

Content Divide: Africa and the Global Knowledge Footprint

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ABSTRACT

The purpose of this panel is to discuss the global knowledge output at a macro level with a view to understand key inputs that foster scientific and research performance. Here, knowledge production is limited to scientific and technical journals and patent registrations to gauge the performance of each region and continent the world over. Greater emphasis will be placed to highlight important indicators from the input side that help spur national research and innovation systems in Africa. Defined here as “content divide,” panel members focus on key variables that help build scientific and research capabilities of Africa. Closely interrelated variables that will be discussed include (1) access to the global knowledge base, (2) the role of higher education systems (3) national, regional, and global research and education networks (RENs); and (4) gross expenditure on R&D (GERD).

Keywords

Knowledge production, content divide, Africa, higher education, innovation, SIG/III.

INTRODUCTION

Africa is the second largest continent in the world, with a population of a little over one billion living in about 54 countries. According to the fifth edition of the *Guide to higher education in Africa*, (International Association of Universities [IAU], 2010), there are 950 institutions of higher education in 51 African countries. Not only is Africa’s scientific and technical performance very low compared to other regions (King, 2004; May, 1997; Tussen, 2006; Teferra & Altbach, 2003), Africa also has limited access to critical content/knowledge as evidenced by limited or no subscription to scientific and technical databases (Zulu, 2008). It is this limited access to the

global knowledge base and at the same time very small contribution to it that we constrain as “content divide.”

Continent	S&T Jnl titles	% of Titles	Patents filed	% of Patents	% of GERD
Africa	54	0.64	438	0.24	0.4
Asia	968	11.28	70,500	38.76	1.6
Europe	4134	48.55	56,134	30.86	1.6
Oceania	175	2.08	2,065	1.13	1.9
N. America	2966	35.2	51,519	28.32	2.6
S. America	173	2.26	1,205	0.66	0.6
	8,470	100%	181,861	100%	

Table 1. S&T journals, patent applications, and R&D expenditure

This bi-directional challenge has both an “input” and “output” dimension to it. In order to understand the divide, we used the number of (1) scientific and technical journals; and (2) patent applications – as indicators of knowledge production. Research and development (R&D) activities by higher education systems and their affiliates together with patent applications by universities and respective countries are often cited as a barometer for the wellbeing of nations scientific and innovation impact (king, 2004; May, 1997; Powell & Snellman, 2004, p.202; Vincent-Lancrin, 2009).

Analysis of scientific and technical journals from ISI’s master journal list for science citation index that has 8470 titles are analyzed to provide a macro-level view of research outputs by Africa in comparison to other regions. Two additional datasets, i.e., data published by the Patent Co-operation Treaty (PCT) regarding the number of patent applications filed (World Intellectual property [WIPO], 2012) and another data from UNESCO Institute for Statistics (2011) that show GDP devoted to R&D activities (GERD), were juxtaposed to find a reasonable explanation to serve as a starting point to discuss the content divide (Table 1).

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The data in Table 1 shows how Africa fares in comparison to other regions. The key question for this panel is to explore what variables on the input side contribute to innovation and scientific research activities. What are the key resources/inputs that help improve national research and innovation systems? How do we define key scientific and innovation capabilities in the context of Africa? Panelists address these questions by focusing on the following key variables/indicators that we argue help bridge the content divide thereby increasing the knowledge production of the continent.

- Access to the global knowledge base,
- The role of higher education systems,
- National, regional, and global research and education networks (RENs), and
- Gross expenditure on R&D.

ISSUES TO BE DISCUSSED

In view of well-established facts, i.e., higher education systems as engines for knowledge production and economic development (Altbach, 2004; Arocena & Sutz, 2001; Marginson, 2010), and research outputs in scientific and technical fields together with patent applications as key indicators for innovation-related activities (Acs, Anselin, & Varga, 2002; Archibugi & Coco, 2004), panel members will explore the above four key variables to find plausible explanations to the following questions:

- What is the state of scientific and technical research outputs of African higher education systems?
- What key variables enhance the scientific and technical research performance of African higher education systems?
- What is the role of national, regional and global research and education networks (NRENs) in fostering an environment for Africa to increase its knowledge production?
- To what extent gross expenditure on R&D (GERD) improve research performance in Africa?

PANELISTS

Dr. Kendra Albright is associate professor at the School of Library and Information Science, University of South Carolina. Dr. Albright has a wide ranging international experience and her research focuses on users and their social and cultural contexts. Her work explores the individual and social contexts that generate problems to be solved and the way information and communication are used to solve those problems. Drawing from information science, communications, psychology, public health and education. Dr. Albright will discuss the nature of relationship between universities, government, and private sector in enhancing the scientific and technical research activities of Africa.

Dr. Daniel Gelaw Alemneh is a digital curator and project manager in the Digital Library Division of the University of North Texas Libraries. Academic libraries provide services to support the creation, organization, management, use and reuse of digital scholarship. Dr. Daniel will examine the critical factors that can be considered on the input side of building a research capacity. He will provide a comparative analysis of R&D investment and the corresponding research productivity by individual countries and universities in Africa together with other regions of the world.

Dr. Shimelis Assefa is Assistant Professor in the Library and Information Science program at the University of Denver. His research interests include scholarly communication and measurement of knowledge production; value creation and organization-wide information systems, learning technologies, and health informatics. He will discuss the landscape of scientific and technical research outputs by African higher education systems vis-à-vis the contribution and access to the global knowledge footprint.

Dr. Abebe Rorissa is Associate Professor in the Department of Information Studies at the University at Albany, State University of New York (SUNY). Dr. Abebe's research focuses on multimedia information organization and retrieval, measurement and scaling of users' information needs and their perceptions of multimedia information sources and services, and use/acceptance/adoption and impact of information and communication technologies (ICTs). He will discuss the role of national research and education networks in the context of Africa as a means to foster more collaboration in accessing data, protocols, hardware, software, and laboratory instrument from other partnering organizations. He will take the UbuntuNet Alliance as case to discuss how national, regional, and global research and education networks (RENs) can tap into the global REN as well as share resources and expertise among themselves.

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