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The state of knowledge on food security in Ethiopia: Knowledge production trends and publication accessibility

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Abstract

Decision makers require a strong research foundation in order to make evidence-based decisions. In Ethiopia, there is an apparent contradiction regarding the availability of research and evidence. Google Scholar suggests there is a vast amount of research on food security in Ethiopia, while the Web of Science finds a small fraction in comparison. We analyzed these two research search platforms by comparing and contrasting the search results for the period of 2005 to 2016. The results are also analyzed in terms of knowledge production trends and knowledge accessibility. The findings present an analysis of the publishers, citations, the types of documents included in the search results, institutions of authors, and the role of false positives in the results. Of note, the citation analysis suggested that there are distinct circles of knowledge exchange and publication, principally revolving around the accessibility of research. In addition to outlining the landscape food security research in Ethiopia, this study has implications for systematic reviews, specifying the strengths and limitations of the respective databases as well as highlights areas for future inquiry, such as barriers to publication and the categorization of journals.

Keywords: Ethiopia; food security; state of knowledge; review

1.0 Introduction

Decision makers require a strong research foundation in order to make evidence-based decisions. In Ethiopia, there is an apparent contradiction regarding the availability of research and evidence. Google Scholar identifies a vast array of publications on food security in Ethiopia, numbering in the tens of thousands. This has implications for future directions in research. On the basis of the Google Scholar results, Cochrane and Adam (2017) advocate for systematic reviews to synthesize and summarize the available knowledge. However, the Web of Science database finds only a few hundred relevant publications to food security in Ethiopia,

suggesting that the priority may be addressing key research questions, rather than synthesizing or reviewing available evidence. This article presents a critical appraisal of the literature by analyzing the apparent contradiction of the state of knowledge of food security in Ethiopia. We explore the nature of this apparent contradiction by comparing and contrasting the results presented on these two academic search platforms. In doing so, this article provides insight on the state of knowledge on food security in Ethiopia. The results suggest that the literature is not as vast as Google Scholar suggests, while the Web of Science platform is missing a significant amount of literature that is published in non-traditional journals[1] or as reports. The results have implications for understanding knowledge production and publication, as well as methods for conducting systematic reviews. An analysis of knowledge production trends identifies the leading institutions of research in this field as well as the thematic areas of inquiry, providing a more nuanced assessment of the research landscape. The findings highlight issues beyond food security in Ethiopia and about the nature of knowledge production and research availability, namely regarding the barriers to publication for researchers in the Global South and the categorization of journals.

In critically appraising the state of knowledge on food security in Ethiopia, we do not contest the validity of the knowledge gaps identified by Cochrane and Adam (2017), namely the need for greater contextualization and interdisciplinary integration, the importance of synthesis and systematic reviews, as well as the exploration of intersections of activities, and their impacts upon other, unrelated, ones. The analysis presented in this paper furthers one of these four components: the synthesis. While we have not yet conducted a systematic review, this work highlights one of the fundamental challenges in conducting systematic reviews: which tools ought to be used to identify the most relevant literature. In furthering the conversation on systematic reviews, this paper evaluates the state of knowledge of food security by comparing two indexes (Google Scholar and Web of Science). The results specify the strengths, opportunities, and limitations of each platform, and can be used as a guide for future systematic reviews.

2.0 Methods

This critical appraisal of the literature on food security in Ethiopia utilizes two academic databases: Google Scholar and Web of Science. Google Scholar is a free search platform, and where possible, provides links to the publications. Google Scholar includes a much broader set of publications than the Web of Science. This is because Google Scholar is far more inclusive and expansive for what is indexed in its search. Google Scholar includes many more journals and books, grey literature, theses, dissertations, and reports resulting in the identification not just of more literature, but also more citations. For the most relevant publications during the 2005–2016 period, the Google Scholar search identified 63,255 citations (based on citations as of 24 July 2017). While the Web of Science identified only one article

[1]We broadly define 'traditional' journals as those published by the major academic publishers, such as Elsevier, Sage, Springer, Taylor & Francis and Wiley, and that are 'ranked' by Thompson Reuters, verified and indexed by the Web of Science platform. Indexed journals are not static, as new journals are added or removed as a part of the verification process. 'Non-traditional' journals are those not ranked or indexed by Thompson Reuters, which include a diverse set of journals, from university-hosted journals to emerging private sector publication entities. We discuss the concept of 'predatory' journals later in this article.

with 200 or more citations, Google Scholar identified 54 articles as having 200 or more citations. The Web of Science is a subscription-based platform managed by Clarivate Analytics (previously Thomson Reuters) that claims to offer the most reliable, relevant, and credible content amongst research search platforms. The Web of Science is a research indexing platform, providing a focused search of academic publications. Web of Science does not include all academic journals. It utilizes the inclusion criteria of impact, influence, timeliness, peer review and geographic representation (Falagas, Pitsouni, Malietzis, & Pappas, 2008; Leydesdorff, Carley, & Rafols, 2012; Testa, 2006). The inclusion of journals is not static, and it does include non-traditional journals in its search index, such as the African Journal of Agricultural Research, published by Academic Journals (discussed in more detail below; a publisher that remains on Beall's List of so-called 'predatory' journals and publishers, who are accused of pay-to-publish practices).[2] According to the Web of Science, as a result of its inclusion and exclusion criteria, the platform indexes the strongest research, and thus is an important tool for researchers seeking to identify rigorous, peer-reviewed publications. These means of determining quality can be problematic (Collyer, 2018; Meadows, Dietz and Vandermotten, 2016). The indexed journals tend to be those owned by major corporations who sell access to academic research, and rarely are journals owned by an institution in the Global South.

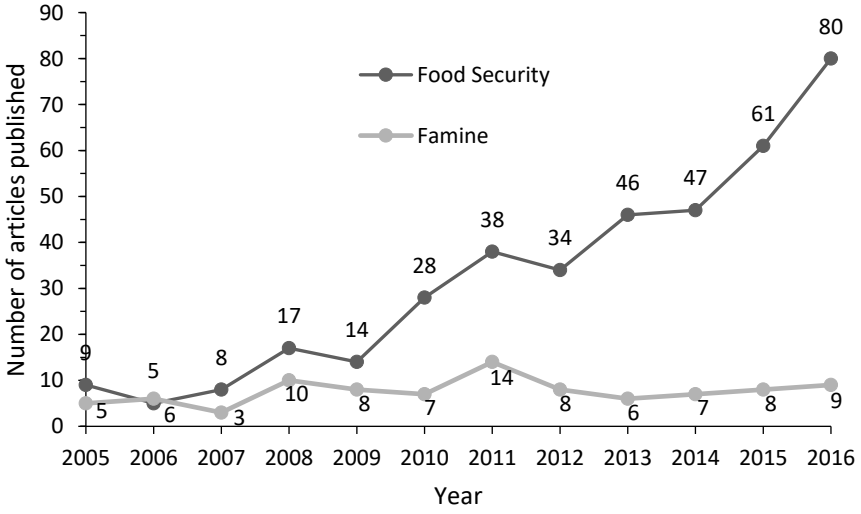
Searches for literature were conducted on these platforms utilizing the keywords "Ethiopia" and "Food security". The searches were limited by a specific time period (2005 to 2016, inclusive). The opening of this time period was selected as it aligns with the launch of the Productive Safety Net Programme (PSNP), Africa's second largest safety net program focused on food security and a moment when researchers began paying more attention to food security, whereas before this point the focus was more on famine events, humanitarian relief, and emergency food aid (see Figure 1 for the rise of publications on food security after this point, with relative stability on publications related to famine). The selection of 2005 also allows for an assessment of more recent evidence and trends. We did not include publications up until the submission of this article (2017) because this would pose challenges for replicability—most search platforms allow for publication searches by year, but not the month or specific dates. Thus, the closing date of 2016 is simply a result of it being the most recent complete year for inclusion and therefore facilitates verification and replication. As a result, a total of twelve years are included for this critical appraisal of the literature. The keywords and time parameters were applied for searches on both platforms.

For the search conducted on the Web of Science platform, the data was first broken down by year of publication to explore the chronological trends (based on year of publication). The results were then summarized by organization/institution within which authors of the publications were based. Both the publication date and the author's institutional affiliation data were provided by the Web of Science analytics, as a part of its search results. After this initial quantitative assessment, all of the matching articles (total: 387) were downloaded, and the abstracts were qualitatively analyzed for relevance to identify false positives—this was an important process as the false positives constituted nearly a third of the total results. False positives were deemed to be those papers not specifically about Ethiopia (e.g., a paper about Peru or China), but made reference to Ethiopia and thus was identified by the search

[2]Beall's List: http://beallslist.weebly.com/ As of 14 August 2017, Academic Journals, which publishes the African Journal of Agricultural Research, remained on the list.

index. All papers about Ethiopia and with some linkage to food security, even if peripheral, were retained. The remaining papers (total: 267) were then categorized by thematic focus based upon a qualitative assessment of the content. However, all of the articles focused on food security in Ethiopia have been framed in specific thematic areas or are from specific disciplinary perspectives. For example, some food security research focuses on the physical, nutritional aspects from a health sciences perspective, others focus on agricultural sciences such as soil quality and production, and yet others focus on decision making or perceptions at the individual level. In some instances, there were multiple foci of a publication, for the purposes of this article the dominant theme was used (to avoid double counting). The themes into which the articles were categorized were identified using an iterative process (while some themes were anticipated, others were introduced as part of the review process). Some thematic areas were expected (e.g., technical agricultural studies, natural resource management, climate change, and social services) while others were identified as a part of the qualitative assessment (e.g., conflict, large-scale land acquisitions, and economics).

Figure 1. Rise of Publications on Food Security.



The search results for food security and Ethiopia on Google Scholar were vast; 27,500 during the 2005–2016 time period (excluding patents and citations). The publications identified by Google Scholar were not each assessed qualitatively because the publications identified were not easily accessible, which included books, book chapters, reports, theses, and dissertations. In addition to accessibility barriers, even the subset of results (the most relevant 1,000 publications), presented an amount of literature that was too large to qualitative assessment. Furthermore, Google Scholar does not have analytic functions that allow for disaggregating data (such as by year or author's institution, as Web of Science does). In order to analyze the Google Scholar results, therefore, a different approach was followed. To conduct the analysis, the Google Scholar results were analyzed using Harzing's Publish or Perish software, allowing for the most relevant literature from the extensive Google Scholar results to be identified (see Harzing, 2007). This software provides a means for analyzing citations using the extensive results on the Google Scholar platform. Harzing was specifically designed for platforms like Google Scholar, making a suitable and appropriate software choice for the objectives. The software limits the

results of a particular search to 1,000 publications (prioritizing the most relevant results). Nonetheless, this software provides insight into the multiple layers of research on food security in Ethiopia. A key limitation of this software, however, is that it does not allow for an analysis of all matching publications, and thus some of the publication trends will not be identified. For example, it might be the case that in the process of prioritizing the most relevant results, the software has excluded national publishers, such as Ethiopian university publications. The use of Harzing's software presents an opportunity to identify the most relevant works, but also a limitation in that it excludes publications beyond those that are amongst the most relevant one thousand publications. Once incorporated into the software, the Google Scholar results were analyzed based on the number of citations and the publishers of the matching publications. The study draws upon citations, which is a narrow metric that has limitations (e.g., not all great research is widely cited by other research, such as systematic reviews that act more as places to identify research than as works that are referenced). However, citations continue to be a commonly utilized metric that is available on both of the platforms we have used which allowed for a comparative analysis. Another metric, such as article views, is offered by Web of Science, but not Google Scholar. While recognizing the limitations of citations, we have opted to use this metric to allow for comparative analyses.

3.0 Results

As outlined at the outset of this article, there is an apparent contradiction when assessing the state of knowledge on food security in Ethiopia: a few hundred publications, or tens of thousands. The Web of Science search platform identified 387 matching publications during the 2005–2016 period, fewer than an average of 3 publications per month. However, the Google Scholar search of the same period and using the same keywords identified 27,500 relevant publications, an average of nearly 200 publications per month. This begs the question: is Ethiopia awash with evidence of food security, or not? In some countries, the greatest challenge is a lack of research. The results of this paper demonstrate that while much more research is needed, a significant amount is available. To provide some context, a search on Google Scholar for Nigeria and 'food security' results in a similar number of publications (27,900) while the Web of Science indicates far fewer (206) than Ethiopia. For Bangladesh, there were far fewer results on Google Scholar (17,400) and also less on Web of Science (311). Due to population size, as expected, there were far more results for India (Google Scholar: 83,800; Web of Science: 814), but there were also more for Kenya (Google Scholar: 34,800; Web of Science: 396). The comparison to Kenya appears to be reflective of the geography of development research—whereby some nations receive more research attention and funding than others (Cochrane & Thornton, 2018). The results of the two search platforms are analyzed below in an attempt to understand the research landscape, availability of evidence, knowledge production trends, and accessibility of publications.

3.1 Web of Science

When the Web of Science was queried for the search terms "Ethiopia" and "Food security" for the time period of 2005 to 2016, there were 387 results, with a rising trend over time (see Figure 1). The increase of publications over this time period is significant: nearly ten times as many publications came out in the mid-2010s compared to the mid-2000s. Since the establishment of Ethiopia's PSNP, there has been a marked rise in publications focusing upon food security. In contrast,

publications matching the search terms of "Ethiopia" and "famine" remained relatively stable during the same time period, suggesting that the additional research attention is aligned with the implementation and development of the PSNP as outlined in Figure 1.

The Web of Science platform uses author affiliations to identify the institution or organization of the authors, which provides insight into who is conducting this research and where they are based. Of the institutions with ten or more publications, the results suggest that the studies are primarily carried out by individuals at Ethiopian universities (total: 99), followed by international organizations (total 73), and then European universities (total: 71) (see Table 1). This result is important because it has been identified that authors from the Global South face a series of barriers in seeking to be published in traditional academic journals, often owned by corporations in the Global North (Collyer, 2018; Joseph, 2015). While these barriers persist, a number of researchers based in Ethiopia have overcome them. While this alludes to the high quality of research conducted in Ethiopian universities, it also perpetuates the problem of putting this important research behind fee-based barriers and thus making it largely inaccessible to most researchers in Ethiopia.

Table 1: *Web of Science (2005–2016), Organizations (10+ publications)*

Organization	**Number of publications**
Addis Ababa University (Ethiopia)	28
CIMMYT (International)	28
Wageningen University (Netherlands)	28
Hawassa University (Ethiopia)	24
Ghent University (Belgium)	22
Jimma University (Ethiopia)	19
IFPRI (International)	19
Mekelle University (Ethiopia)	16
ILRI (International)	16
Emory University (USA)	13
Haramaya University (Ethiopia)	12
University of California (USA)	11
Norwegian University of Life Sciences (Norway)	11
University of London (UK)	10
University of Hohenheim (Germany)	10
FAO (International)	10

Thus far, however, we have assumed that the results of the Web of Science search are accurate and that the platform has correctly identified relevant research. To assess the relevance of the 387 matching results, each abstract was qualitatively evaluated for relevance. This process identified a large number of false positives, which are defined as those articles that are not primarily about Ethiopia. For example, an article about food security in Peru could mention Ethiopia, and thus appear in the search results. For the purposes of this study, these were considered false positives and excluded as no research was conducted in Ethiopia, nor was the content primarily about it. The qualitative assessment resulted in the exclusion of 120 articles (31%). These results were false positives and highlight that even the limited results on the Web of Science platform suggest a greater amount of research than what actually exists.

The resulting 267 articles were further qualitatively analyzed and categorized by thematic area (see Table 2). The results of this assessment show two dominant thematic areas of research: (1) technical and scientific assessments, such as studies of soil, crop varieties, and irrigation schemes, and (2) studies related to natural resource management and water management. These two thematic areas accounted for 37% of all the publications identified by Web of Science. Following these, the next most dominant thematic area was studies that focused on social services and policy. Of the social services, the PSNP was the most researched, which aligns with the earlier claims regarding the reasons for the rise of research on food security in Ethiopia. Research that assessed vulnerability or was conducted with individual farmers was almost entirely local-scale research; no meta-studies or systematic reviews were identified. While there were six studies that focused primarily on gender, it is notable that very few studies explored issues of social inequalities beyond gender, such as ethnicity, religion, age, location, ability and economic status. The vulnerability assessments, to a degree, addressed some of these points by including them as metrics for household surveys (e.g. economic status), but gender was the only factor of social inequality for which specific research was published.

The journals within which the articles were published were almost entirely owned by large corporations that require paid subscriptions for access (194 articles; 73%), including Elsevier, Routledge, Springer, and Wiley. The largest open access publisher was BioMed Central (20 articles). However, the vast majority of results on the Web of Science platform were not open access and thus this platform is of limited relevance for researchers who do not have the required institutional subscriptions—in fact the Web of Science search platform itself is a service that requires paid subscription, presenting yet another barrier for researchers seeking to identify research on food security in Ethiopia.

The Web of Science also lists the number of citations an article has, however, this is limited to the databases that it indexes and is thus far more narrow in scope that the Google Scholar assessment of citations. Nonetheless, the most cited relevant articles covered (in order of number of citations) are: climate change adaptation (Bryan, Deressa, Gbetibouo, & Ringler, 2009), famine early warning (Verdin, Funk, Senay, Choularton, 2005), climate variability (Conway, 2005), climate change adaptation (Conway & Schipper, 2011), crop biodiversity (Di Falco & Chavas, 2009), child growth and food aid (Yamano, Alderman, & Christiaensen, 2005), gender bias (Hadley, Lindstrom, Tessema, & Belachew, 2008) and land grabbing (Lavers,

2012).[3] All the journals within which these articles were published required paid subscription for access.

Table 2: *Thematic Coverage of Articles in Web of Science, 2005–2016*

Theme	**#**	**%**
Technical Agricultural Studies, Food Science	51	19
Natural Resource Management, Water	48	18
Social Services, Policy	35	13
Climate Change, Rainfall	30	11
Vulnerability Assessments	30	11
Individual Farmers	27	10
Health	15	6
Economics, Business	13	5
Large-scale Land Acquisitions	10	4
Gender	6	2
Conflict	2	1
Total	**267**	**100**

3.2 Google Scholar

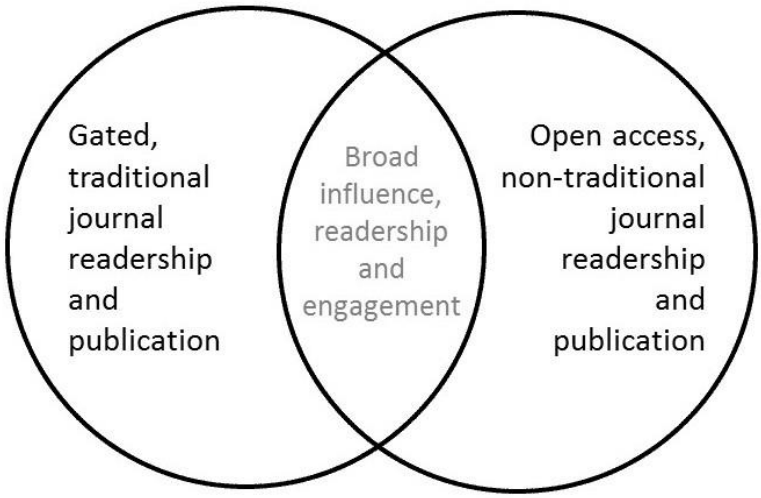
Using the same keywords and time period as the Web of Science described above, a similar search was conducted on the Google Scholar search platform. The results suggest that there are 27,500 publications related to food security in Ethiopia. Based on the results and analysis of the Web of Science results, this appears to present a contradiction regarding the state of knowledge on food security in Ethiopia. The Google Scholar results suggest that the research landscape is much broader and deeper than the Web of Science search does. The following analyzes the Google Scholar results to assess if this is an illusion of knowledge, or if the Web of Science is insufficiently capturing the available research.

In analyzing the articles that are listed as being highly cited on the two platforms, it is noteworthy that they differ not just in the number of citations identified, but also which articles are identified as being highly cited. Of the most cited publications (Web of Science, see Section 3.1, and Google Scholar, see Section 3.2), only two were listed as being highly cited on both search platforms (Bryan et al, 2009;

[3]We list the citation numbers as of the date of assessment, 24 July 2017. This list includes those studies with 50 or more citations as of that date.

Conway & Schipper, 2011). This suggests there is not just a difference in search results, but a difference in how researchers utilize knowledge based on where it is published. For example, it may be the case that readers of non-traditional open access journals are inclined to publish in non-traditional journals. In other words, while there is some overlap, it appears that researchers operate in different academic circles. While this requires further study to confirm, Xia et al. (2014, p. 1406) find that there are "distinct author populations" for each group of journals they analyzed. If correct, this might be best understood as a trend whereby academics with access to gated traditional journals themselves publish in such journals, and those without such access publish in non-traditional journals, with a limited degree of overlap in-between (see Figure 2). With the exception of those articles and journals that have broad influence, readership, and engagement, this has the potential to create distinct forms of echo chambers, wherein knowledge has limited impact beyond its respective sphere.

Figure 2. Knowledge Exchange Hypothesis.



Source: Authors.

Similar to the Web of Science, false positives posed a significant challenge in the Google Scholar results. As this platform analyzes the complete text of publications, it results in a far higher number of matching results. However, in many cases, the appearance of "Ethiopia" and "food security" within the text was done as a brief reference. In these publications research was not conducted in Ethiopia nor were the publications primarily about Ethiopia. Consider the most highly cited publications from the Google Scholar results as an example of the challenges of false positives: Of the 54 publications with 200 or more citations, only ten (19%) are specific to Ethiopia. From the Google Scholar results, the ten most cited, relevant, publications were (highest citation first): Bryan et al, 2009; Carter, 2007; Di Falco, Veronesi, & Yesuf, 2011; Bellemare & Barrett, 2006; Mamo, Sjaastad, & Vedeld, 2007; Deressa, Hassan, & Ringler, 2010; Gilligan, Hoddinott, & Taffesse, 2009; Bernard & Spielman, 2009; Conway & Schipper, 2011; Mekuria at al., 2007. Most of these publications were published in Web of Science indexed journals. However, some of the most relevant publications were published in journals not indexed by the Web of Science (discussed below). In contrast to the Web of Science highly cited articles,

which covered diverse topics, amongst the highly cited Google Scholar publications climate change stands out as a key thematic area of research (being the focus of four of the ten papers cited more than 200 times). While Google Scholar identifies much more research, false positives in the Google Scholar results are more of a problem than in the Web of Science (in the Web of Science results about a third were identified as false positives while on Google Scholar four-fifths of the most highly cited publications were general studies not specific to Ethiopia).

In some ways, the Google Scholar search was similar to the Web of Science results. For example, the majority of publishers of the matching academic articles in the Google Scholar results were also listed within the Web of Science index and usually required paid subscription for access. The publishers of these journals included (alphabetically; the number of results): Cambridge (16), Elsevier (144), Oxford (19), Sage (12), Springer (104), Taylor & Francis (45), and Wiley (90). The journals Agricultural Economics (Wiley), Food Policy (Elsevier), Food Security (Springer), Global Food Security (Elsevier) and World Development (Elsevier) were the journals with the largest number of relevant articles (10+) covering Ethiopian food security.

Google Scholar differs from Web of Science in that it offers more diverse types of results. For Google Scholar, articles within academic journals represented 430 of the 1,000 most relevant results. The majority, however, were not articles within academic journals. Of the 1,000 most relevant results identified by Google Scholar, 87 were books or book chapters, drawing upon Google Book's extensive index of full-text books.4 The key difference is that nearly half of the 1,000 most relevant matching articles are not in traditional academic journals or books.

Google Scholar includes publications from non-governmental organizations (CGIAR, FARM Africa, Forum for Social Studies, IFPRI, IUCN), intergovernmental agencies (FAO, World Bank), theses from Ethiopian universities (Addis Ababa, Haramaya, Mekelle) and government agencies (Ethiopian Commodity Exchange, Ethiopian Institute of Agricultural Research). Google Scholar also searches a large collection of non-traditional journals that are not indexed by the Web of Science. Specifically, this includes the four key publishers: (1) Academic Journals, an African publisher hosting over 100 open-access journals; (2) African Journals Online (AJOL), which hosts over 500 journals, including thirty focused on Ethiopia; (3) Journal of Sustainable Development in Africa, hosted by Clarion University of Pennsylvania; and (4) Multidisciplinary Digital Publishing Institute, hosting over 170 journals. Together, these four publishers comprise almost a third of the most relevant 1,000 results on the Google Scholar search platform.

Much debate exists over the quality of the non-traditional journals, many of which are accused of operating pay-to-publish platforms (Xia et al., 2014). Undoubtedly, the actions and quality of some publishers are questionable (Beall, 2012, 2016; Seethapathy, Kumar, & Hareesha, 2016). Pointing out these platforms as problematic, however, does not address the challenges faced by researchers in the Global South as they seek to publish their research. Beall (2012; 2016) has actively called for the banning of these journals, including those that have been indexed on Web of Science (the African Journal of Agricultural Research is an example of this). Valid criticisms do not equate with solutions. Instead, there is a need to think of

[4]The Web of Science does include some book chapters, so this is not a unique feature of Google Scholar, although as with the journal results, it identifies a greater number.

ways to promote rigorous, peer-reviewed, open access journals hosted in the Global South, such as those hosted by national universities. There has been some success in this regard—Ethiopian universities have launched at least 36 journals, most of which conduct thorough peer reviews before publication and do not charge processing fees. However, since these journals have no income, and rely upon volunteer time and university financing, they run the risk of becoming inactive. Of those 36 Ethiopian journals, 21 are inactive or publish inconsistently. Because there are few viable alternatives, it does not seem tenable to disregard everything published outside of traditional journals indexed on the Web of Science.

For many researchers in Ethiopia, there is a struggle to meet the editorial requirements of the traditional publishers, and there are few viable options for publication outside of them. It is important to distinguish between barriers related to writing and barriers related to quality, a nuance that does not emerge in Beall's criticism—it is well worth noting that requiring researchers in the Global South to write and publish in English (as the dominant language of these journals) re-enforces the dominance of languages from the Global North, which for much of the Global South were colonial impositions (and therefore also acts to marginalize publications in local languages). In addition to alleviating some of the barriers, many of these non-traditional journals are open access. As a result, they tend to be read more often by researchers in Ethiopia because of their accessibility, and thus have the potential for greater influence than publications in the traditional, fee-based journals. For example, an article on sorghum in the AJOL platform (Dicko et al, 2006) has been cited 220 times. This journal is published by Academic Journals, which is classified by Beall as a 'predatory' journal. However, this article is widely cited in traditional and non-traditional journals, thus transitioning the high-quality evidence from the journals of questionable reputation into the traditional sphere. Within the food security literature in Ethiopia, the Ethiopian Journal of Health Development stands out as one of the most cited national journals (hosted on AJOL), such as a study on intestinal parasitic infections (Mengistu, Gebre-Selassie, & Kassa, 2007) and child stunting (Teshome, Kogi-Makau, & Taye, 2009), each of which have been cited over 90 times (as of 24 July, 2017).

Despite a continued challenge of false positives, the results of the Google Scholar search indicate that much more research on food security in Ethiopia exists than what is suggested by the Web of Science. The reason Google Scholar is able to identify so many more publications is the broader and more inclusive criteria, as well as the inclusion of more books, book chapters, reports, and non-traditional journals. The comparison of citations on the two platforms suggests that there are distinct circles of knowledge exchange and publication, largely being divided by access to research. Alternative publication outlets are important for researchers in Ethiopia, who struggle to overcome the barriers of traditional journals. While some research in non-traditional journals is of questionable quality, and some practices of publishers is problematic, this should not be broadly generalized to suggest that all research published in these journals is not useable or is inaccurate. Amidst calls for banning non-traditional, so-called 'predatory' journals, it appears more prudent to focus on finding solutions to overcoming barriers and supporting emerging and struggling university-based journals in the Global South.

4.0 Conclusions

Is there a lot of research on food security in Ethiopia, or not? Due to a significant number of false positives, Google Scholar greatly overestimates the amount while Web of Science underestimates it because of its narrow inclusion criteria. These differences have implications for systematic reviews. Researchers should be cognizant of the limitations and benefits of the search platform utilized to identify literature for a systematic review and reflect upon the reasoning behind that decision-making process. Both platforms presented significant challenges of false positives, which suggests that systematic reviews should not be limited to quantitative methods, such as looking only at analytic results but also include qualitative methods to verify that the included materials align with the objectives of the study.

A key challenge for researchers in Ethiopia is accessibility; the majority of publications identified in this assessment are inaccessible to researchers in Ethiopia due to the requirement of paid subscriptions. There are challenges with non-traditional publishers and journals. Some non-traditional journals operate a pay-to-publish model with weak or non-existent peer review systems. As a result, the quality of the research is questionable. For other non-traditional publishers, such as those hosted by Ethiopian public universities, peer review can be strong, but other quality issues may arise, such as formatting and writing quality, which does not equate with poor research or inaccurate findings. Often university-hosted journals of this nature struggle as they rely upon volunteers and lack sufficient funding to cover operational costs. A number of platforms, such as AJOL, have been developed where such journals can be hosted, and a number of Ethiopian journals have long been doing so (such as the Ethiopian Journal of Development Research, Ethiopian Journal of Health Development, Ethiopian Journal of the Social Sciences and Humanities, Ethiopian Journal of Agricultural Sciences). These initiatives have streamlined the publication process and increased the options for publication. Furthermore, since most are open access, they have also improved accessibility.

This critical appraisal of the state of knowledge on food security in Ethiopia further justifies the needs for regular systematic reviews and synthesis articles, as called for by Cochrane and Adam (2017). The results of this paper highlight the trends of the research landscape, and also emphasize the need for critical reflection when searching for relevant research, including when doing so for systematic reviews and syntheses. This paper does not specify a particular platform as being the most well suited. Rather, it outlines the limitations and strengths that researchers need to reflect upon when making this decision to ensure that the platform selected aligns with the research objectives.

Conflicts of Interest

The authors declare no conflicts of interest.

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