

# Measuring e-Business for Development

Stephane GAGNON\*  
Patrick C. K. HUNG†  
Katia PASSERINI\*  
Miguel Vargas MARTIN‡

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### Introduction

Among many positive outcomes from the first World Summit on the Information Society (WSIS-1, Geneva, December 2003), Heads of States have recognized the importance of clearly measuring the diffusion of Information and Communication Technologies (ICT), and Internet Technologies, e-commerce, and e-business in particular. The upcoming 2nd WSIS (WSIS-2, Tunis, November 2005) shall prove even more promising in bringing innovative methods and solutions to support ICT policy making for development.

However, research and policy communities must overcome several challenges in order to build a truly international measurement process that will yield relevant, reliable, and comparable metrics. In addition, they must build the institutional framework to ensure a coherent measurement system addressing the particularities of ICT in various economies. Finally, working relationships must be redefined among statistical agencies, ICT and industrial policy units, research centers, local industry associations, etc.

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### Research Agenda

This Special Issue on “Measuring e-Business for Development” was initiated with the goal to clarify how stakeholders could better measure the development impact of ICT, and of e-business in particular.

We invited contributions from academia, industry, and government, so as to provide a balanced perspective. They addressed strategic issues and challenges, while proposing innovative solutions. Among other issues, we welcomed papers in key areas:

1. New e-business measurement models and frameworks: Developing metrics and survey instruments that are accurate, scalable, and remain valid in various economies,
2. New e-business measurement methods and tools: Exploring new approaches to collecting, analyzing, diffusing, and exploiting data, such as through international industry-government partnerships,
3. Use of e-business measurement in policy making: Analyzing case studies of major ICT policy decisions where e-business and development metrics were used successfully in decision making,
4. Regional e-business measurement initiatives: Reviewing the lessons learned from recent efforts at measuring e-business for development, in both developing and developed countries,
5. International coordination of e-business measurement: Proposing innovative processes and institutional structures to ensure the development of an international measurement process.

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### Special Issue

Given this wide ranging set of issues, the papers included here were selected to reflect the diversity of solutions available for policy and decision making at various levels.

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\* School of Management and College of Computing Sciences, New Jersey Institute of Technology, USA

† Faculty of Business and Information Technology, University of Ontario Institute of Technology, Canada

‡ Faculty of Engineering and Applied Science, and Faculty of Business and Information Technology, University of Ontario Institute of Technology, Canada

The first paper is entitled "Measuring the e-Business Diffusion in the Information Society", by Jose L. Salmeron and Victor A. Banuls, University Pablo de Olavide at Seville (Spain). It presents an overview of several measurement frameworks, and concludes as to what improvements are needed to improve their accuracy and reliability for decision making. Its original contribution is to bring a foresight perspective on the ICT and e-business measurement process.

The authors provide a review of the e-business indicators used in the several recent supranational benchmarking exercises. This contribution aims to bring a framework from researchers and practitioner in the e-business measurement field. Moreover several challenges from the e-business measurement research agenda are proposed. They propose to resolve these challenges by: (1) spreading the use of the e-business indicators, (2) extending the set of e-business dimensions covered by the indicators, (3) spreading the existing methodologies among the research networks in order to set standards, and (4) integrating the advances in related scientific areas such as Policy Analysis and Technology Foresight in the e-business measurement field.

The second paper is entitled "Assessing e-Business Capabilities and Effectiveness: A Set of Key e-Business Metrics", by Debabroto 'Dave' Chatterjee, University of Georgia (USA), and Albert Segars, University of North Carolina at Chapel Hill (USA). This paper proposes a more diverse set of metrics in measuring e-business capabilities, and serves as an excellent example of the further research that is needed in our field to produce more complete and reliable measurement systems.

The authors addresses two major challenges in measuring e-business activities in industry. First, the all-encompassing and abstract nature of e-business makes it difficult to develop metrics that will solely measure the effectiveness of e-business ventures. In fact, many experts contend that companies make a mistake in trying to separate e-business from the rest of business. Therefore, a more holistic approach to e-business measurement is needed. The other challenge lies in identifying the key measures. Several e-metrics are available, and if a company tried to adopt every one of them, it would be lost in a flood of e-metric data. Thus, companies need a set of key metrics to assess their e-business capabilities and performance efficiently and effectively. This paper presents such a set of metrics by drawing from best practices data from a major field study that examined e-business transformation efforts across several industries and firms in the United States and abroad. Conceptualizing e-business capability as the ability to engage effectively in different forms, scopes, and modes of electronic exchange, this study provides three classes of metrics to assess digital readiness, collaborative capability, and viability of electronic marketplaces.

The third paper is entitled "E-governance in India: A Strategic Framework", by Raghunath Mahapatra, Verve Consulting Private Limited (India), and Sinnakrishnan Perumal, Indian Institute of Management Calcutta (India). The paper takes stock of major cases of ICT use for e-government in India, and empirically develops an framework to improve the success of such initiatives. As such, it provides an example of measuring the effectiveness of ICT for development, and how its use in policy making may significantly impact the life of citizens. It also offers an interesting solution to the need for more diverse measurement frameworks, built through joint public-private partnerships.

While the implementations of E-governance in India have been well regarded by the media, they are effort-centered rather than result-centric. This paper provides a strategic framework for the implementation of e-governance projects in Indian context, to achieve a result-centric implementation. An extensive literature survey is presented on the various aspects encountered in arriving at the strategic framework. This literature survey discusses about the need for transformation to e-governance from traditional governance. In addition, it discusses about the existing approaches, methodologies, technologies, factors and strategic frameworks. The literature on e-governance implementation in India is also presented. Further to this, this paper analyses some of the successful Indian e-government projects and lists their strengths and weaknesses. This analysis leads to a conclusion on various factors contributing to the success of e-governance and the strategic framework. This paper specifically addresses those e-government initiatives that have a direct impact on the citizens and in which the citizens derive benefit through direct transactions with governmental services.

The fourth paper is entitled "Synthetic indicators for measuring e-business: A target approach", by Jordi Vilaseca, Antoni Meseguer, and Joan Torrent, Universitat Oberta de Catalunya (Spain). It addresses the fourth item in our research agenda by assessing regional initiatives in measuring ICT and e-business for development.

The authors discuss a quantitative approach, by defining appropriate synthetic indicators, to a qualitative description of targets concerning the development of e-business, and present a general framework for the detailed socioeconomic analysis of changes promoted by the intensive use of ICTs. The target description is founded on the e-Europe Action Plans, where targets are proposed to make of Europe the most competitive and dynamic economy in the information and communication society. For the definition of synthetic indicators, indicators from different European projects are classified into three different levels of concretisation, covering information about changes in demand and supply, and the internal organisation and business strategy. These synthetic indicators built on the idea of importance of an indicator in the description of each level of concretisation. With these indicators and using data from those European projects and from other regional projects, static analysis is developed for comparing different regional and national realities concerning the development of e-business.

The fifth paper is entitled "Measuring e-business in Developing Countries", by Susanne Teltscher, e-commerce Branch, United Nations Conference on Trade and Development (UNCTAD). This paper is unique as it provides an insider perspective in ongoing measurement initiatives in international organizations. As such, it provides a balanced perspective as to what indicators are necessary and usable in a policy context, and should serve to guide future research in developing new metrics better adjusted to the institutional context.

Reliable and comparable data on how companies use ICTs in their business processes, and the impact this may have on firm productivity and competitiveness, are scarce in developing countries. Currently, few statistical offices measure e-business, for example, through enterprise surveys, and only at a very basic level. Therefore, several international agencies working on the subject matter have joined forces to advance ICT measurement in developing countries. As a first step, a set of core ICT indicators has been developed and adopted internationally, as a basis for data collection and harmonization, and database development. But much more needs to be done, in particular concerning the training of practitioners in developing countries to develop their e-measurement programmes and tools.

Finally, the sixth paper is entitled "Toward a Multilateral Effort in Measuring e-Business for Development", by Stephane Gagnon, New Jersey Institute of Technology (USA). As a co-editor of this Special Issue, the author attempts to synthesize recent research in this field, especially by blending the perspectives of practitioners and researchers.

A new multilateral effort is proposed in measuring e-business (including e-commerce), as well as other forms of Information and Communication Technologies (ICT), in support of development policy and programs. It would require that international organizations, governments, businesses, and non-governmental organizations coordinate their efforts in producing more accurate, reliable, and comparable metrics on ICT usage and their impact on development, especially economic through the use of e-commerce and e-business. The proposal focuses on 4 action areas: (1) developing an international database; (2) building new policy capabilities; (3) creating forums for exchange; and (4) providing training to transfer best practices. The paper first discusses the present international trends in ICT policy, and the importance of measuring progress in this area. It then addresses the goals this new multilateral effort could seek to achieve in the measurement process. This leads to an outline of the present state of measurement, from the perspectives of the end-users (mostly policy makers) and producers (mainly National Statistical Organizations or NSOs) of such data and information. Finally, the paper tries to identify the key challenges in building the proposed measurement infrastructure.

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## Future Research

This Special Issue on “Measuring e-business for Development” provides a sample of the current research on a broad agenda. We were fortunate to attract papers that blend practitioner and research perspectives, and as such allow us to assess the full range of opportunities and challenges in measurement systems. The contributions in this Special Issue provide also original solutions to some key issues in measuring the development impact of ICT and e-business, mostly related to new metrics and measurement approaches, new strategic frameworks and methods to use metrics in policy making, and evolving institutions necessary to support a global system of e-business measurements.

Future research in this area should focus on more detailed assessments of existing measurement systems. As the interest in the resolving the Digital Divide grows rapidly, especially following the upcoming 2nd WSIS in Tunis in November 2005, there will be an urgent need for more accurate, reliable, and internationally-comparable set of metrics. As well, it is urgent to improve the scope of measurement methods, and go beyond basic statistics to move toward multivariate, as well as qualitative, research methods. It is also necessary to improve the applicability of various metrics, and take in account the implementation environment in which these building blocks the international Statistical Information System are to be configured and applied.

We look forward to revisit these research contributions in the near future, hoping to assess the results of some of the solutions brought forward by the authors of this Special Issue.