, telephone density increases more rapidly (Saunders et al., 1983) and that as the population size increases telephone density decreases. Nevertheless the studies cited above were carried out from a global perspective without focusing on LDCs in particular. This study therefore examines the relationship between GDP per capita and teledensity for LDCs. This leads us to our second hypothesis:

H2: As GDP per capita for a LDC increases, so will the level of teledensity.

Other studies that have examined the relationship between teledensity and socio-economic factors suggest a strong correlation between changes in international telecommunications traffic over time, the number of tourists per year, and the volume of international trade. One such study, conducted by (Yatrakis, 1992), suggests that the volume of trade (measured as the dollar value of imports and exports) is an important determinant of the demand for international telegraph and telex services. This relationship, however, is beyond the scope of this study.

The World Bank has conducted a number of telecommunications studies using structural economic analysis. These studies model telecommunications as an input into the production process and postulate that telecommunications services are not equally important to all sectors of the economy. Various country studies suggest that telecommunications services are more intensively

used in the service sector, such as in tourism, than in the primary sector, such as in agriculture. A 1950 CCITT comparison of employment and telecommunications in Germany suggested that although 25 percent of the economically active population was employed in agriculture, this sector accounted for only 7 percent of telephone lines and 4 percent of telephone revenues. Commerce and transport sectors (service sectors) employed 16 percent of the work force, but accounted for 39 percent of telephone lines and 41 percent of revenues (as reported in Saunders et al., 1983).

Other country studies confirm this result (CCITT, Blue Book, vol. 2, Geneva: ITU, 1965 as reported in Saunders et al., 1983). A 1969 United Nations (UN) input-output study of communications patterns in 20 countries in the 1960s suggests that communications output is primarily used by service sector industries, followed by manufacturing and mining (UN, International Comparisons of Inter-industry Data, 1969). The results suggest that service industries tend to be characterized by high value added relative to other industries. (Saunders et al., 1983). This leads us to our third hypothesis:

H3: As contribution of the service sector share to GDP in the economy of LDCs increases, so will the level of teledensity.

The research presented here draws on the literature above in an important way. These studies have established a strong correlation between teledensity and various socio-economic factors. Their results therefore provide a base from which to examine the relationship between teledensity and various socio-economic factors for both developed and developing countries in general. Other studies, as earlier mentioned, focused on developing countries in general. However, none has focused exclusively on the relationship between the teledensity and socio-economic factors for LDCs in particular.

This paper therefore examines the 48 LDCs worldwide with teledensity of less than one. The three hypotheses are summarized in figure I.

Research Methodology

Participants

Table I (see Appendix) contains the list of 48 LDCs, as currently defined by the United Nations General Assembly that was used for this study. The list was most recently updated in December 1998 with the “graduation” of Botswana and the addition to the list of two new countries, Angola and Eritrea. Of the 48 LDCs, 30 are in Africa, 13 in Asia and the Pacific, 4 in the Arab Region and 1 in the Americas. There were 25 LDCs in the original group in 1971, indicating that the number has virtually doubled in 20 years. The criteria, used by the United Nations General Assembly, for inclusion of economies in the list of LDCs are discussed below.

Old criteria for inclusion

The original set of criteria for constructing a list of countries classified as LDCs was adopted in 1971. These were:

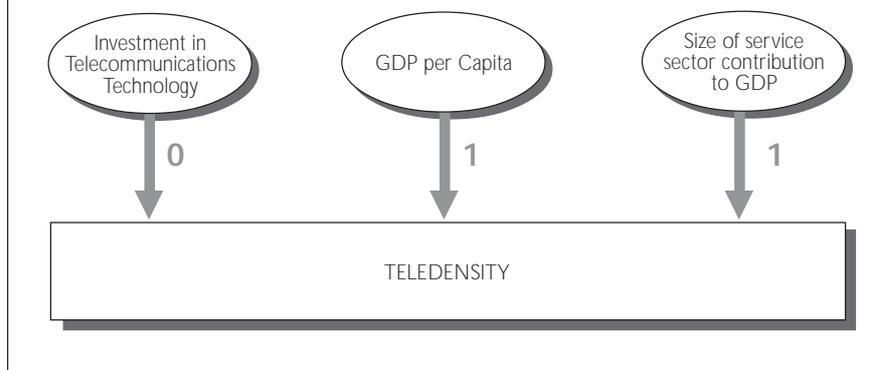
1. Per capita income per year less than US \$200. This figure has been revised periodically, and stood at US \$600 in 1998.
2. Share of industrial production in the Gross National Product (GNP) under 10 percent, adult literacy rate less than 20 percent.

New criteria for inclusion

New criteria for determining LDCs were established in 1994:

1. Population less than 75 million;
2. Per capita GDP less than, US \$700 (average 1990- 92);
3. Augmented physical quality of life index (APQLI) less than 47;
4. Economic diversification index (EDI) less than 26.

Figure I: Hypothesized relationships between the model's independent variables (investment in telecommunication technologies, GDP per capita and contribution of the service sector share to GDP) and the model's dependent variable (teledensity).



These criteria were elaborated as follows:

1. *Population*: It was decided that from 1991 population size will explicitly be taken into account, and countries larger than 75 million, inhabitants should not be considered for inclusion in the list of LDCs. In the preceding two decades, it had only been implicit that LDC classification was meant to designate countries with small economics.
2. *GDP per capita*: The relative level of poverty may be measured by per capita income. GDP per capita and per capita income are used interchangeably in this study.
3. *APQLI*: The Augmented Physical Quality of Life Index (APQLI) comprises four indicators: life expectancy at birth, per capita calorie supply, school enrollment ratio, and adult literacy rate.
4. *EDI*: The Economic Diversification Index (EDI) comprises the share of manufacturing in GDP, the share of employment in industry, per capita electricity consumption, and the export concentration ratio.

Inclusion rule

A country qualifies for inclusion if it meets all four formal criteria, namely population size, per capita income, the APQLI, and the EDI. This is subject to the judgement of the UN on the natural

endowment index (agricultural land per capita, exports of minerals as a percentage of total exports, average rainfall, and rainfall availability), export of petroleum as a percentage of total exports, and official development assistance as a percentage of GNP.

Alternatively, a country will qualify if it meets the population and per capita income criterion, the APQLI or the EDI, is land-locked, is a small country with a population of 1 million or less, and suffers from frequent severe climatic risks such as drought, floods and hurricanes. Inclusion will be subject to the judgement of the UN on other considerations. The inclusion rule is applied judiciously and a country may still be included in the list even if it does not meet all the four key criteria but is overwhelmed by three of them. Bangladesh, with a population greater than 75 million, typifies such an exception.

Procedures

A multiple regression model was used to predict the dependent variable, teledensity. The independent variables tested include GDP per capita, telecommunications investment and size of the service sector. No dummy variables were used in the model.

Below is a general linear regression equation developed to test the impact of the potential independent variables

on teledensity and came up with the following form:

$$\text{Teledensity} = B_0 + B_1(TI) + B_2(\text{GDP}/c) + B_4(\text{SSI}) + E$$

Where:

TI = Investment in telecommunications

GDP/c = Gross Domestic Product per capita

SSI = Size of the service sector contribution to GDP

Per capita income is included as an independent variable to represent the overall level of development in each country.

The data for population are mid-year estimates from the United Nations year-book statistics from 1980 through 1998. The data for GDP per capita are generally from the World Bank "World Development Report, 1998". They are the price data in national currency converted to United States dollars at current average exchange rates.

The data for main telephone lines, telecommunications investment, and size of the service sector are from the International Telecommunications Union

(ITU) world database, 1998. Main telephone lines refer to telephone lines connecting a customer's equipment (e.g., telephone set, facsimile machine) to the Public Switched Telephone Network (PSTN) and which have a dedicated port on a telephone exchange. Note that for most countries, main lines also include public payphones.

Teledensity is calculated by dividing the number of main lines by the population and multiplying by 100. Teledensity can also be calculated as the number of telephones per 1000 inhabitants.

Telecommunications investment refers to the annual expenditure associated with acquiring ownership of property and plant used for telecommunications services and includes land and buildings.

Size of the service sector is measured as the percentage contribution of the service sector to GDP. Some service sector activities include tourism, transportation, hotels, and restaurants.

Even though the LDCs fit a certain set of economic and social criteria, the differences among them could hardly be

greater. Perhaps the most evident difference is in terms of population size which ranges from the less than 10,000 inhabitants of Tuvalu to the 116 million of Bangladesh. There are also significant differences in teledensity and wealth: teledensity ranges from a high of 4.21 in the Maldives to 0.06 in Cambodia while GDP per capita ranges from over US\$ 1,200 in Tuvalu to US\$ 65 in Ethiopia.

Results

Descriptive statistics

Moments and quantiles for the dependent and independent variables used in this model were also calculated (Table II). Teledensity had a mean of 0.80, a median of 0.34 and standard deviation of 1.05. The mean, median and standard deviation for telecommunications investment were \$9.14 million, \$5.80 million, and \$11.97 million respectively. The size (percentage) of the service sector contribution to GDP had mean, median and standard deviation of 43.60%, 42%, and 11.90% respectively.

Correlation

Table III shows correlations among the variables used in this study.

Model Fit

The R2 statistic for the whole model was 0.76, which means that 76% of the variation in teledensity was explained by all three independent variables in the model: GDP per capita, Investment in

Table II: Selected moments and quantiles for variables used in model (also includes data for population size and main lines – used to calculate teledensity. They are not used as variables in this study)

Variable	Mean	Median	Standard deviation
Teledensity	0.80	0.34	1.05
GDP per capita (US\$)	423.62	325	310.34
Telecom. Investment (millions US\$)	9.14	5.80	11.94
Size of service sector (% contribution to GDP)	43.60	42	11.96

N = 48

Table III: Correlations of variables used in study

Variable	Teledensity	GDP per capita	Telecom Invsmt (MUS\$)	Size of service sector (% contribution)
Teledensity	1.0000			
GDP per capita	0.6521**	1.0000		
Telecom Invsmt (MUS\$)	0.1430*	0.0071	1.0000	
Size of service sector (% contr)	0.7600***	0.2095	0.0974	1.0000

* P < .05 ** P < .01 *** P < .001 *N* = 48

telecommunications infrastructure, and size of the service sector contribution to GDP. The adjusted R2 statistic was 0.73 which was very close to the R2 statistic. This shows that the overall model fit was good. Table IV presents results of the regression.

Results of testing the hypotheses

Table V is a summary of the results from testing the hypotheses. All three hypotheses were supported.

There was a very low relationship ($r = 0.14$, $p < 0.05$) between level of telecommunications investment and teledensity. The beta coefficient was 1.14 ($p < .001$). Also as hypothesized, there was a fairly close relationship between GDP per capita and teledensity in LDCs. The beta coefficient was 1.52 ($p < .05$) and $r = 0.65$ ($p < 0.001$). There was a positive relationship between the size of the service sector and teledensity. The beta coefficient was 3.66 ($p < .001$) and $r = 0.76$ ($p < 0.001$). Almost all of the LDCs with a teledensity over one had service sectors that contribute to over 50 percent of economic output.

The fitted regression equation is:

$$\text{Teledensity} = 1.33 + 1.14(TI) + 1.52(GDP/c) + 3.66(SSI)$$

Where:

TI = Investment in telecommunications

GDP/c = Gross Domestic Product per capita

SSI = Size of the service sector contribution to GDP

Discussion

There was a very low relationship between investment and teledensity but it still remains a major concern for LDCs. For example, the level of net foreign investment in 1992 was just US \$245 million (IMF World Economic Report, 1993), equivalent to just over 1 percent of GDP. In some countries, the

Table IV: Regression Table for variables used in the model.

Model	Unstandardized Coefficients		P Value
	Beta Coefficient	Standard Error	
Constant	1.33	.020	.003**
GDP per Capita	1.52	.011	.042*
Telecomm Investment	1.14	.000	.000***
Size of Service Sector	3.66	.010	.001***

* P < .05 ** P < .01 *** P < .001

Table V: Test of hypotheses

Hypothesis	Description	Result
H1	Increased investment in telecommunication technologies is not a major determinant for growth of teledensity	Supported
H2	As GDP per capita for a LDC increases, so will the level of teledensity.	Supported
H3	As contribution of the service sector share to GDP in the economy of LDCs increases, so will the level of teledensity.	Supported

recent pattern has been one of disinvestment, with a net outflow of foreign investment. However, there are a couple of bright spots, notably in countries which have a high level of tourist investment (e.g. The Gambia, Solomon Islands) and countries which still retain strong links with a former colonial power (e.g. Vanuatu, Guinea).

Many LDCs have been maintaining a high level of telecommunications investment without seeing the fruits from such investments. Nevertheless, a few LDCs, such as Gambia, Cape Verde and have experienced high level growth of teledensity of which telecommunications investment was a major contributing factor.

The results also presented a fairly close relationship between GDP per capita and teledensity in LDCs ($r = 0.65$, $p < 0.05$). This should be a major concern for LDCs that generally have a very low average per capita income of US \$283 per year. This is just 7 percent of the global average of US \$3,980 per year.

There was also a close relationship between contribution of the service sector share to GDP and teledensity. The

service sector is one of the biggest customers of communication services typically accounting for over half of telecommunications operator's revenues. Service sector customers included industries such as banking, trade, tourism and administration. This is just such as banking, trade, tourism and administration. Given that the service sector was such a heavy user of communications, one would intuitively expect a relation between the importance of the service sector in a national economy and the level of telecommunications development.

It was notable that the level of teledensity appears to rise sharply after the contribution of the service sector to the economy surpassed 55 percent. This was evident in both cross-sectional analyses of the LDCs at the point in time as well as an analysis of one country over a period of time. For example, almost all of the high teledensity LDCs had significant service sectors. In the Gambia, teledensity remained level throughout the 1980s until the service sector reached 55 percent of the national economy in 1987 (Table VI). Following that, teledensity rose sharply eventually surpassing one in 1990.

Table VI:
The Gambia: Relating size of The Gambia's service sector to teledensity (1981 – 1990)

Year	Size of service sector (% control to GDP)	Tele-density
1981	46	0.35
1982	48	0.36
1983	52	0.37
1984	51	0.35
1985	54	0.4
1986	52	0.52
1987	55	0.65
1988	54	0.71
1989	53	0.91
1990	57	1.1

Source: International Telecommunications Union (ITU) world database, 1998

Although size of the service sector contribution to GDP highly correlated with teledensity, the unresolved question is whether services lift teledensity or whether telecommunications development leads to growth in the service sector. It is probably a bit of both. Since services are big users of communications, their demand will increase the telecommunications operator's revenues, allowing further network investment to take place. At the same time, growth of teledensity will tend to lower costs for the service sector, triggering expansion and attraction of new service industries.

This mutually beneficial relation between service and telecommunications suggests that the LDCs may want to encourage development of the service sector. Another strong reason for encouraging development of the service sector is the gains for the economy. Economic growth has been steady since 1990 for LDCs with significant service sectors (IMF World Report, 1997). Growth in LDCs without large service sectors tends to be cyclical and dependent on commodity prices and other factors that vary from year to year.

One of the best ways of fostering growth in the service sector would be for LDCs to grant their telecommunications operators more independence (Adedeji, 1986). After all, the telecommunications industry itself forms an important part of the service sector especially in countries with sizeable service sectors. For example, telecommunications revenues as a percent of GDP is 5 percent in Cape Verde, 4.5 percent in the Gambia, 6.1 percent in Kiribati and 9.2 percent in São Tomé and Príncipe. It is notable that all these countries have higher teledensities than other LDCs, they also have autonomous operating entities with minimal government intervention. In some countries, the governments are the sole operator of telecommunications and ban the importation of telecommunications equipment. Consumers are denied the freedom to attach or own their preferred equipment for computing or communications to telephone networks.

The monopolistic and parochial culture of LDCs telecommunications operators is also reflected in the mounting tariff and awkward traffic situation in LDCs. The average telecommunications revenue per subscriber line in Europe is about US \$770 while the average in LDCs is roughly the double of that at US \$1,460 (Paltridge, 1997). Given the lower per capita income in LDCs the ratio of revenue in LDCs to that of Europe is extremely high. Restrictions for private investors to provide telecommunications services further raise the high cost of telecommunications services. Statistics show that data transmission in Europe costs two to three times that of the US due to more restrictions in Europe (Paltridge, 1997). In LDCs, where restrictions are even higher, the costs are also exorbitantly high. Institutions and/or individuals are charged a rate of four to eight times that of Europe and four to twenty times that of the United States for the same volume of calls. An unanswered question here is whether complete privatization will bring down these costs. A suggestion for further re-

search here will be to use some developed countries which have completely privatized their telecommunications industry as a benchmark.

Maintenance of existing equipment leaves much to be desired. In some countries malfunctioning telephone equipment waits for months before a maintenance team arrives to the rescue. The maintenance process is slow even after problems are identified unless the team gets 'benefits' (a spiced term used for bribery). Lack of management plans for maintenance and low salaries open the way to corruption and perpetuate the sluggish maintenance processes. Other external factors such as weather, roads, and sewerage tunnel building make maintenance much more difficult. The latter is a menace to the reliability of telecommunication networks.

Implications for future research and conclusion

This study just looked at the "what is" state of teledensity in LDCs. However, specific strategies on the "how to" solutions to this problem are not thoroughly examined. This opens room for further research in this area. The authors intend to further this study by looking at African LDCs. Specifically the authors will examine African telecommunications stakeholders' perceptions of strategies to promote growth of teledensity in African LDCs. The United Nations (UN-NICI Report, 2000) defines both Governmental Stakeholders and Non-Governmental Stakeholders as follows:

- Governmental Stakeholders**
- Government and Parastatals
 - Telecommunications Operators (government controlled)
- Non-Governmental Stakeholders**
- Telecommunications Operators (non-government controlled)
 - Academia, Research Centers and IT experts
 - International/Regional organizations

Research on the diffusion of mobile telecommunications infrastructure is needed. This is especially important when we consider the difficulty and labor intensity to dig trenches in order to establish new physical telephone circuits. Such research could hopefully be an answer to the issue of universal service that will benefit both urban and rural areas since an important characteristic of mobile communications is that it has minimal geographical limitations as compared to the traditional plain old telephone systems (POTS).

Furthermore, from a theoretical point of view, this study can be expanded to focus on those countries at a similar stage of telecommunications infrastructure and service development. Toffler (1990) identifies three distinct groupings among LDCs according to their economic development. Similarly, Jamison (1991) claims that in many domains of modern intellectual life, implicit assumptions of uniformity or homogeneity have been discredited and largely abandoned. The discovery of an unexpected degree of variability in systems being studied has led to a revision of theory and practice in fields. Thus, a study that will not see LDCs as one coherent group of countries in the world but take into account their heterogeneity will be necessary to diagnose their unique problems and prescribe the most appropriate solutions. For instance, a study can be carried out specifically for LDCs in Africa. Such a study can explore the factors that influence growth of teledensity in African LDCs. Such a study could enrich awareness of the state of teledensity in specific African LDCs and highlight some of the particular complexities the countries on the continent face in the challenge to expand their levels of teledensity. Also, this could serve as a basis to establish specific strategies to promote growth of teledensity in the region.

To conclude, this study was an exploratory to examine whether investments in telecommunications infrastructure

are the major determinants for growth of teledensity in LDCs. The findings from this study show evidence that is not continuous investments in telecommunications infrastructures that will boost growth of teledensity in LDCs, but that GDP per capita and size of the service sector contribution to GDP are the major determinants. The results of this study can be used to provide prescriptive directions to the policy makers of LDCs and development agencies who are in charge of improving the teledensity of the countries.

References

Adedeji, A. (1986). *Towards a Dynamic African Economy*, Vikas, London.

Austin, J.E. (1990), *Managing in Developing Countries: Strategic Analysis and Operating Techniques*, The Free Press, New York, NY.

Berry, J. F. (1983). *The case of France and Spain. Case study No.1 referred to in the Synthesis Report on the ITU-OECD project: Telecommunications For Development.*

Bhatnagar, S.C. (Ed.) (1992), *Information Technology Manpower: Key Issues for Developing Countries*, Tata McGraw-Hill, Delhi, India.

Bhatnagar, S.C. and Odreda, M. (Eds) (1992), *Social Implications of Computers in Developing Countries*, Tata McGraw-Hill, Delhi, India.

Central Intelligence Agency (1995), *The World Fact Book 1995*, Central Intelligence Agency, Washington, D.C., <http://www.odci.gov/cia/publications/95fact/ec.html>.

Clarke, D. G., & Laufenberg, W. (1983). *The Role Of Telecommunications in Economic Development: With special reference to rural sub-Sahara Africa, Case study No.4 referred to in the Synthesis Report on the ITU-OECD Project "Telecommunications for Development."*

Cronin, F. J., Parker, E. B., Colleran, E. K., & Gold, M. A. (1991). *Telecommunications Infrastructure and Economic Growth: An analysis of causality. Telecommunications Policy*, 15, pp. 529-535.

Cronin, F. J., Colleran, E. K., Herber, P. L. & Lewitzky S. (1993). *Telecommunications And Growth: The Contribution of Telecommunications Infrastructure Investment to Aggregate and Sectoral Productivity. Telecommunications Policy*, 17, pp. 677-690.

Dholakia, R. R., & Harlam, B. (1994). *Telecommunications and Economic Development: Econometric Analysis of the US Experience. Telecommunications Policy*, pp. 470-477.

Gille, L. (1986). *Growth and Telecommunications. In Information, Telecommunications and Development*, pp. 25-61. Geneva: ITU.

Hardy, A. P. (1980). *The Role of the Telephone in Economic Development Telecommunications Policy*, 4, pp. 278-286.

Heeks, R. (1999). *Information and Communication Technologies, Poverty and Development. Institute for Development Policy and Management, University of Manchester: Manchester, U.K.*

Hudson, H. E. (1984). *When Telephones Reach The Village: The Role Of Telecommunications In Rural Development. Norwood, NJ: Ablex.*

Hudson, H. E. (1989). *Overcoming the barriers of distance: Telecommunications and Rural Development IEEE Technology and Social Magazine* 8(4), pp. 7-10.

Hudson, Heather (1997). *Global Connexions. Van Nostrand Reinhold.*

Independent Commission for World Wide Telecommunications Development (The Maitland Commission). (1984). *The missing link. Geneva: ITU.*

International Telecommunications Union. (1981) *Appropriate Modern Telecommunications Technology for Integrated Rural Development in Africa*. ITU: Geneva, Switzerland.

International Telecommunications Union. (1983, 1986, 1987). *Pan-African Telecommunications Network*. Geneva: ITU.

International Telecommunications Union (1984). *The Missing Link: Report of the Independent Commission for Worldwide Telecommunications Development*. Geneva: ITU.

International Telecommunication Union (ITU). (1994). *World Telecommunication Development Report*. Geneva: ITU.

International Telecommunication Union (ITU). (1995). *World Telecommunication Development Report*. Geneva: ITU.

International Telecommunication Union (ITU). (1998). *World Telecommunication Development Report*. Geneva: ITU.

International Telecommunication Union (ITU). (1999). *Telecommunication Indicators Handbook*. Geneva: ITU.

Jamison, N. L. (1991). *Communication and the New Paradigm for Development*. In F. L. Casmir (Ed.), *Communication in Development*, pp. 27-50. Norwood, New Jersey: Ablex.

Jensen, M. (1995). *Telematics in a Global Context, Discussion Paper, Africa Regional Symposium on Telematics for Development, Addis Ababa*.

Jussawalla, M. (1988). *Information Economies and the Development of Pacific Countries*. In M. Jussawalla, D. M. Lamberton, & N. D. Karunaratne (Eds.), *The Cost of Thinking: Information Economies of Ten Pacific Countries*, pp. 15-43. Norwood, NJ: Ablex.

Mbarika, V. (1999). *Factors that Affect Growth of Teledensity in Least Developed Countries*. *Proceedings of the 22nd Conference on Information Systems Research in the Scandinavia (IRIS 22)*, Jyväskylä, Finland. pp. 383-396.

Mbarika, V., Raymond, J., Byrd, T. (2000). "Growth of Teledensity in Least Developed Countries: Need for a Mitigated Euphoria." *Proceedings of the 2000 Pacific Asian Conference on Information Systems (PACIS2000)*, Hong Kong, China.

McClelland, P. 1998, *Causal Explanation and Model Building in History, Economics, and the New Economic History*. Ithica: Cornell University Press.

Minges (1995). *Towards an African Information Infrastructure, African Regional Symposium on Telematics for Development, Addis Ababa*.

Montealegre, R. (1996), 'Implications of electronic commerce for managers in less-developed countries', *Information Technology for Development*, Vol. 7 No. 3, pp. 145-52.

Montealegre, R. (1997), 'The interplay of information technology and the social milieu', *Information Technology & People*, Vol. 10 No. 2, pp. 106-31.

National Research Council, (1996). *Bridge Builders: African Experience with Information and Communication Technology*, National Academy Press.

Paltridge, S. (1994). *A survey of tariff structures in Africa – comparison to the rest of the world*. *Africa Telecom '94*, Cairo.

Panos Institute, *The (1997). Telecommunications – Development and the Market: The Promises and the Problems*. Panos Media Briefing No. 23/ April 1997.

Rizzoni, E. (1976). *An Overview of Latin American Telecommunications: Past, Present, and Future*. *IEEE Transactions on Communications*. Vol. 24, pp. 290-305.

Rorissa, A. (1996). *The impact of introduction of electronic communication in Ethiopia: A survey*. *Ethiopian Scientific Society Conference*.

Saunders, R. J. (1982). *Telecommunications in Developing Countries: Constraints on Development*. In M. Jussawalla & D.M. Lamberton (Eds.), *Communication Economics and Development*. pp. 190-210. Honolulu: The East-West Center.

Saunders, R., Warford, J., and Wellinius, R. (1983). *Telecommunications and Economic Development*. Washington D.C.: The World Bank.

Saunders, R. J., Warfbrd, J. I., & Welienius, B. (1994). *Telecommunications and economic development (2rd ed.)*. Baltimore, MD: John Hopkins University Press.

Toffler, A. (1990). *Power Shift*, New York: Bantam Books.

United Nations (2000). *The Process of Developing National Information and Communications Infrastructure (NICI) in Africa*. Washington D. C.: World Bank.

Willenius, B. (1992). *Telecommunications: World Bank Experience and Strategy*. Washington D. C.: World Bank.

World Bank (1991). *World Bank Telecommunications Sector Reports*. Washington D. C.: World Bank.

Yatrakis, G. (1992). *Determinants of the Demand for International Telecommunications*. *Telecommunications Journal*. 39, 12. pp. 732-746

Appendix

Table 1: The 48 Least Developed Countries as recognized by the UN General Assembly

Countries	Africa	Americas, Asia & Pacific	Arab States	Year of Entry	
Afghanistan		■		1971	
Angola	■			1998	
Bangladesh		■		1975	
Benin	■			1971	
Bhutan		■		1971	
Burkina Faso	■			1971	
Burundi	■			1971	
Cambodia		■		1991	
Cape Verde	■			1977	
Central African Republic	■			1975	
Chad	■			1971	
Comoros	■			1977	
Djibouti			■	1982	
Equatorial Guinea	■			1982	
Eritrea	■			1998	
Ethiopia	■			1971	
Gambia	■			1975	
Guinea	■			1971	
Guinea Bissau	■			1981	
Haiti		■		1971	
Kiribati			■	1986	
Lao (PDR)		■		1971	
Lesotho	■			1971	
Liberia	■			1990	
Madagascar	■			1991	
Malawi	■			1971	
Maldives		■		1971	
Mali	■			1971	
Mauritania			■	1986	
Mozambique	■			1988	
Myanmar		■		1987	
Nepal		■		1971	
Niger	■			1971	
Rwanda	■			1971	
São Tomé & Príncipe	■			1982	
Sierra Leone	■			1982	
Solomon Islands		■		1991	
Somalia			■	1971	
Sudan			■	1971	
Tanzania	■			1971	
Togo	■			1982	
Tuvalu		■		1986	
Uganda	■			1971	
Vanuatu			■	1985	
Western Samoa			■	1971	
Yemen			■	1971	
Zaire	■			1991	
Zambia	■			1991	
Total	48	29	1	13	5

Source: United Nations General Assembly, December 1998

About the Authors

Victor W. Mbarika (vmbarika@aol.com) is Assistant Professor of Information Systems and Decision Sciences in the E. J. Ourso College of Business Administration at Louisiana State University, U.S.A.. He holds a B.S. in Management Information Systems from the United

States International University Nairobi/San Diego, CA, a M.S. in Management Information Systems from the University of Illinois at Chicago and a Ph.D. in Management Information Systems from Auburn University, U.S.A.. His research in Telecommunications Diffusion in Developing Countries and his research in Multimedia Learning has been

accepted for publication in several academic journals. He has also presented his research at several national and international conferences on Information Systems.

Terry Anthony Byrd (byrd@business.auburn.edu) is Associate Professor of MIS in the Department of Management at the College of Business, Auburn University. He holds a B.S. in Electrical Engineering from the University of Massachusetts at Amherst and a Ph.D. in Management Information Systems from the University of South Carolina. His research has appeared in *MIS Quarterly*, *Journal of Management Information Systems*, *Decision Sciences*, *OMEGA*, *Interfaces* and other leading journals. His current research interests include the strategic management of information technology, information technology architecture and infrastructure, electronic commerce, and information technology implementation.

Jennie Raymond (raymond@business.auburn.edu) is originally from Arkansas. She received her PhD in Economics from Vanderbilt University in 1989 and has been on the faculty in the Auburn University College of Business since then. Her research field is econometrics with applications to labor economics, finance and other business issues.

She is currently Associate Professor of Operations Management at the Auburn University College of Business.

Patrick McMullen (mcmullen@business.auburn.edu) is an Assistant Professor of Operations Management at the Auburn University College of Business. He received his Ph.D. in 1995 from the University of Oregon. He has held teaching positions at the University of Oregon, University of Maine and Harvard University. Prior to this, he was an industrial engineer in the food and automotive industries. His research interests are primarily in the use of search heuristics for optimization purposes. He has published in journals such as *International Journal of Production Economics*, *IIE Transactions*, *Journal of the Operational Research Society*, and the *European Journal of Operational Research*.

Calendar of Events

January

01/27/2001 - 01/28/2001

7th International Conference on Communications

Indian Institute of Technology,
Kampur, India
<http://www.iitk.ernet.in>

February

02/01/2001

New Media and the interconnection of media in publishing firms

Frankfurt, Germany
<http://www.managerakademie.de>

02/15/2001 - 02/17/2001

Society for Consumer Psychology Winter Conference

Scottsdale, Arizona, USA
<http://fisher.osu.edu>

March

03/08/2001 - 03/10/2001

E-Commerce 2001

Hawaii, USA
<http://www.e-comprofits.com>

03/12/2001 - 02/13/2001

Workshop on Information and Organizational Design (EIASM)

Brussels, Belgium
<http://www.eiasm.be>

April

04/04/2001 - 04/05/2001

The 8th World Business Dialogue "PLANET NET - Strategies for a New Economy"

University of Cologne, Germany
<http://www.ofw.de>

04/05/2001 - 04/06/2001

1st International Workshop on MANAGEMENT AND INNOVATION OF SERVICES

Maastricht, Netherlands
<http://www.fdewb.unimaas.nl/marketing/workshop>

May

05/01/2001 - 05/05/2001

The Tenth International World Wide Web Conference

Hong Kong, China
<http://www.10.org>

05/17/2001 - 05/18/2001

3rd Symposium of the Hamburg Forum of media economy:

Print vs. online publisher
in the Internet age
(language: German)
Email: marketfa@unibw-hamburg.de

05/17/2001 - 05/19/2001

2001 Advertising and Consumer Psychology Conference: "Online Consumer Psychology"

Seattle, USA
<http://fisher.osu.edu>

05/20/2001 - 05/23/2001

2001 IRMA International Conference - Managing IT in a Global Economy

Toronto, Canada
<http://www.irma-international.org>

Impressum

Title

JMM – The International Journal
on Media Management

Edition: Vol. 2 – No. III/IV – 2000

ISSN (printed edition): 1424-1277

ISSN (electronic edition): 1424-1250

Editorial Office

mcm – Institute for Media and
Communications Management,
University of St. Gallen/Switzerland
Müller-Friedberg-Str. 8

CH – 9000 St. Gallen

Phone: +41-71-224 34 28

Fax: +41-71-224 27 71

Email: media.editors@netacademy.org

URL: <http://www.mediajournal.org>

Published by

mcm – Institute for Media and
Communications Management,
University of St. Gallen/Switzerland
Müller-Friedberg-Str. 8

CH – 9000 St. Gallen

Phone: +41-71-224 34 28

Fax: +41-71-224 27 71

Email: media.editors@netacademy.org

URL: <http://www.mediajournal.org>

Editorial Team



Beat F. Schmid



Peter Glotz



Peter Gomez



Dörte Wittig

BEAT F. SCHMID – Editor-in-Chief

PETER GLOTZ – Co-Editor

PETER GOMEZ – Co-Editor

DÖRTE WITTIG – Executive Editor

Layout

BELAU, Duisburg, Germany, info@b-e-l-a-u.de

Printer

Niedermann Druck, St. Gallen, Switzerland

Remarks

This publication is part of the NetAcademy on
Media Management at the mcm – Institute for
Media and Communications Management,
University of St. Gallen/Switzerland.

Articles from the contributors do not neces-
sarily reflect the opinion of the editors.

Copyright

© mcm – Institute for Media and
Communications Management

Partial or total reproduction will be permit-
ted upon application, subject to acknowledg-
ing the source and sending two copies to the
editorial office.

The editors wish to thank Bertelsmann Foun-
dation, Germany and Heinz Nixdorf Founda-
tion, Germany, for their support with the
publication of this journal.

The journal will observe the following issues closely

- Strategic, managerial and organizational
aspects of the media sector and the media
industry
- Economics of traditional and new media
- Evolution of the media industry and me-
dia industry segments
- Technology, infrastructure, user behavior
related to the changes in the media sector
- Effects of new media on economy, society,
politics, law and culture

Our goal is the close analysis of new industry
structures, organizational forms, and critical
competencies developing as a result of
reconfigurations in the media value chain. We
want to bring together academics and indus-
try figures to explore the transition from „clas-
sic“ to „new“ media and identify the factors,
which will determine organizational success
and economic efforts in a fast changing and
converging environment.

We are interested in receiving your submis-
sion to the JMM. Articles, which deal with one
of the above issues, are more than welcome.

Orderform

Annual Subscription (4 Editions)

■ Institutional: US\$ 300*

■ Individual: US\$ 64*

*(plus tax and postage)

Single unit price:

■ Regular: US\$ 22*

*(plus tax and postage)

I wish to subscribe to JMM

This is an institutional subscription

This is an individual subscription

Name

Company

Department

Street

City

ZIP Code

Country

Phone

Fax

Primary Activity

Comments

Please return to

mcm – Institute for Media and
Communications Management,
University of St. Gallen/Switzerland
Müller-Friedberg-Str. 8

CH – 9000 St. Gallen

Phone: +41-71-224 34 28

Fax: +41-71-224 27 71

Email: media.editors@netacademy.org

URL: <http://www.mediajournal.org>