The drastic Under-representation of African Researchers in Africa-related Research

Saralees Nadarajah
Overview

1. **Motivation**
   What is the goal of this investigation?

1. **Data**
   What Data was used, and under which Criteria has it been obtained.

1. **Methods**
   How the Affiliations and relevance to Africa have been assessed.

1. **Findings**
   What discoveries were made, which relationships stand out the most?

1. **Comparisons**
   A comparison to countries that have very similar economic statistics can reveal other factors that come into play.

1. **Conclusion**
   A summary of the current state of the research.

1. **Discussion**
   We are more than happy to discuss any of the results with you, and your direct input is invaluable for this project!
1. Motivation

The exploitation of the African continent has been a painful reality for decades and centuries. But natural resources are not the only thing being drained from the continent.

Source: Chege publishing. “Africans are Robbed of Benefits of Mineral Wealth. Kwesi W. Obeng
1. Motivation

Jeff Bezos, the richest tech billionaire. His company Amazon built on minerals from Africa. Yet Africa remains poor.
1. Motivation

Bill Gates, the second richest tech billionaire. His company Microsoft built on minerals from Africa. Yet Africa remains poor.
1. Motivation

Elon Musk, the third richest tech billionaire. His company Tesla built on minerals from Africa. Yet Africa remains poor.
1. Motivation

Mark Zuckerberg, the fourth richest tech billionaire. His company Facebook built on minerals from Africa. Yet Africa remains poor.
1. Motivation

Dangerous Preconceptions

Highly questionable research, driven by biased agendas continue to negatively influence perceptions of African researchers.

While the research has been contested multiple times by independent researchers, and the authors themselves are controversial to say the least, the damage is clear.

“Lynn (1991) and by Lynn and Vanhanen (2002), as well as several more recent studies, which are said to indicate that the mean IQ of sub-Saharan black Africans is about 70 - at the borderline of mental retardation.”
1. Motivation

The research community has become much more critical, sadly sloppy studies with dubious conclusions such as this persist today.

The perception of African Researchers, Officials and Businesspeople in the Western World is massively harmful to successful collaborations.
1. Motivation

President Donald Trump referred to African countries, Haiti and El Salvador as "shithole" nations during a meeting Thursday and asked why the U.S. can’t have more immigrants from Norway.
1. Motivation

What is the current state of research on challenges in Africa?

While a tremendous amount of research is conducted, much internationally published work includes little to no researchers based in Africa.

AIDS in Africa: its present and future impact.

Author(s): Barnett, T.; Blaikie, P.

Abstract: That AIDS will have a major economic impact in sub-Saharan countries is clear but the extent is unknown. This book explores the social and economic consequences but although the title says Africa it refers specially to Uganda where the authors spent 18 months in a research project. This focus allows them to explore in considerable detail the demographic impact of HIV, the societal (and in particular schoolchildren's) response to AIDS, the way people and society have coped with previous disasters, social history in Buganda-the economic and political processes that led to the development of high-risk foci, the impact on households, families and communities and the coping mechanisms that have evolved, orphans, and the impact on farming systems. With regard to farming the authors stress the difficulties in predicting the impact of AIDS at the system level but the amount of information they have amassed means that this book will be an invaluable tool for those concerned with AIDS and development.
1. Motivation

Based on this first observation, is it possible to determine the frequency of these publications on a large scale?

Can dependencies on research fields, location or specific journals be deducted?

Is it possible to identify causes from the publication data alone?
2. Data

Where can such data be obtained from?

Scopus, ISI Web of Knowledge and other services provide publication information. We have decided to go with Scopus, as it offers most metrics easily accessible.
2. Data:

The exact metrics on each publication are:

- Author(s) (with ID)
- Document Title
- Year
- Source Title (Journal)
- Volume/Issue/Pages
- Citation Count
- Source & Document Type
- DOI
- Affiliations
- Correspondence Address
- Abstract
- Author Keywords
- Index Keywords

More Metrics are available, but have not been selected for the analysis thus far.

Variables of primary interest necessary for evaluation

Secondary variables for analysis and finding impact factors
2. Data

The principal idea is to identify:

1. How many publications are there that require, or are positively impacted by knowledge and experience of local intricacies in Africa?
2. Do the Authors, or at least one of the Authors posses such knowledge?
2. Data - Overview

The raw data has the following specifications:

- 350,000 Titles
- Reaching back to 1960, up until 2019
- From over 20,000 Journals, Conferences and Circulars
- Authors from 200 Countries
- Focused on topics in 40+ African countries
3. Methods

How is data obtained, cleaned and structured?

Scopus.com

Raw Data

1. Due to the millions of papers available, a reference to Africa/ an African nation is necessary

Title
- “Topic A in ..”
- “Topic B in ..”

Authors
- Author 1
- Author 2, Author 3

Affiliation
- University A
- University B, Institute C
3. Methods

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Raw Data

Title
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1. Due to the millions of papers available, a reference to Africa/ an African nation is necessary

2. String Match: Is there a match for Africa in general, or a specific nation?

Abstract/ Keywords may be considered as well

Specific country mentioned. (Hit)

False positive: African-American, Papua New-Guinea, etc.
3. Methods

How is data obtained, cleaned and structured?

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Raw Data

1. Due to the millions of papers available, a reference to Africa/ an African nation is necessary

2. **String Match**: Is there a match for Africa in general, or a specific nation?

   - Abstract/ Keywords may be considered as well

3. **String Match**: Affiliation country in Africa or elsewhere?

   - Specific country mentioned. (Hit)

   - False positive: African-American, Papua New-Guinea, etc.

- Title
  - “Topic A in ..”
  - “Topic B in ..”

- Authors
  - Author 1
  - Author 2, Author 3

- Affiliation
  - University A
  - University B, Institute C

Authors

Affiliation
3. Methods

Clarification:
When considering publications that are thematically relevant, or author affiliation, these are the countries we have included
3. Methods

We then get a new entry for each publication, that is composed as follows:

<table>
<thead>
<tr>
<th>Title</th>
<th>Journal</th>
<th>Ranking (H-Factor)</th>
<th>Affiliation in Africa?</th>
<th>Percentage of Authors in Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title A</td>
<td>Nature</td>
<td>1096</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Title B</td>
<td>Science</td>
<td>1058</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Title C</td>
<td>Lancet</td>
<td>700</td>
<td>1</td>
<td>0.2</td>
</tr>
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The data can then be accumulated by Journal and dissected by their ranks, or field.

→ Percentage of only non-African authored publications and average author percentages per journal.
4. Findings - Percentages

scale_colour_hue(..., h = q(0, 360) + 15, c = 100, l = 65, h.start = 0, direction = 1, na.value = "grey50", aesthetics = "colour")
4. Findings - Percentages

- 51.3% No Afr. Affiliations
- 22.4% African Authorship
- 26.3% Mixed Authorship
4. Findings – By Journal

Nature

H-factor 1096
Count 837
4. Findings – By Journal

H-factor 1058
Count 414
4. Findings – By Journal

The Lancet

- Overall Authorship: 60.5%
- 37.3%

H-factor 700
Count 874
4. Findings – By Journal

H-factor 700
Count 874
4. Findings – By Journal

Journal of Clinical Investigation

H-factor 447
Count 80
4. Findings – By Journal

Cancer Research

H-factor 411
Count 87
4. Findings – By Journal

Journal of Experimental Medicine

H-factor 411
Count 88
4. Findings – By Journal

Energy Conversion and Management

- Overall Authorship: 64.4%
- Count: 84

H-factor 381
4. Findings – By Journal

Gastroenterology

H-factor 368
Count 147
4. Findings – By Journal

Journal of Cell Biology

H-factor 353
Count 53
4. Findings – By Field
4. Findings - Ranking

How does this look specifically for individual journals?
Is there sensible collaboration?

Science

Almost no collaboration

IEEE

More collaboration

Malaria
4. Findings - Ranking

The 2000 Journals with the most research output related to Africa.
4. Findings - Ranking

Average Percentage of Africa-affiliated Authors

Data points for all Journals with an available H-factor rating.
4. Findings – By Decade

![Graph showing findings by decade with trend lines for Weighted Average Ranking, Average Ranking, Percentage Zero Africa affiliated Authors, and Percentage Africa affiliated Authors.](image.png)
5. Comparison - Map

Percentage of no-local Author Publications

The map shows the percentage of non-local author publications across different regions of Africa. The color gradient indicates the range from 0% to 100%.
5. Comparison - Map

Average Journal Ranking

The map shows the average journal ranking across different countries in Africa. Each region is color-coded according to the following scale:

- **Red**: Highest ranking
- **Orange**: Above average
- **Yellow**: Average
- **Green**: Below average
- **Blue**: Lowest ranking

The map includes African countries labeled with their respective initials. The legend at the bottom indicates the range of journal rankings, from 20 to 80.
5. Comparison

Research Population vs zero local Author Publications

- Africa
- Europe
- L. America
- S.E. Asia
5. Comparison

Per Capita Research Population vs zero local Author Publications
5. Comparison

Research Spending vs zero local Author Publications
5. Comparison

Total Research Expenditure vs zero local Author Publications
5. Comparison

- HDI vs zero local Author Publications
6. Conclusion

A quick recapture on what could be deducted:

1. An approximation of the frequency of African authors in research directly affecting Africa
2. An indication of how different metrics influence the frequency

Reputation, Citations, Collaboration

Impact and Amount of Research

Funding, Equipment
"Most of the fossil evidence related to our origin comes from Africa and I think Africans should be able to use the resources available in their own continent and advance their career in palaeoanthropology. Their limitations getting to this field of study is usually funding.“ – Prof. Y. Haile-Selassie
7. Discussion

The very point of this presentation is to communicate the research conducted, and to get into contact with the very people underrepresented in academia.

Any feedback, input or inquiry is welcome!

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