



PROCEEDINGS OF THE 14th INTERNATIONAL CONFERENCE ON PRIVATE HIGHER EDUCATION IN AFRICA

Tuesday, 12th & Wednesday, 13th July, 2016

Theme: The Role of Private Higher Education Institutions (PHEIs) in Sustainable Development

Held at African Union Conference Centre, Addis Ababa, Ethiopia

Editor: **Prof. Olugbemi Jege**.

The Importance of Using High Impact Data to Make Ethiopian Universities Competitive by Joy Owango, Scientific & Scholarly Research, Thomson Reuters

Introduction

Africa faces many challenges, including lack of infrastructure, geographic and institutional isolation and a lack of investment in skills development and research. Yet its research output continues to grow exponentially. With this growth, comes huge disparities among countries and regions.

These differences are influenced by many factors, including countries' research infrastructure and network, local funding and finance frameworks and policies supporting education and research. Factors that positively influence research and innovation in higher performing countries include:

- Strong, functioning national research funding and subsidy systems
- National science, technology and innovation policies and programmes
- Networks such as university-industry linkages and researcher collaboration
- The existence of national systems of innovation including research laboratories, higher education institutions, and industrial research agencies.

Many African organisations and institutions still lack the resources and tools to collate and analyse data to benchmark and track research and innovation performance.

Narrowing all the above down from continental platform to country level, Ethiopia the country being considered in this paper, faces similar challenges as experienced in the rest of the continent. However, it should be noted that despite these challenges, Ethiopia has produced over 13,912 high impact research publications since 1933. This could be seen in the figure of Web of Science shown below.

The screenshot displays the Web of Science search results interface. At the top, it shows 'WEB OF SCIENCE™' and the Thomson Reuters logo. The search results are for 'CU= Ethiopia and PY=1900-2016', yielding 13,912 results. The results are sorted by 'Publication Date -- oldest to newest'. The first four results are listed:

- Notes from a Nurse's Diary**
By: Bancroft, Agnes H. Willoughby
AMERICAN JOURNAL OF NURSING Volume: 33 Issue: 2 Pages: 169-169 Published: FEB 1933
- Treatment of typhus with anti-typhus horse serum**
By: Wolman, M
LANCET Volume: 2 Pages: 210-212 Published: 1944
- PROFESSOR GIGLIO, ANTONELLI AND ARTICLE-17 OF THE TREATY-OF-WICHALE**
By: RUBENSON, S
JOURNAL OF AFRICAN HISTORY Volume: 7 Issue: 3 Pages: 445-457 Published: 1966
- GALLA MONARCHY - JIMMA-ABBA-JIFAR, ETHIOPIA, 1830-1932 - LEWIS, HS**

Noted in this exponential growth is its production of high impact authors either through local or international collaboration. The figure below highlights the top 25 authors based on their publication output as coming from Ethiopia.

<input type="checkbox"/> View Records <input checked="" type="checkbox"/> Exclude Records		Field: Authors	Record Count	% of 13538	Bar Chart	<input type="button" value="Save Analysis Data to File"/>
<input type="checkbox"/>		ASEFFA A	186	1.374 %		<input checked="" type="radio"/> Data rows displayed in table <input type="radio"/> All data rows (up to 200,000)
<input type="checkbox"/>		HAILU A	152	1.123 %		
<input type="checkbox"/>		BERHANE Y	139	1.027 %		
<input type="checkbox"/>		NYSSSEN J	120	0.886 %		
<input type="checkbox"/>		MEDHIN G	118	0.872 %		
<input type="checkbox"/>		DECKERS J	112	0.827 %		
<input type="checkbox"/>		HAILE M	110	0.813 %		
<input type="checkbox"/>		ALEM A	105	0.776 %		
<input type="checkbox"/>		BEKELE A	96	0.709 %		
<input type="checkbox"/>		WORKU A	94	0.694 %		
<input type="checkbox"/>		DAVEY G	88	0.650 %		
<input type="checkbox"/>		LINDTJORN B	84	0.620 %		
<input type="checkbox"/>		POESEN J	81	0.598 %		
<input type="checkbox"/>		CHANDRAVANSI BS	80	0.591 %		
<input type="checkbox"/>		TEGEGNE A	80	0.591 %		
<input type="checkbox"/>		WOLDAY D	78	0.576 %		
<input type="checkbox"/>		DAGNE E	76	0.561 %		
<input type="checkbox"/>		ERKO B	74	0.547 %		
<input type="checkbox"/>		BEKELE E	71	0.524 %		
<input type="checkbox"/>		ALI A	70	0.517 %		
<input type="checkbox"/>		KEBEDE D	70	0.517 %		
<input type="checkbox"/>		BRITTON S	68	0.502 %		
<input type="checkbox"/>		AMENI G	65	0.480 %		
<input type="checkbox"/>		MARIAM DH	65	0.480 %		
<input type="checkbox"/>		GEBRE T	63	0.465 %		

Included in these developments is the growth in influence of Ethiopian universities and their collaborators and as noted below Addis Ababa University is the most influential university in Ethiopia. This is compared against 24 institutes who have either partnered with Ethiopian or International universities.

<input type="checkbox"/> View Records	Field: Organizations-Enhanced	Record Count	% of 13912	Bar Chart
<input type="checkbox"/>	ADDIS ABABA UNIVERSITY	5408	38.873 %	
<input type="checkbox"/>	INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE	848	6.095 %	
<input type="checkbox"/>	JIMMA UNIV	710	5.104 %	
<input type="checkbox"/>	MEKELLE UNIVERSITY	647	4.651 %	
<input type="checkbox"/>	HAWASSA UNIV	539	3.874 %	
<input type="checkbox"/>	UNIV GONDAR	484	3.479 %	
<input type="checkbox"/>	ARMAUER HANSEN RES INST	483	3.472 %	
<input type="checkbox"/>	UNIVERSITY OF LONDON	454	3.263 %	
<input type="checkbox"/>	HARAMAYA UNIVERSITY	384	2.760 %	
<input type="checkbox"/>	BAHIR DAR UNIVERISTY	372	2.674 %	
<input type="checkbox"/>	GHENT UNIVERSITY	275	1.977 %	
<input type="checkbox"/>	WAGENINGEN UNIVERSITY RESEARCH CENTER	247	1.775 %	
<input type="checkbox"/>	KU LEUVEN	245	1.761 %	
<input type="checkbox"/>	LONDON SCHOOL OF HYGIENE TROPICAL MEDICINE	244	1.754 %	
<input type="checkbox"/>	UNIVERSITY OF CALIFORNIA SYSTEM	232	1.668 %	
<input type="checkbox"/>	ETHIOPIAN HLTH NUTR RES INST	231	1.660 %	
<input type="checkbox"/>	SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES	224	1.610 %	
<input type="checkbox"/>	KAROLINSKA INSTITUTET	199	1.430 %	
<input type="checkbox"/>	NORWEGIAN UNIVERSITY OF LIFE SCIENCES	183	1.315 %	
<input type="checkbox"/>	UNIVERSITY OF OSLO	161	1.157 %	
<input type="checkbox"/>	EMORY UNIVERSITY	156	1.121 %	
<input type="checkbox"/>	ALEMAYA UNIV	155	1.114 %	
<input type="checkbox"/>	ETHIOPIAN INST AGR RES	152	1.093 %	
<input type="checkbox"/>	UNIVERSITY OF BERGEN	152	1.093 %	
<input type="checkbox"/>	MINIST HLTH	137	0.985 %	

Ethiopia's top research focus is Agriculture, bearing in mind that food security is a major problem in Africa and particularly in this country, it comes as no surprise. These research areas equally attract the largest amount of funding for the country.

<input type="checkbox"/> View Records	Field: Research Areas	Record Count	% of 13177	Bar Chart	Save Analysis Data to File
<input type="checkbox"/>	AGRICULTURE	2089	15.853 %		<input checked="" type="radio"/> Data rows displayed in table
<input type="checkbox"/>	PUBLIC ENVIRONMENTAL OCCUPATIONAL HEALTH	1537	11.664 %		<input type="radio"/> All data rows (up to 200,000)
<input type="checkbox"/>	GENERAL INTERNAL MEDICINE	1236	9.380 %		
<input type="checkbox"/>	TROPICAL MEDICINE	1059	8.037 %		
<input type="checkbox"/>	INFECTIOUS DISEASES	856	6.496 %		
<input type="checkbox"/>	ENVIRONMENTAL SCIENCES ECOLOGY	852	6.466 %		
<input type="checkbox"/>	VETERINARY SCIENCES	797	6.048 %		
<input type="checkbox"/>	PLANT SCIENCES	651	4.940 %		
<input type="checkbox"/>	CHEMISTRY	502	3.810 %		
<input type="checkbox"/>	PARASITOLOGY	475	3.605 %		
<input type="checkbox"/>	GEOLOGY	447	3.392 %		
<input type="checkbox"/>	SCIENCE TECHNOLOGY OTHER TOPICS	431	3.271 %		
<input type="checkbox"/>	IMMUNOLOGY	409	3.104 %		
<input type="checkbox"/>	PHARMACOLOGY PHARMACY	377	2.861 %		
<input type="checkbox"/>	MICROBIOLOGY	367	2.785 %		
<input type="checkbox"/>	BUSINESS ECONOMICS	340	2.580 %		
<input type="checkbox"/>	WATER RESOURCES	294	2.231 %		
<input type="checkbox"/>	FOOD SCIENCE TECHNOLOGY	292	2.216 %		
<input type="checkbox"/>	ENGINEERING	257	1.950 %		
<input type="checkbox"/>	PATHOLOGY	253	1.920 %		
<input type="checkbox"/>	BIOCHEMISTRY MOLECULAR BIOLOGY	248	1.882 %		
<input type="checkbox"/>	PHYSICS	216	1.639 %		
<input type="checkbox"/>	BIOTECHNOLOGY APPLIED MICROBIOLOGY	207	1.571 %		
<input type="checkbox"/>	PUBLIC ADMINISTRATION	207	1.571 %		
<input type="checkbox"/>	NUTRITION DIETETICS	194	1.472 %		

(121 Research Areas value(s) outside display options)

When it comes to funding (as noted in the image below), one of the most unique aspects about its support of research in Ethiopia is that national institutes are leading. As compared to most African institutes that get their funding from international partners. This is a positive sign on Ethiopia's commitment in investing in research.

Field: Funding Agencies	Record Count	% of 13177	Bar Chart
<input type="checkbox"/> ADDIS ABABA UNIVERSITY	193	1.465 %	
<input type="checkbox"/> JIMMA UNIVERSITY	98	0.744 %	
<input type="checkbox"/> WELLCOME TRUST	85	0.645 %	
<input type="checkbox"/> UNIVERSITY OF GONDAR	72	0.546 %	
<input type="checkbox"/> GERMAN ACADEMIC EXCHANGE SERVICE DAAD	64	0.486 %	
<input type="checkbox"/> HARAMAYA UNIVERSITY	50	0.379 %	
<input type="checkbox"/> BILL AND MELINDA GATES FOUNDATION	42	0.319 %	
<input type="checkbox"/> NATIONAL SCIENCE FOUNDATION	36	0.273 %	
<input type="checkbox"/> BILL MELINDA GATES FOUNDATION	35	0.266 %	
<input type="checkbox"/> MEKELLE UNIVERSITY	35	0.266 %	
<input type="checkbox"/> SWEDISH RESEARCH COUNCIL	35	0.266 %	
<input type="checkbox"/> ETHIOPIAN INSTITUTE OF AGRICULTURAL RESEARCH	31	0.235 %	
<input type="checkbox"/> NSF	30	0.228 %	
<input type="checkbox"/> NATIONAL INSTITUTES OF HEALTH	27	0.205 %	
<input type="checkbox"/> HAWASSA UNIVERSITY	26	0.197 %	
<input type="checkbox"/> NERC	26	0.197 %	
<input type="checkbox"/> ETHIOPIAN INSTITUTE OF AGRICULTURAL RESEARCH EIAR	25	0.190 %	
<input type="checkbox"/> EUROPEAN COMMISSION	23	0.175 %	
<input type="checkbox"/> INTERNATIONAL FOUNDATION FOR SCIENCE IFS	23	0.175 %	
<input type="checkbox"/> SIDA SAREC	23	0.175 %	
<input type="checkbox"/> SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY SIDA	22	0.167 %	
<input type="checkbox"/> BAHIR DAR UNIVERSITY	21	0.159 %	
<input type="checkbox"/> BILL AND MELINDA GATES FOUNDATION GLOBAL HEALTH PROGRAM	21	0.159 %	
<input type="checkbox"/> EUROPEAN UNION	21	0.159 %	
<input type="checkbox"/> NATIONAL NATURAL SCIENCE FOUNDATION OF CHINA	20	0.152 %	

Universities across Ethiopia are looking to build research capacity, train professionals, support postgraduate learning and increase academic output in the region. They aim to build world class institutions that can be benchmarked on a global platform.

Within this context, providing high impact data and science infrastructure are critical. Universities need high impact data that include high impact citation databases that will support basic and applied research, and assist Ethiopian Universities with benchmarking and evaluating research and support commercialization of research. The coverage and indexing of the databases within this offer is unrivalled and nothing comparable exists within the citation database arena. Web of Science is such a high impact database

Web of Science provides researchers, administrators, faculty, and students with quick, powerful access to the world's leading citation databases. Authoritative, multidisciplinary content covers over 12,000 of the highest impact journals worldwide—including open access journals—and over 160,000 conference proceedings. You'll find current and retrospective coverage in the sciences, social sciences, arts, and humanities, with coverage dating back to 1900. Focus on the essential data from across more than 250 disciplines.

Web of Science Core Collection offers the only true citation index—with carefully curated data—providing you with the information you need to conduct your work. These include:

- Finding high-impact article and conference proceedings
- Uncovering relevant results in related fields

- Discovering emerging trends that help you pursue successful research and grant applications
- Identifying potential collaborators with significant citation records, and
- Integrating searching, writing and bibliography creation into one streamlined process using EndNote

Also included in the Web of Science are the following databases:

- Science Citation Index Expanded[®] :

Over 8,500 major journals across 150 disciplines — 1900 to present.

- Social Sciences Citation Index[®] :

Over 3,000 journals across 55 social science disciplines, as well as selected items from 3,500 of the world's leading scientific and technical journals — 1900 to present.

- Arts & Humanities Citation Index

Fully indexes over 1,700 arts and humanities journals, as well as selected items over 250 scientific and social sciences journals — from 1975 to present.

- Index Chemicus

Contains over 2.6 million compounds — dated to 1993

- Current Chemical Reactions

Contains over one million reactions — dated to 1986; plus INPI archives from 1840 to 1985

- Book Citation Index

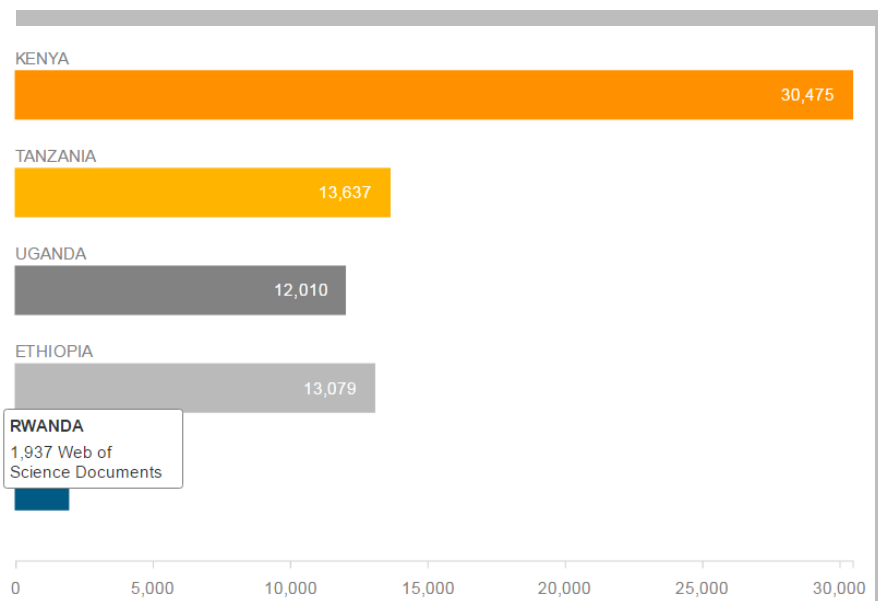
Indexes over 50,000 editorially selected books with 10,000 new books added each year — from 2005 to present

- Conference Proceedings Citation Index — available back to 1990

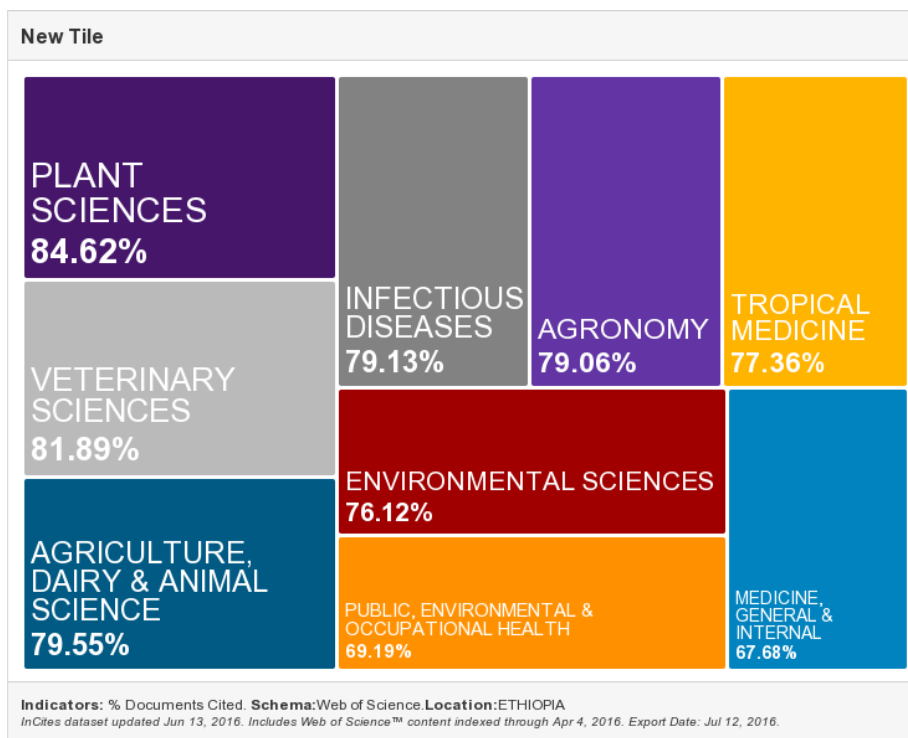
The fastest way to gain access to cutting edge, impactful research derived from conference proceedings literature

These databases are hosted on the state-of-the-art WEB OF SCIENCE platform which allows seamless access, searching and citation analyses across all citation databases.

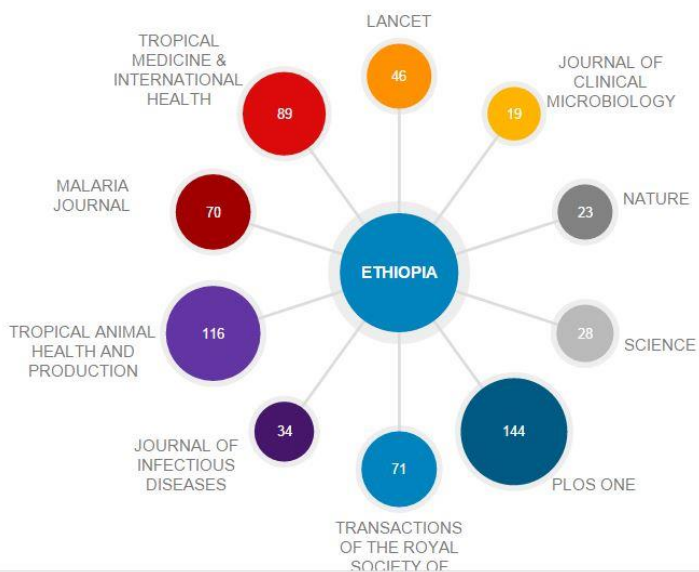
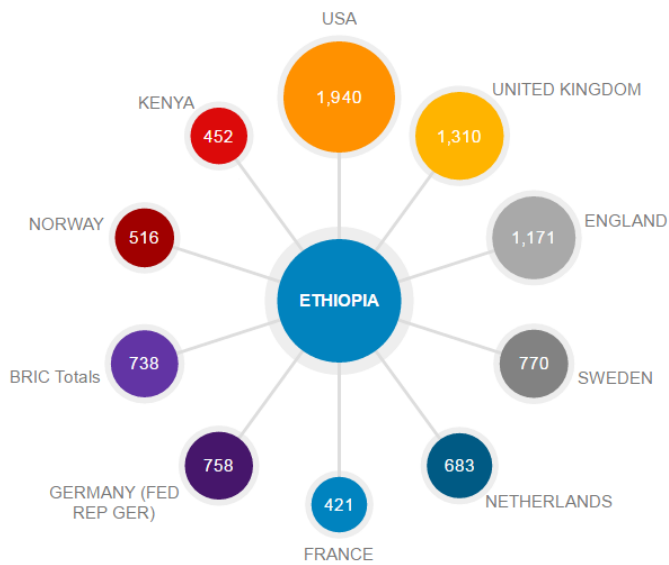
Ethiopian universities are in the process of building infrastructure and resources to strengthen teaching, learning and research at their institutions. In order to do this they have to consider a wide variety of proposals for supporting their aims and different focuses at universities. One of the ways in doing this is through benchmarking and analytics of their universities, which, supports them in monitoring the performance of their universities. This also includes monitoring of the country's performance in the region. Below is a figure that compares Ethiopia's research performance with other countries in the region.



It is through benchmarking and analytics that one can also monitor the performance of top research areas coming from Ethiopia. The figure below shows the most cited research areas in Ethiopia:



The benchmarking and analytics tools help in showing collaborative partners from a regional, institutional and author level. It also monitors Ethiopia's publishing habits as highlighted in the figures below.



The benchmarking and analytics tool called InCites comes with research capacity support highlighting the following:

- Bibliometrics:
 - Introduction and application
 - Value and limitations of bibliometric indicators within Ethiopia's context
 - New methods and indicators for evaluating and measuring impact and performance
 - Tools to evaluate performance
- Research management tools:
 - Understanding tools such as InCites
 - Using tools to analyse collaborations
 - Using tools to identify funders for your research
 - Journal analysis

- Research trends evaluations
- Benchmarking across the Ethiopian research landscape – both researchers and institutions
- Institutional profiles and ranking information
- Global benchmarking and analysis
- How individual researchers can influence their impact and influence:
 - Researcher branding
 - What is your citation impact and what influences your impact

In a nutshell, in order to support Ethiopian universities in making them competitive Thomson Reuters also offers the following key differentiators that will resonate for local researchers and universities with the following;

- Training and capacity building that will deepen the research culture in African countries.
- Exposure to only the top, international, peer reviewed academic literature.
- Access to unprecedented citation analysis data that will allow researchers to evaluate and benchmark their research.
- Journal citation information that will allow researchers to identify in which journals to publish in order to increase the visibility of their research.
- Unique and comprehensive compilation analytical tools. An ideal analytical resource for policymakers, administrators, analysts and information specialists in government agencies, universities, corporations, private laboratories and foundations.