



**11th International Conference on
Industrial Engineering and
Operations Management**
March 7 - 11, 2021, Singapore
A Virtual Conference



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11th Annual International Conference on Industrial Engineering and Operations Management Singapore, March 7-11, 2021

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KEYNOTE SPEAKERS – 11th Annual IEOM Singapore Conference, March 9-11, 2020

March 9, 10:40 am, Tuesday



Hamid R. Parsaei, Ph.D., P.E.
Fellow, IISE, ASEE, SME, IEOM
Professor, Department of Industrial and
Systems Engineering, Texas A&M
University, College Station, Texas, USA

March 9, 10:20 am, Tuesday



Alex Teo
Vice President & Managing Director –
South East Asia
Siemens Digital Industries Software,
Singapore

March 9, 11:30 am, Tuesday



Dr. Chung Piaw TEO
Provost's Chair Professor
Executive Director, Institute of
Operations Research and Analytics
NUS Business School
National University of Singapore

March 9, 12:00 pm, Tuesday



Benny Tjahjono, PhD
Professor of Supply Chain
Management, Sustainable
Production & Consumption Research
Cluster, Centre for Business in
Society, Coventry University, UK

March 9, 12:30 pm, Tuesday



Dr. Lu ZHEN
Dean and Professor
School of Management
Shanghai University
Shanghai, China.

March 10, 9:40 am, Wednesday



**Dr. Victoria Jordan, PhD, MS,
MBA**
Vice President – Quality
Emory Healthcare
Atlanta, Georgia, USA

March 10, 10:20 pm, Wednesday



Dr Koh Niak Wu
CEO and CTO
Cosmigo International
Singapore

March 10, 11:30 am, Wednesday



Dr. Ir. Wahyudi Sutopo, IPM
Professor, Department of Industrial
Engineering and Vice Dean for
General and Financial Affairs
Universitas Sebelas Maret (UNS)
Surakarta, Indonesia

March 10, 12:00 pm, Wednesday



Prof Ruth Banomyong
Dean
Thammasat Business School
Thammasat University
Thailand

March 10, 12:30 pm, Wednesday



Dr. Alessandro ROMAGNOLI
Associate Professor
School of Mechanical and
Aerospace Engineering
Nanyang Technological University,
Singapore

March 11, 9:40 am, Thursday



Dr. Robert de Souza
Executive Director
The Logistics Institute-Asia Pacific (TLI –
Asia Pacific), Singapore, Senior Fellow,
Department of Industrial Systems
Engineering & Management
National University of Singapore

March 11, 10:20 am, Thursday



Dr Jenson Goh
Chief Information and Learning Officer
Monde Nissin Singapore Pte Ltd
Singapore

March 11, 11:30 am, Thursday



Dr. Hoong Chuin LAU
Professor of Information Systems and
Director of the Fujitsu-SMU Urban
Computing and Engineering
Corporate Lab, Singapore
Management University (SMU)

March 11, 12:00 pm, Thursday



Dr. Murphy Choy
Director of Operations and
Technology
SSON Analytics
Singapore

March 11, 12:30 pm, Thursday



Dr. Noordin Mohd. Yusof
Professor, Department of Materials,
Manufacturing and Industrial
Engineering, Faculty of Mechanical
Engineering, Universiti Teknologi
Malaysia (UTM), Former Dean of
Mechanical Engineering at UTM

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A Study of Green Management Literature through Bibliometric Positioning during Four Decades

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Abstract

The main drivers of economic growth in many countries are Innovation because it can add new vitality to the company. This paper aims to review the status and visual map position of research in the internationally green management literature indexed Scopus that used a bibliometric positioning overview. The research was carried out using bibliometric techniques. Data analysis as well as visualization utilising VOSViewer program and the Scopus function for analyze search results. In this review, the details collected applied to 352 documents issued from 1983 through 2019. The study reveal that Cruz-Machado, V. and UNESP-Universidade Estadual Paulista Studies were the most active individual scientists and affiliated institutions in green management literature. In green management literature, the business, management and accounting, and journal of cleaner production were the most areas of study and dissemination sources. There were one worldwide group maps with collaborative researchers. In order to identify the body of knowledge created from thirty-six years of publication, this study constructed a convergence axis grouping comprising of green management literature: Industrial,

Technology, Environmental, Construction, Supply Chain, Manager, and Ecology, abbreviated as the theme ITECSME.

Keywords

green management, management, and bibliometric

1. Introduction

Globally, economic development has become an important concern (Mardani et al.)(Jokimäki et al.). Innovation could give businesses new momentum and is the major driver of economic growth in several nations (Ge et al.). One of the innovations in the global era such as today is green management. Green management is a proactive strategy for reducing the environmental effects of a firm's supply chain although enhancing its economic efficiency (Raut et al.). The main objective of green management is to explain about how inside and outside green practices can be utilized to anticipate green development execution (Li and Huang), Green management can construct way better systems with other partners, and show increased social responsibility and best reputation (Chen et al.). Another objective of green management is to encourage the adoption of cleaner and more sustainable production (Mustapha et al.). A manager can influence green investment (Schaltenbrand et al.), by contributing to the quality management and green management literature and sustainable practices (Yu et al.)(Mazzola et al.). It is trusted that green management can offer assistance companies not as it were increment benefits, but too carry out their social duty to the community and to secure the environment (Raharjo).

Economic progress in environmental management is expressed in commodity growth and production, service sector management, use of sustainable resources , waste management as a by-product and many others (Hasan et al.). Green supply chain management (GSCM) has become an important issue for the industry to achieve market profits and benefits by reducing environmental risks and increasing efficiency (Chand et al.). GSCM is a modern management model that concentrates on a coordinated increase in economic benefits and environmental impacts (Malviya et al.). The overall objective in putting GSCM into practice is to minimize the unwanted environmental impacts of key process players in the supply chain (Famiyeh et al.). On going GSCM practices can too minimize the whole natural affect on the whole item life cycle (Shu et al.), due to sustainability issues (Reis et al.). The aim is to improve quality, reduce costs, and increase productivity, as well as to improve company performance (Li et al.), so that it can affect the sustainability of operational performance (Magon et al.).

Green management not only cuts expenses, but by environmentally sustainable practices also successfully fulfills their social obligation (Yu and Huo). Green management encourages companies to pay consideration to environmental issues and the demands of various partners, which enriches the flow of information and broadens research and development in order to promote innovation (Zhou et al.). In a study conducted by R. Guo, W. Zhang, T. Wang, CB Li, and L. Tao argued that brand strategy "considered timely" achieves the worst green brand trust improvement effect and the legitimacy of eco-friendly brands plays a significant mediating role. in the process of brand trust improvement . In general, previous research related to green management has been limited to examining only one research topic, such as one country (Shu et al.), one affiliation (Bortolini et al.), and one field (Gupta). Unfortunately, despite presenting a broad image map visualized year over year with details from several published studies at the global scale, there has not been much on green management literature. The strong positive relationship regarding affiliation, scholars, and the impact of scholarly studies has also not been explicitly discussed by any publication. This study aims to study literature positions in the field of green management by researchers at the global level published internationally indexed by Scopus using a bibliometric positioning. We monitor the increase in the number of green management -related scholarly documents published as well as indexed by Scopus since 1983 through 2019.

2. Research Methods

This review mapped the status of study conducted in the last 36 years at global level on the basis of Green Management. In April 2020, this study collected data from the scopus utilizing document search queries (Aziz and Purnomo), The research was carried out using bibliometric techniques. Data analysis as well as visualization utilising VOSViewer program and the Scopus function for analyze search results (Purnomo, Susanti, et al.)(Purnomo, Septianto, et al.).

This study identifies green management keywords to recognize and look for Scopus database publications with 352 globally published documents from 1983 through 2019. The research confined collection of data to 2019 and excluding 2020. In order to reflect the state of the study over the entire year, the annual academic data collected

from January to December. TITLE-ABS-KEY ("Green management") AND PUBYEAR <2020 is the query input command which is implemented while mining academic publication data on online database of Scopus. The research applies a co-authorship analysis with authors' analysis units and full calculation systematic techniques utilizing VOSViewer to gain the collaboration research network of the international researcher. The research conducted an in-depth co-occurrence analysis with keyword relation analysis as well as a full systematic technique of calculation utilizing VOSViewer to generate a keyword map network.

3. Result and Discussion

Green management literature appear to be likely to increase and grow per year. The tallest point for international publication was 51 documents in 2019. Since 1983, publishing on green management has already started

3.1 Green Management Literature Most Common Organizational Affiliations

The leading research organizations in green management literature was UNESP-Universidade Estadual Paulista, with 7 documents. Then, with 5 documents, the Tamkang University followed, National Central University Taiwan with 5 documents, Università degli Studi di Padova with 4 documents, Hong Kong Polytechnic University with 4 documents, National Taipei University with 4 documents, Xi'an Jiaotong University with 4 documents, Texas A&M University with 4 documents, Universiti Teknologi Malaysia with 4 documents, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa with 4 documents, Islamic Azad University with 4 documents, and Abu Dhabi University with 4 documents.

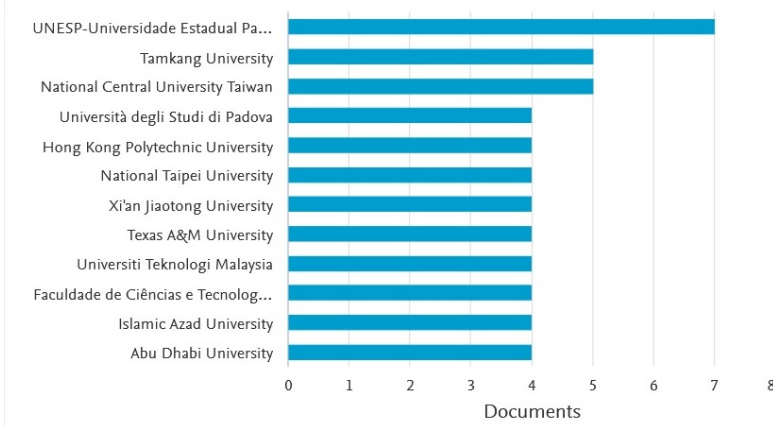


Figure 1. Organizational Affiliation Number of Annual Publication of Green Management Literature

3.2 Green Management Literature Most Individual Researcher

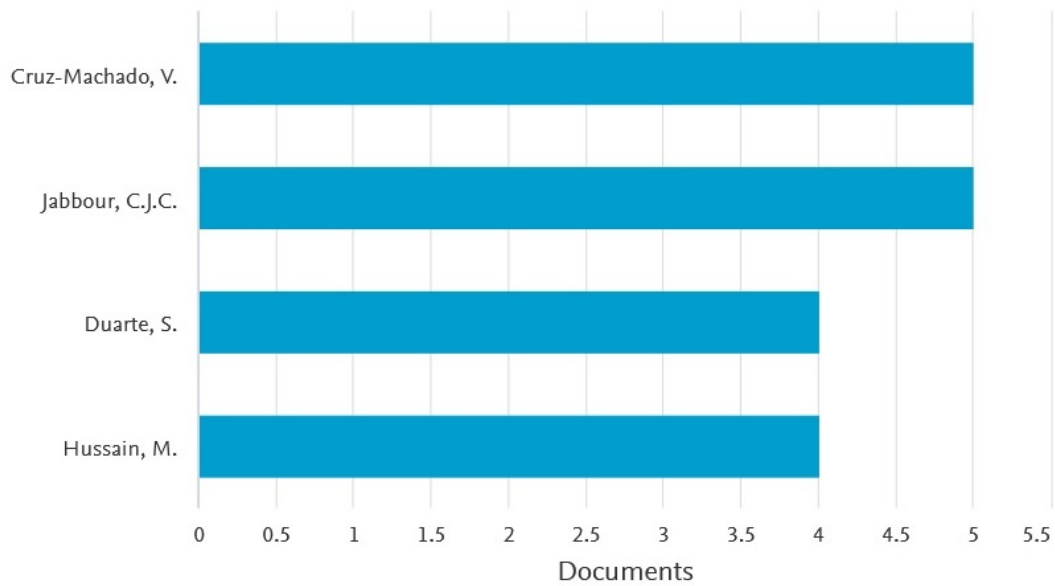


Figure 2. Most individual Green Management Literature Researcher

The researcher in the area of green management to the most writings was Cruz-Machado, V. 5 documents with it, Pursued by Jabbour, C.J.C. with five documents, Duarte, S. with four documents, and Hussain, M. with four documents.

3.3 Nation Number Of Annual Publication Of Green Management Literature

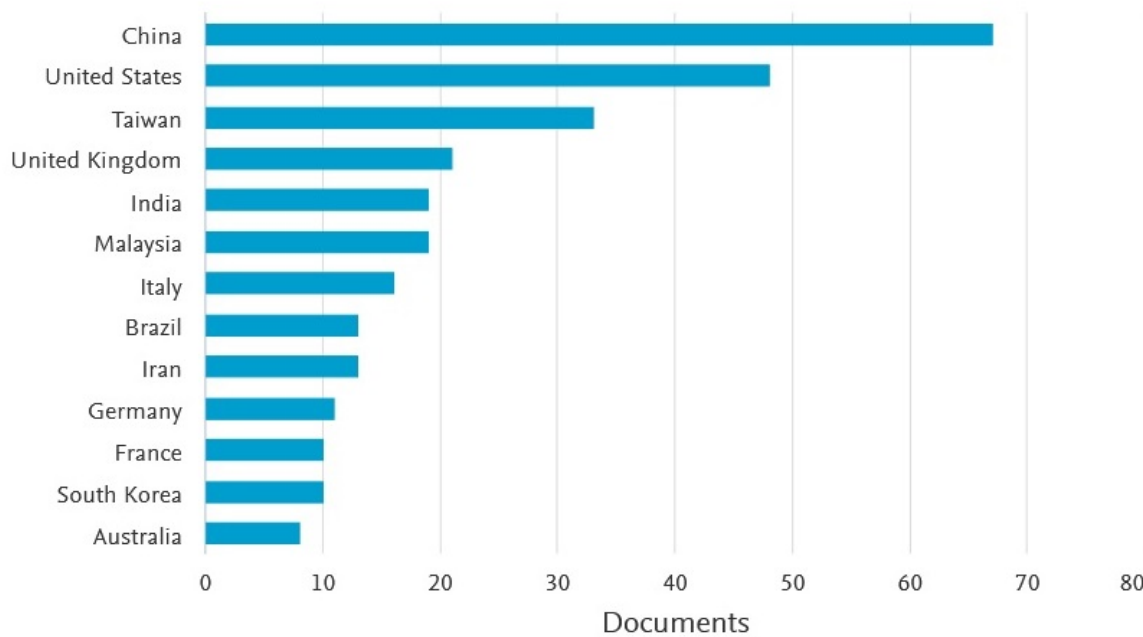


Figure 3. Number of Documents by Nation from the Green Management Literature

In green management literature publications, the China with 67 academic documents was the leading research nation. Pursued with 48 documents, the United States, and then Taiwan, United Kingdom, India, Malaysia, Italy, Brazil, Iran with, Germany, France, South Korea, Australia followed.

3.4 The Largest Frequency of Publication of Green Management Literature by Subject Area

With 152 documents (22.6 percent), Business, Management and Accounting in the subject area was the most frequent subject areas in international research on Green Management Literature. Pursued by Engineering (15.4%) with 104 documents, Environmental Science (14.7%) with 99 Social Sciences documents (9.1%) with 61 documents, Decision Sciences (6.7%) with 45 documents, Energy (6.2%) with 42 documents, Computer Science (5.6%) with 38 documents, Agricultural and Biological Sciences (5.0%) with 34 documents, Economics, Econometrics and Finance (4.0%) with 27 documents, and Earth and Planetary Sciences (1.5%) with 10 documents.

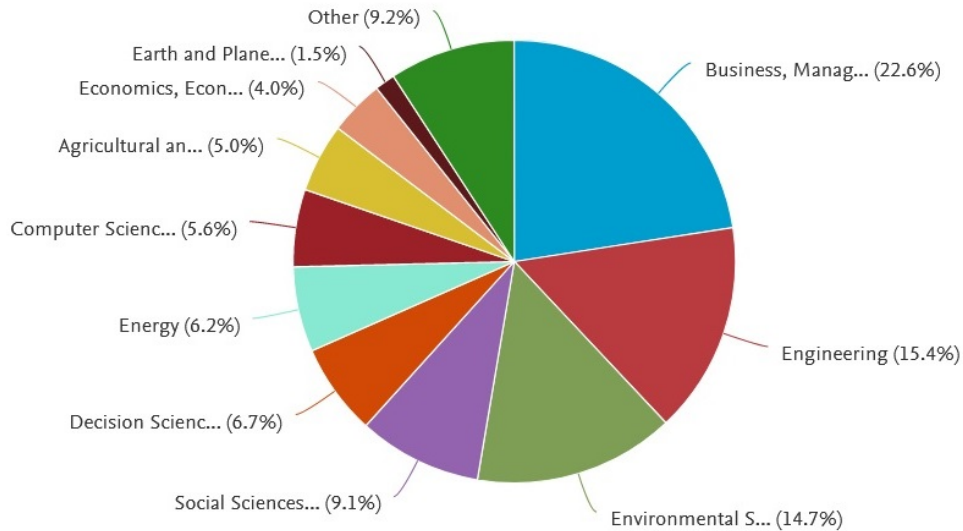


Figure 4. The Largest Frequency of Publication of Green Management by Subject Area

3.5 Year Documents of Green Management Literature Publication Sources

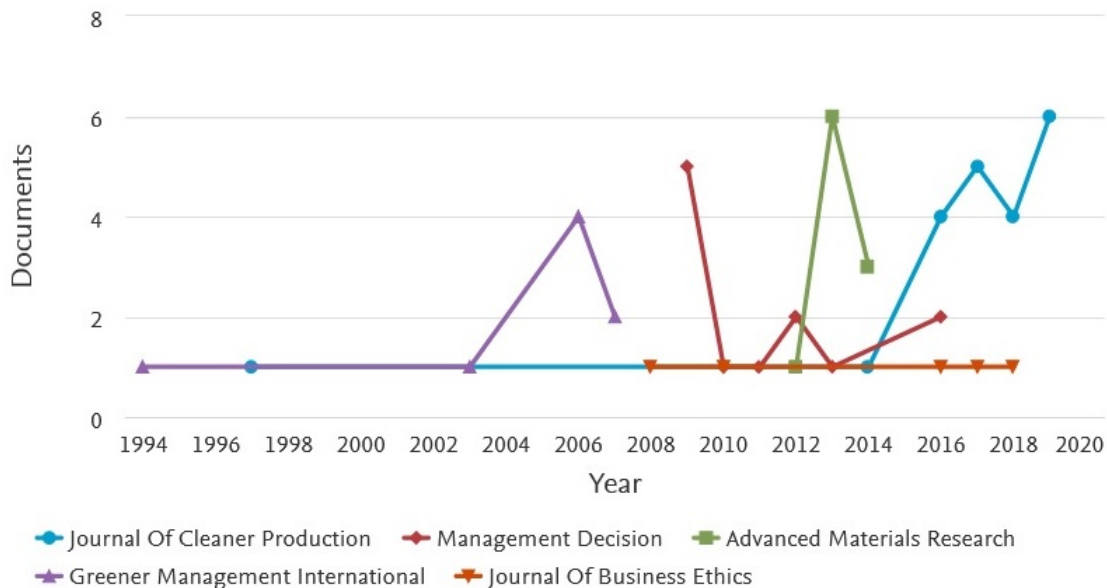


Figure 5. Year Annual Documents of Green Management Literature Publication Sources

The leader in the annual number of sources of Green Management Literature publications is the “Journal Of Cleaner Production” with 21 documents, Management Decision with 12 documents, Advanced Materials Research with 10

documents, Greener Management International with 8 documents, and Journal Of Business Ethics with 5 documents.

3.6 Annual documents from the Green Management Literature

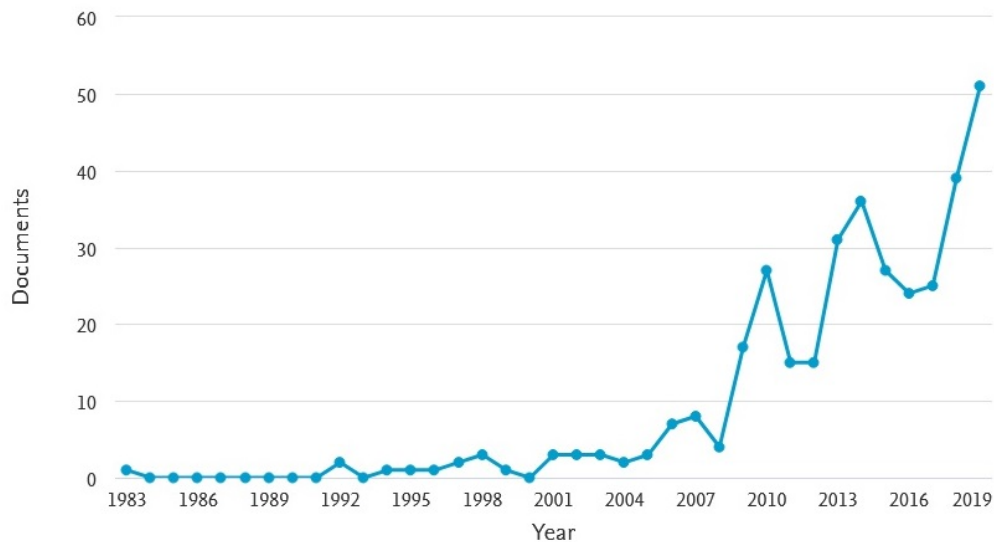


Figure 6. Annual Number of Documents Per Year from the Green Management Literature

The annual number of international publications from green management literature has shown an increasing trend every year. The annual number of documents per year in green management publications is that in 2019 there were 51 papers, and in 2018 there were 39 papers

3.7 The Green Management Literature Article Cited

The study of Lee, JS, Hsu, LT, Han, H., and Kim, Y was the most widely cited publication on green management literature. the most cited number was in 2010 entitled “Understanding How Consumers View Green Hotels: How a Hotel's Green Image Can Influence Behavioral Intentions”, cited 386 documents (Lee et al.).

3.8 Map of Study Themes

With analysis and visualization of the VOSViewer program, construction was developed on the green management keyword framework for the green management literature of publication theme map. Six repetitions were the criterion for the minimum amount of keyword-related documents. Therefore, 62 keywords among 2,232 keywords reached the thresholds. From figure. 7. there were seven publication theme groups dependent on study keywords regarding the international academic publication of green management literature: Industrial, Technology, Environmental, Construction, Supply Chain, Manager, and Ecology, abbreviated as ITECSME themes.

1. Industrial cluster (green). The keywords Green Management, Green innovation, Industrial engineering, information management, economic development, and green product dominated in this cluster. Many of these keywords are linked to themes in green management.
2. Technology cluster (red). The keywords information technology, energy conservation, pollution control, recycling, and urban planning dominated in this cluster.
3. Environmental cluster (blue). The keywords environmental management, environmental performance, green manufacturing, manufacture, and sustainable development dominated in this cluster. Many of these keywords are linked to in environmental themes
4. Construction cluster (light blue). The keywords construction, construction industry, project management, and planning dominated in this cluster.
5. Supply Chain cluster (Purple). The keywords supply chain management, green supply chain management, human resource management, and surveys dominated in this cluster. Many of these keywords are linked to in supply chain themes
6. Manager cluster (Yellow). The keywords management, human, lean and green dominated in this cluster. Many of these keywords are linked to in manager themes.
7. Ecology cluster (Orange). We can find ecology themes in this cluster. This cluster was related by the keywords ecology. Green technology, and environmental technology.

3.9 Network of Authorship

With the VOSViewer program, construction was developed on the green management researcher framework for the authorship network map. Two document was one of the requirements for the minimum collection of publications per author. Thus, out of 869 researchers, 61 researchers who reached the thresholds were recognized. As shown in the figure 8, there were one group partnership networks between international researchers in green management literature publications. The red cluster of green management literature which contains

1. Red Cluster: Hoffmann, J., Salleh, N.A.M., Zainuddin, A., Kuzaiman, N.A., and Kasolang, S.

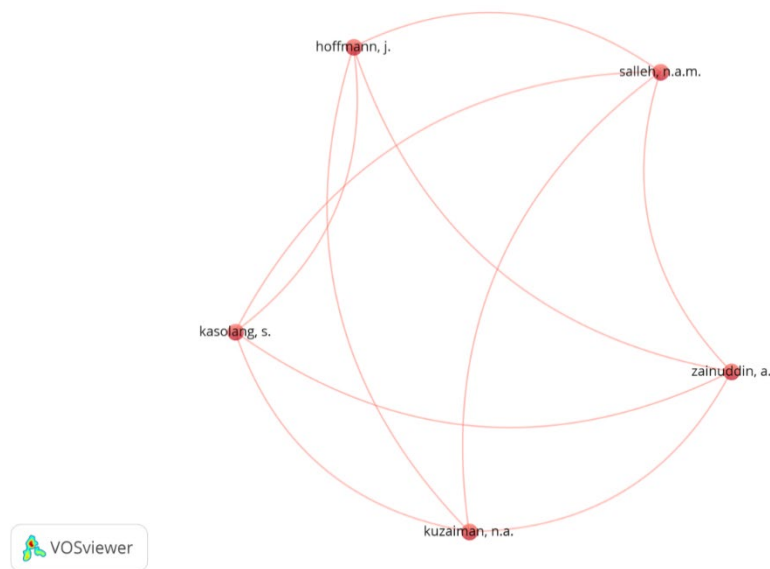


Figure 8. Authorship Network Map

4. Conclusion

The results of this research revealed that there is an annual trend towards a spike in the amount of international publications on "Green Management", there were maps and visual patterns. In the publication of the green management publications, UNESP-Universidade Estadual Paulista studies was the most active research institution with 7 papers. Meanwhile, In the the green management literature publication, the individual academic researcher with the most prolific publications was Cruz-Machado, V. 5 papers with it. With 67 documents, the China was the country with the greatest contribution to publications in green management literature. With 152 documents (22.6 percent), the most intensively studied areas published in the green management literature publication were business,

management and accounting. The “Journal Of Cleaner Production” with 21 documents was the majority of annual documents by the source in the green management literature publication. With 51 papers, the highest publication of worldwide scholarly publications in green management literature was in 2019. The works of Lee, JS, Hsu, LT, Han, H., and Kim, Y. were mostly publications with the most citations. In 2010, cited 386 documents entitled “Understanding How Consumers View Green Hotels: How a Hotel's Green Image Can Influence Behavioral Intentions”. There were one researcher partnership groups linked to the publication of green management literature. In terms of contributing knowledge implications, this study recommends a classification of the convergence axis comprising of publication in green management literature to classify the body of knowledge created from thirty-six years of academic publication: Industrial, Technology, Environmental, Construction, Supply Chain, Manager, and Ecology, abbreviated as ITECSME themes. The identification of key themes in the green management leads, as practical implication, contributes to an awareness of the creation of practical studies to clarify general contexts and topics, as well as research gaps. All this will lead to fresh research addressing a lack of study and specialized expertise in the disciplines. The most studied themes often reflect the ability to contribute of green management to environmental, technology, business, ecology, and management.

Acknowledgements

The authors are indebted and thanks Airlangga University for access to data on ademic publications on Scopus.

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