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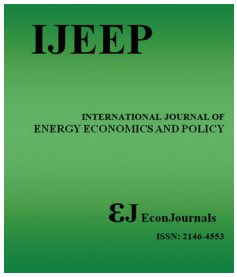

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Green Economy: Bibliometric Analysis Approach

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ABSTRACT

With the increased efforts and focus on sustainable development and changes in the climate, literature has given more attention to the green economy. However, researchers have not yet been totally able to consensus on the definition of this phenomenon. The study presented in the paper provides an overview of the advancements present in research on the green economy for the period from 1990 to 2020. Using a bibliometric analysis approach, the paper summarizes the trends of development and the status quo of the green economy. The aim is to provide the reader with guidance and a solid conceptual framework for future research.

Keywords: Green Economy, Sustainability, Bibliometric Analysis
JEL Classifications: Q54, Q56, Q20

1. INTRODUCTION

The financial sector can play a crucial role in building a stable and prosperous economy by implementing the principle of responsibility and accountability. This requires redirecting investments towards economic activities, which balance economic, environmental and social objectives, in order to enhance living standards and reduce the effect of global challenges, such as a change in the climate, decreasing levels of biodiversity, inequality, etc. In this sense, many analysts take a closer look at the "green economy," which can improve the growth of a country's economy and achieve goals of sustainability simultaneously.

The green economy concept has become a significant field in the specific development policies of countries worldwide (Bogovic and Grdic, 2020). It was first proposed by the British environmentalist Pearce in the book Blueprint for a Green Economy. He believed that a green economy is a form of economic development instead of the traditional pursuit of economic growth. It emphasizes the organic combination of social development and ecological environment protection (Pearce et al., 1989). Since then, the concept has continued to expand. The United Nations Environment Programme describes the green economy as a form of economy that advances and improves social equity and human welfare while simultaneously reducing the risks of adversely affecting the environment and shortages in the ecological system.

Several significant challenges arose due to the incorporation and implementation of the classical economic theory. According to Shmelev (2017), there is a need for a revolutionary system such as the green economy to replace the capitalistic economy to support more economic growth through innovations. The green economy is based on fostering entrepreneurship, establishing balance in multiple sectors and encouraging sustainable development.

According to Bergius et al. (2020), the insufficient availability of natural resources and the significant increase of environmental damages are gaining attention as substantial challenges facing the universe in the current era. Due to these factors, conflict arises due to the steadily increasing growth of the population. Therefore, the green economy needs to be developed, which is a new path that promotes environmentally sustainable investment. Researchers have found that the current boom era effect on industrial structures is among the determinants of degradation (Mealy and Teytelboym,

2020). If incorporated and implemented in the international states, the green economy environmental policies will offer guidance to industries in utilizing economically friendly practices and maintaining competitiveness.

Local community development and improving people's living standards are the main aspects considered in the green economy (Vasile et al., 2013). Studies have shown that holistic approaches in development policies are vital for the success of the green economy (Jones et al., 2016). Implementation of the green economy is dependent on the local communities, research institutions, the government and industries. Zhou and Deng (2019) provide a deeper explanation of the green economy, stating that its prime goals are to address economic disparities in an entire region and establish environmentally friendly societies. Such economic efficiency is made possible through the implementation of well-targeted policies focused on the environment. The results attained from the policies benefit policymakers in promoting low-carbon developments and establishing green areas. Therefore, this paper is particularly interested in gaining a more profound understanding of the implementation of environmental policies that play a significant role in establishing the green economy.

In the last decade, academics have accorded more attention to the green economy. For example, Loiseau et al. (2016) developed a conceptual framework that demonstrates the ability of the green its approaches, tools, and economic concepts that will lead to the transition of a country's economy towards more sustainability. The green economy interventions significantly impact indicators of various sectors and investments in ecosystem services and low carbon development in South Africa (Musango et al., 2014). In addition, Musango et al. (2014) there lies a connection between South Africa's informal economy and the green economy. Therefore, providing the argument that by inluding informal economy in green economy discussions, the environmental planning and policy formulation becomes more informed, resulting in environmental developments that are more sustainable and socially equitable (Mark and Vandenbergh, 2012).

Further research on the green economy in South Africa focused on assessing women's opportunities in environmental sectors and green economy development (Nhamo and Mukonza, 2020). The researchers observed it is essential for policymakers to raise awareness in women of the interventions and opportunities to enhance their capacity at the conceptualization stage of the project and managerial levels. Mukonza (2020) and Wenjia C, et al., (2011) found that influential factors in South Africa green entrepreneurship activities include access to information, knowledge funding, competence, support from the private sector support and government are also critical in order to sustain entrepreneurship in a green economy. Studies have looked into the issues arising from the transition into a green economy in Ghana in previous years. The problems recognized from the studies include incorporating green building technologies and implementing green information technologies (Leonard et al., 2021; Mastini et al., 2021; Mahmood et al., 2020, Darko et al., 2018, Ahenkan et al., 2018; Dovie, 2017; Bai et al., 2018; Al-Omoush, K.S., et al., 2020).

This paper aims at contributing the existing literature by addressing the questions;

- In the Scopus database, what is the historical trend of scientific products and the numbers of green economy researches?
- How is the trend of scientific production of green economy researchers in terms of subjects/fields?
- What are the critical intellectual and influential aspects of green economy literature?
- What is the future research direction of the green financial economy?

The findings of this paper could provide some future study directions for the interested authors. Moreover, the following table represents the literature reviews of the green economy. In addition Table 1 summarized some of the Literature Reviews of the Green Economy.

Figure 1 shows the importance of green economy policies as reflected in the various discussions by researchers and scientists.

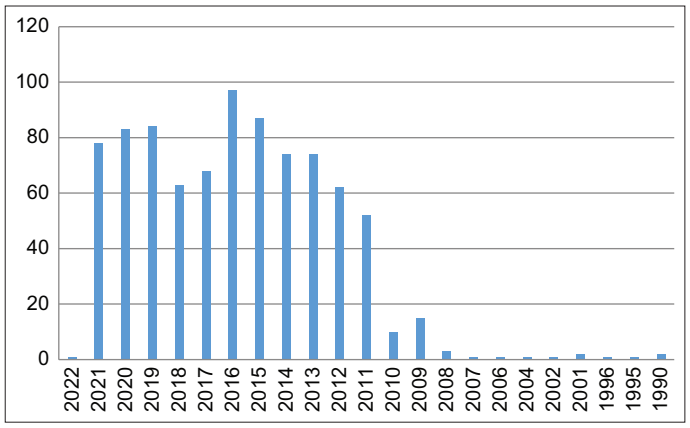
This paper started by providing a summary of literature from recent publications, intending to prove a broader picture of relevant research conducted in this field. The following parts are Section 2, that is an overview of the research database and methodology, including the data collection strategies used and filtered data. Section 3 provides further discussions. Section 4 includes the conclusion of the paper and the future directions.

2. METHODOLOGY AND PROCEDURES

A bibliometric analysis approach has been used in this paper. Pritchard (1969) was among the first researchers to utilize it. The approach has acquired more recognition as an effective tool to conduct a quantitative analysis to gain a deeper understanding of the literature.

Since articles from the Scopus database are more reputable, it was utilized as a source for analyzing publications focused on the Green economy. Since the first article based on the green economy is the Journal of Development Economics in 1990, the bibliometric analysis will utilize publications from 1990 to 2020. All journal publications from 1990 to 2020 are exported in comma-separated values (CSV) and plain text format, containing keywords, citations,

Figure 1: The number of relevant publications



and bibliographic information. A total of 862 publications are retrieved and used for the analysis for providing representative and informative perspectives of the information on the topic.

Researchers such as Atayero et al. (2018), Zyoud et al. (2014), Kamdem et al. (2019), Yessirkepov et al. (2015), Sabah et al. (2019), Mokhtari et al. (2019), Kazerani et al. (2017), Thomas, W. (2015), Batooli et al. (2016) and Ho et al. (2017), Alghusin, Nawaf, et al. (2020) have derived data in their research from the Scopus database.

Identification of essential parts of the scientific publications was done through clustering techniques. For data analysis, the software VOS viewer and Excel software were used in the study. VOS viewer software facilitates bibliometric analysis by creating co- occurrences maps, co-authorship and co-citation. Other features such as searching, magnification, and navigating found in the software made it a necessary tool in the study (Van Eck et al., 2010). Figure 2 summarizes the applied methodology in this paper.

3. KEY RESULTS

The bibliometric analysis addresses the following questions:
The papers are published from which journals?
Which are the countries of origin for these authors?
Which are the fundamental interests and words from each study?
How are the papers cited in the literature?

Table 1: Summary of literature reviews of the green economy

Author Name/Year	Article Title	Source	Findings
Lorek and Spangenberg, 2014	Sustainable consumption within a sustainable economy – beyond green growth and green economies	Journal of Cleaner Production	The authors advocate for an approach that evades risks by the economy in terms of its physical size. To achieve this, there's a need for robust, sustainable consumption that depends on transforming the settings of social institutions
Loiseau et a., 2016	Green economy and related concepts: An overview	Journal of Cleaner Production	The article defines identified diverse concepts, tools, approaches, and theories related to a "green economy". In addition, it recognizes the need to develop a framework portraying the capacity of the green economy to foster the transition of a country towards a green economy
Bina, 2013	The Green Economy and Sustainable Development: An Uneasy Balance?	Environment and Planning C: Politics and Space	The article provides the three discourse categories that can effectively describe and show the effects of greening. These categorize are demonstrated as "all change," "greening," and: "almost business as usual"
Gasparatos, 2017	Renewable energy and biodiversity: Implications for transitioning to a Green Economy	Renewable and Sustainable Energy Reviews	The study indicates that the logic of renewable energy expansion has socio-economic and environmental benefits that should be considered when developing renewable energy policies
Zeb et al., 2015	Causal links between renewable energy, environmental degradation and economic growth in selected SAARC countries: Progress towards a green economy	Renewable Energy	The results show that there is bidirectional Granger causality between depletion of natural resources and carbon dioxide emissions in Nepal and between poverty and energy production in Pakistan
Cohen, 2012	The potential role of carbon labelling in a green economy	Energy Economics	International, multi-stakeholder organizations play a significant role in establishing protocols and standards. Authors argue that it is vital we consider the entire life circle of a product being labelled. It is also essential to set an international standard for reporting and measurement
Pan, 2018	Advances and challenges in sustainable tourism toward a green economy	Science of The Total Environment	This paper provides a more profound understanding of matters on sustainable tourism. It encourages various disciplines and researchers to explore inter-relationships among energy/water/food more broadly, environment/ecology and community/culture
Kothari et al., 2014	Alternatives to sustainable development and the Green Economy	Development	The article argues that the "Green Economy" is not enough to respond to the inequity and unsustainability of "development" (a western cultural construct). The authors propose optional socio-environmental futures to (and not of) development
Wanner, 2015	The New 'Passive Revolution' of the Green Economy and Growth Discourse: Maintaining the 'Sustainable Development of Neoliberal Capitalism	New Political Economy	The authors argue that the green economy can be perceived as a Gramscian 'passive revolution' whereby the dominant discourse on sustainable development, subsumed by capitalist hegemony, is secured in global developmental, economic, environmental, and growth crises
Barbier, 2011	The policy challenges for green economy and sustainable economic development	Natural resources forum	The authors argue that the growth of the green economy does not ensure sustainable economic development due to the losses and degradation evident in the global ecosystem. The article explores and advocates for the implementation of a range of financing mechanisms

Figure 2: Summary of Methodology, Source: Own work

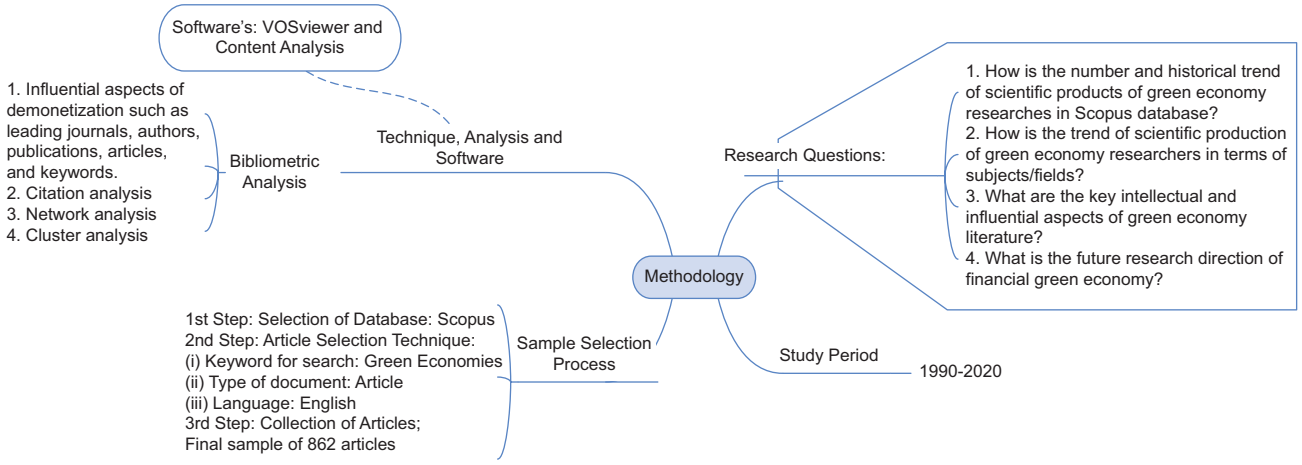


Table 2: Distribution of the journals (publications over six)

Sources	Articles	Sources	Articles
IOP conference series: Earth and environmental science	27	International journal of green economics	14
E3S web of conferences	25	Environmental science and pollution research	12
Sustainability (Switzerland)	25	Lecture notes in networks and systems	10
Quality - access to success	16	Biodiversity in the green economy	9
Journal of cleaner production	15	International multidisciplinary scientific geoconference surveying geology and mining ecology management SGEM	9

3.1. Distribution of Journals

Table 2 provides listed journals based on the numbers of publications according to the numbers of publications in the study sample. It is evident that the most influential journals that publish works related to the paper's study are journals labeled "ENVIRONMENTAL SCIENCE."

Five key journals appearing in this list published many publications in a green economy and other fields: IOP Conference Series: Earth and Environmental Science with 27 magazines, Sustainability (Switzerland) with 25 publications and International Journal of Green Economics with 14 publications.

Notably, the green economy gained recognition from finance journals, regardless of its broadly acknowledged significance and the urgency for regulatory tools and relevant policies. More research is needed to bring the green economy to the attention of mainstream sources of financial and economic analysis to fill the vacuum in the existing literature.

The findings of this study recognize that various reasons support the paper's claims of the need for more research. First, investments in green projects have increased at substantial levels in recent years and have maintained a robust momentum. For example, the reported 2017 record of 155.5 billion dollars in global green bond issuance caught the interests of various academics.

In addition, more academic researchers from diverse disciplines are interested in this area. Though currently, limited publications are produced, several finance journals and events in the leading stream economy and previous years will link to significant outputs (e.g. 2018 RFS Climate Finance Initiative in London3). The inadequacy of relevant research means that there is potential for new considerable research in the green economy. The paper aims at showing that there exists more opportunity.

3.2. Country of Origin of the Authors

It is important to investigate the regions which research on the green economy originates. The study links this idea to the countries of the authors' origin. Figure 3 provides information on the countries from which the authors originate. The information shows that recent progress in research on the green economy is mainly from the United States, China, the United States, the United Kingdom and other developed countries. The dominant researchers in this field are based in China, the United States, and the United Kingdom. Influential international organizations such as the UN and the World Bank base their headquarters in one of these countries to encourage and facilitate research.

Among the significant emerging contributors are Saudi Arabia, Ireland, Iran, and other emerging economies. Based on the sizes of these countries, it is necessary to hold active debates discussing green economy topics. There lies uneven distribution between the developing and developed countries in terms of the origin of the authors, which means developed countries dominate the field of the green economy.

The study acknowledged the fact that developed countries have dominated academic research on the green economy. Also, the statistics are unlikely to change for a significant amount of time. Therefore, green economy issues in countries that are developing ought to be considered as areas of focus in future research.

3.3. Analysis of Keywords

Table 3 provides a list of the ten most important keywords. The Green Economy, Sustainable Development, Economics, and Environmental Economics are the most significant literature

Figure 3: Country of origin of the authors

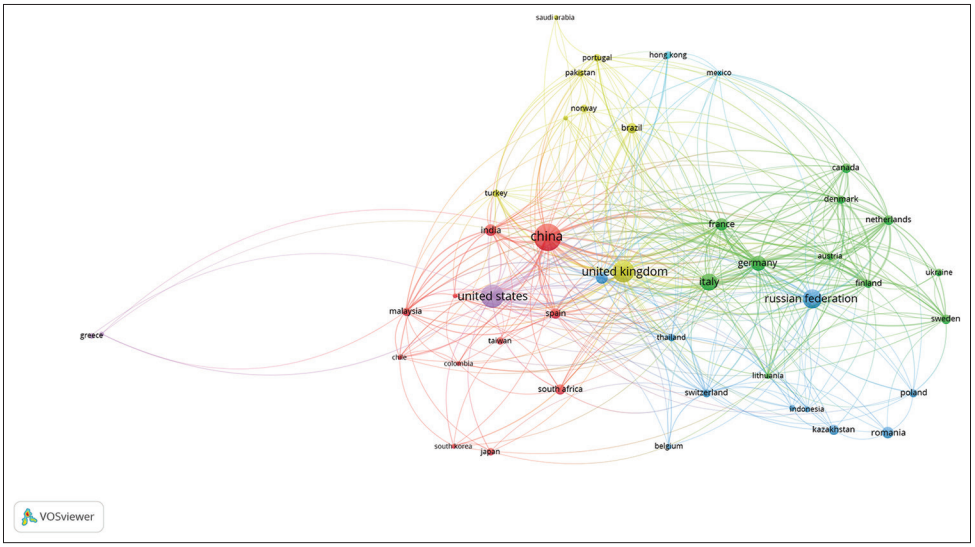


Figure 4: Analysis of keywords

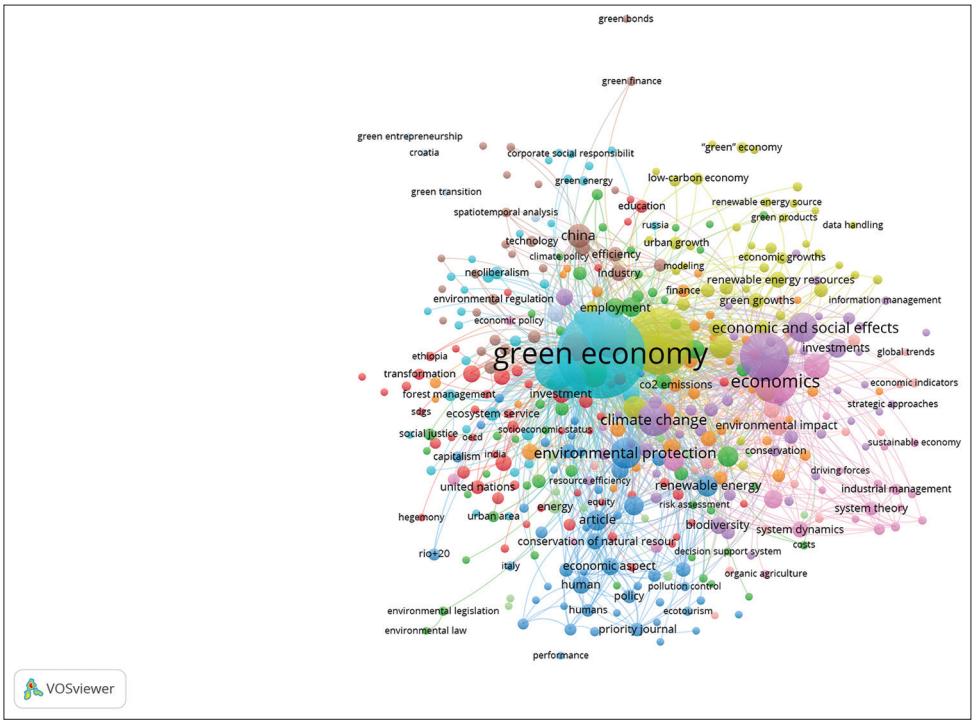


Table 3: Top ten keywords

Keyword	Occurrences
Green Economy	379
Sustainable Development	222
Economics	92
Environmental Economics	85
Sustainability	66
Economic Development	62
Climate Change	55
Environmental Protection	46
Economic And Social Effects	44
Economic Growth	39

concerns. The green economy is established to address issues on Sustainable Development and Environmental Economics.

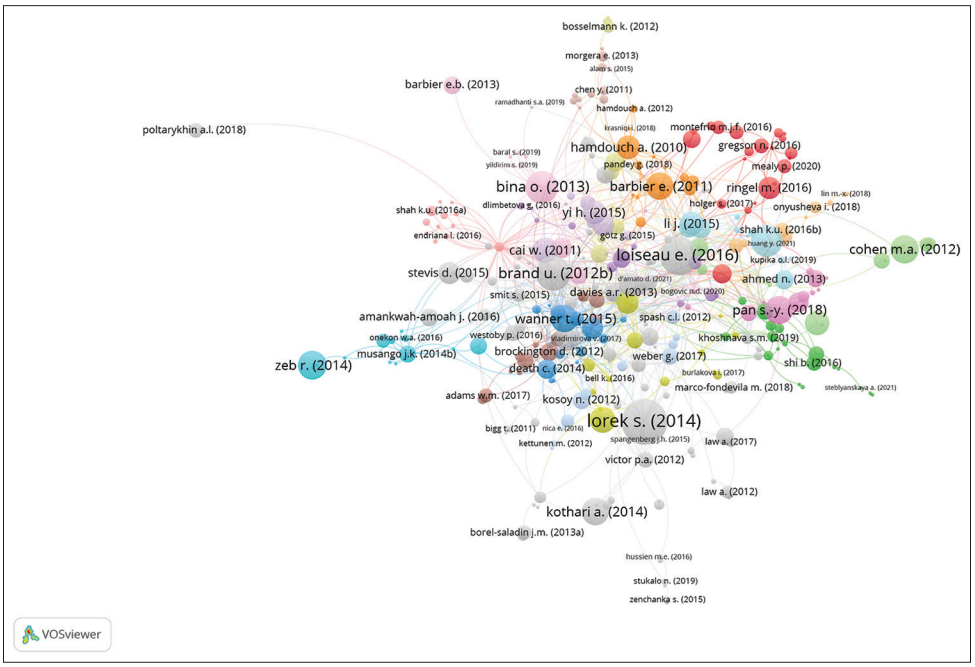
Figure 4 is a graphical illustration of the keywords that are evident in the used articles. Combining the top ten list of keywords globally and the visual data shows patterns that catch the reader's attention. In addition, keywords are seen to have gained more attention. Economic Growth is ranked the 10th; this indicates the importance of a green economy in managing Economic Growth.

The keyword climate change which is evident in Figure 4, relates to a green economy, showing that climate change is of significant significance to the topic of the green economy. Researchers also have paid interest in the effect of the green economy on the growth of development and sustainability. The following is represent table 4 to show the top-cited articles in the green economy field.

Table 4: Top cited articles

Author and Year	Journal	Citations	Documents title
Gómez, 2013	Ecological Economics	770	Classifying and Valuing Ecosystem Services for Urban Planning
Massari, 2013	Resources Policy	417	Rare Earth Elements as Critical Raw Materials: Focus on International Markets and Future Strategies
Genovese, 2017	Omega	402	Sustainable Supply Chain Management and the Transition Towards A Circular Economy: Evidence And Some Applications
Kalmykova, 2018	Resources, Conservation and Recycling	346	Circular Economy – From Review of Theories and Practices to Development of Implementation Tools
Foster, 1996	Ecological Economics	283	Determinants of Consumers' Green Purchase Behavior in a Developing Nation: Applying and Extending the Theory of Planned Behavior
Yadav, 2017	Journal of Cleaner Production	279	Green, Circular, Bio Economy: A Comparative Analysis of Sustainability Avenues
D'amato, 2017	Journal of Cleaner Production	272	Sustainable Consumption within a Sustainable Economy – Beyond Green Growth And Green Economies
Lorek and Spangenberg, 2014	Journal of Cleaner Production	270	Supply Chain Drivers That Foster the Development of Green Initiatives In An Emerging Economy
Loiseau et al., 2016	Journal Of Cleaner Production	189	Green Economy and Related Concepts: An Overview
El-Kassar, 2019	Technological Forecasting and Social Change	184	Green Innovation and Organizational Performance: The Influence of Big Data and the Moderating Role of Management Commitment and Hr Practices

Figure 5: Citation analysis from reference lists



An analysis of the keywords is essential and is used to provide clarification of green economy conceptual points. The green economy is linked to changes in climate and ought to be driven by policies. The topics of investments or financial issues are the critical topics of interest. The green economy receives attention from various economists such as financial economists.

3.4. Analysis of the Citations

The papers utilized in the literature were cited correctly. The citations for the sample of the 862 publications are 9 814 in number. We take a deeper look into the cited sources cited by these papers. As shown in Figure 5, Ecological Economics, Resources Policy and Omega journals dominate the citations. It is evident from the study that finance journals are not primarily used. An analysis of the used journals shows the literature is comprehensive. Although this area is labeled a green economy, the studies are not mainly founded on prominent stream finance journals. This shows the unavailability of models and techniques in mainstream finance research to gain a more profound understanding of issues relating to a green economy.

4. CONCLUSION

The study used the bibliometric approach to provide an analysis of the ongoing trends and status of the development of the green economy. Using a rank analysis and illustration of critical factors of the publications, we identified vital data that assisted in

forming an accurate subject matter description. After analyzing the keywords in green economy literature, it shows it is important to consider the green economy as an interdisciplinary research phenomenon that covers policies and investments in climate adaption and financing. An analysis of the authors' country of origin shows that developed countries dominate most research on the green economy.

The green economy is seen as an essential topic that is gaining more recognition in the academic sphere. Recent literature shows an increased focus on the green economy, but less interest is paid from finance journals and mainstream economics. This creates a vacuum that allows researchers to look into the following direction in their research:

1. Since the green economy is a topic based on the economy, this creates a need to look into economic issues using financial techniques and finance perspectives. Also, topics such as green governance, green bonds and management of green risk ought to be in mainstream finance journals
2. More research on issues of the green economy from the green economy perspective in development would be beneficial to policymakers and regulators for purposes of developing well-defined objectives for the policies and aligning their goals.

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