

**THE GLOBAL DIGITAL DIVIDE: EXPLORING THE RELATION BETWEEN  
CORE NATIONAL COMPUTING AND NATIONAL CAPACITY AND  
PROGRESS IN HUMAN DEVELOPMENT OVER THE LAST DECADE**

AN ABSTRACT  
SUBMITTED ON THE THIRD DAY OF AUGUST 2001  
TO THE PAYSON CENTER FOR INTERNATIONAL DEVELOPMENT  
AND TECHNOLOGY TRANSFER  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
OF THE GRADUATE SCHOOL  
OF TULANE UNIVERSITY  
FOR THE DEGREE  
OF  
INTERDISCIPLINARY Ph.D.

BY

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## ABSTRACT

This study was designed to explore the relations between some aspects of the global digital and human development over the last decade using an analytical framework which includes factors considered to have an impact on national development suggested by theory and practice. The operational definition of the global digital divide links access, adaptation and creation of information and knowledge via the use of digital information and communication technologies to national development processes, within a demographic, economic, political and social context. The methodology carried out to analyze the relations between the global digital divide and national development processes included the construction of a quantitative model for 174 developed and developing countries which explained more than 91% of the variability in development in 1997 in terms of the national info tech infrastructure, and another quantitative model which explained more than 43% of the *changes* in development over the last decade in terms of the national core computing and networking capacity. Findings from the study suggest the existence of an S-shaped curve in which differences between inadequate and weak national info tech infrastructure, or medium and strong national info tech infrastructure, are not as significant as those between weak and medium infrastructures. The existence of a significant, strong and positive relation between core digital information and communication technologies and progress in national development processes in developing countries over the last decade suggests that this single factor will play an increasingly important role in the near future.

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Dedicated to my country, Colombia.

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## ACRONYMS

ANOVA	Analysis of Variance
ARPANET	Advanced Research Projects Agency Network
CD-ROM	Compact Disk - Read Only Memory
CERN	Conseil European pour la Recherche Nucleaire
CIS	Commonwealth Independent States
Core-ITP	Core Index of Technological Progress
Dot-Force	Digital Opportunity Task Force
ENIAC	Electronic Numerical Integrator and Computer
FM	Frequency Modulation
G8	Group of eight industrialized countries
GDP	Gross Domestic Product
GNP	Gross National Product
GNU	GNU's Not Unix
HDI	Human Development Index
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IBM	International Business Machines Corporation
ICP	International Comparison Programme
IDC	International Data Corporation
IDRC	International Development Research Center (Canada)
IED	Internet for Economic Development
IMF	International Monetary Fund
INEXSK	Infrastructure, Experience, Skills, Knowledge
IP	Internet Protocol
IPTS	Institute for Prospective Technological Studies
ISI	Information Society Index
ISP	Internet Service Providers
IT	Information Technology
IT-infrastructure	Information Technology infrastructure
ITP	Index of Technological Progress
ITU	International Telecommunication Union
Kbps	Kilobytes per second
LINCOS	Little Intelligent Community

MSC	Multimedia Super Corridor
NAS	National Academy of Science
NASDAQ	National Association of Securities Dealers Automated Quotation
NGO	Non Government Organization
NRC	National Research Council
NSB	National Science Board
NSF	National Science Foundation
NSFNet	National Science Foundation Network
NTIA	National Telecommunication and Information Association
OCR	Optical Character Recognition
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
PC	Personal Computer
PCA	Principal Components Analysis
PLQI	Physical Quality of Life Index
PPI	Progressive Policy Institute
PPP	Purchasing Power Parity
R&D	Research and Development
RAND	Research and Development think tank
SIQSS	Stanford's Institute for the Quantitative Study of Society
TALM	Technology Assisted Learning Module
TCP/IP	Transmission Control Protocol/Internet Protocol
TV	Television
U.S.	United States of America
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNI/INTECH	United Nations University/Institute of Economics
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization
WLL	Wireless Local Loop