Fruit Traceability Using Blockchain Technology: A Bibliometric Analysis

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Abstract. The bibliometric overview is presented in a comprehensive visualization in this paper. The aim of this study is to determine the trend of international publications in the field of traceability in supply chain management, was carried out from 2012 to 2022. The two previous keywords, namely "fruit traceability" and "traceability using blockchain" were combined in search keywords based on text data. Data collection by conducting searches assisted by Publish or Perish/ PoP software based on the Scopus Pub Med and Crossref databases, with categories, article titles, abstracts, and keywords. Information expressed as the annual number of publications, journals containing articles related to “fruit traceability” and "traceability using blockchain" in supply chain management. Microsoft Excel 2010 was used to assess the topics and writers' places of origin. VosViewer software was utilized to study the patterns in the growth of worldwide publications in the field of instrumentation.. Based on the bibliometric analysis, it can be concluded that there are not many studies that take on the topic of fruit traceability and traceability using blockchain. So, it can be said that this research contains novelty

Keywords: Supply chain management, Fruit traceability, Blockchain technology, Bibliometric analysis

1 Introduction

The study of bibliometrics is divided into three primary areas: bibliometrics for scientific disciplines (scientific information), where researchers can work with quantitative researchers in information retrieval because they work in a scientific manner and have a strong interest in their field; b) bibliometrics for bibliometricians, which is the primary area of bibliometric research and is typically utilized as a research methodology; and c) bibliometrics for scientific disciplines/ scientific information (Glanzel, 2003).

The study of bibliographic analysis of scientific endeavors is known as biblimetric analysis, and it is predicated on the idea that a researcher does his research and is required to report the

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findings to peers. Progress and knowledge growth will result from scholars working together to examine the specific research topic. Certainly, data from earlier scientific studies that were also completed by colleagues is needed for study. In the traditional input-output paradigm. Publications that offer knowledge output are advised as a means of explaining the scientific research procedure. Scientific research is almost exclusively published as articles and monographs; they are referred to as definitive statements of research findings.

Words (co-words) used in a text might provide information about the notion of science included inside. Co-occurrence analysis of words or keywords from two or more papers that are used to index documents is the foundation of co-word analysis (Farida, 2020). The number of keywords from a research document that appear concurrently in the article under investigation is determined using co-word analysis. The author chooses these search terms. The greater the association between papers in a predefined category, the more times those terms occur in those documents (Börner, 2003). The co-word analysis map of keywords is a map that is based on phrases that appear frequently, are significant, or are unique in the article and may be found in the abstract or title. This phrase originates from the examination of the object that symbolizes a notion.

Using a biblometric is crucial to standardize phrases since using non-standardized keywords might result in uniformity of improper terms. A bibliometric is a list of terminology with additional definitions for a certain topic. Particular. A bibliometric is not the same as a collection of subject headings, which are often broad and span all scientific disciplines. indexing with descriptors that aim to capture a single idea. Organize keywords using a thesaurus. The aim is that the words used are consistent, so that only one term is used for the concepts represented in writing are different and have the same meaning.

The VosViewer program was utilized in this study to assess the trend of worldwide publications related to supply chain management traceability. A free computer tool called VosViewer may be used to explore and visualize bibliometric knowledge maps (Leydesdorff & Rafols, 2012). VOS stands for VosViewer is Visualization of Similarities. The algorithm used in this program is almost the same as Multi Dimensional Scaling (MDS).

Clusters created using VosViewer are immediately shown on the map in color. The cluster method is based on a parameter (ɯ) that may be adjusted to obtain a greater or lesser number of clusters. VosViewer can display color and cluster density (Leydesdorff & Rafols, 2012). VosViewer has an advantage over other analytical apps in that it employs an integrated clustering technique to analyze cocitation data and co-occurence networks, as well as a text mining feature to discover combinations of pertinent noun phrases via mapping (Van Eck & Waltman, 2011; Waltman et al, 2010). While there are various tools for assessing text units and matrix similarities, VosViewer stands out for its visualization capabilities (Van Eck & Waltman, 2010). It is simple to access and examine the program's network of bibliometric data, such as the quantity of citations or the co-occurence links between important phrases and concepts, thanks to its interactive choices and features. (Van Eck & Waltman, 2011; Waltman et al, 2010).

2 Method

In this study, an analysis of research development trends in the field of traceability in supply chain management was carried out from 2012 to 2022. The two previous keywords, namely "fruit traceability" and "traceability using blockchain" were combined in search keywords based on text data. The purpose of the study is to ascertain how the quantity of foreign publications in the discipline has changed over time of “fruit traceability” and “traceability using blockchain” in supply chain management in the Scopus, Pub Med, and Crossref databases from 2012 -2022; 2. Productivity of researchers in the field of “fruit traceability” and “traceability using blockchain” in supply chain management; 3. Development of international research publications in the fields of “fruit traceability” and “traceability using blockchain” in supply chain management by subject/field; 4. Development map of international research publications in the field of “fruit traceability” and “traceability using blockchain” in supply chain management based on keywords (co-words) and co-authors.

Data collection by conducting searches assisted by Publish or Perish/ PoP software based on the Scopus Pub Med and Crossref databases with the keywords "fruit traceability" and "traceability using blockchain" in supply chain management, with categories, article titles, abstracts, and keywords, in the period 2012-2022. Microsoft Excel 2010 was used to evaluate data in the form of publications per year, journals with papers on fruit traceability and "traceability using blockchain" in supply chain management, authors, authors' origins, and subjects. VosViewer software was used to study trends in the evolution of worldwide publications in instrumentation during this time.

3 Results and Discussions

The following is the result of bibliometric processing with the help of Vosviewer software. The results show that "agricultural product" and "food traceability", are publication topics that are still rarely found in the field of "fruit traceability" and "traceability using blockchain" in supply chain management. This can be seen in the following xxx image. In the image of Figure 1 can be seen that the topic of this publication has little connection with other publications. This means that research and publications on the topic of “agricultural product” and “food traceability” in the field of “fruit traceability” and “traceability using blockchain” in supply chain management are still in the category of having novelty.

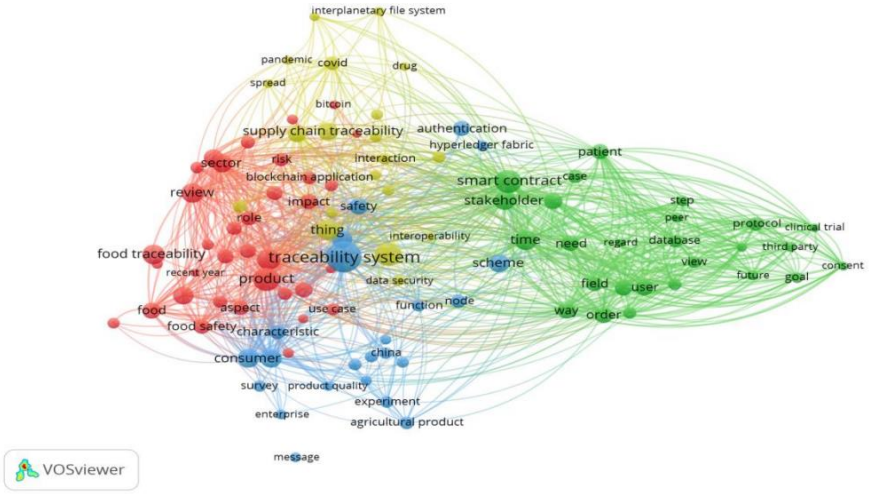

Fig. 1. Bibliometric Processing-Topic Connection

The cropped results in Figure 1 above, become clearer about the topics related to "agricultural products". In the following Figure 2 below. It can be seen that "food traceability" is related to "supply chain management", "product" and "benefit".

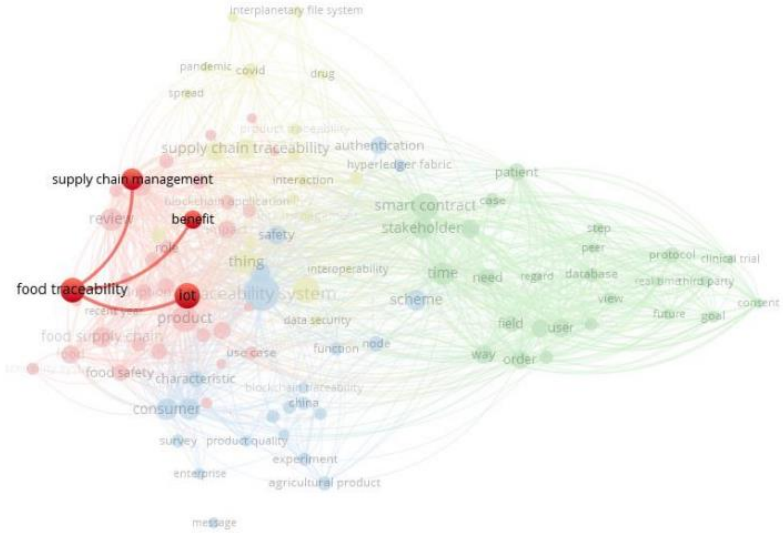

Fig. 2. Bibliometric Processing- Cropped Topic

This is reinforced by the results of the density version map from VosViewer in Figure 3 below. The map shows the parts that have a bright yellow color, namely "traceability system" and "product".

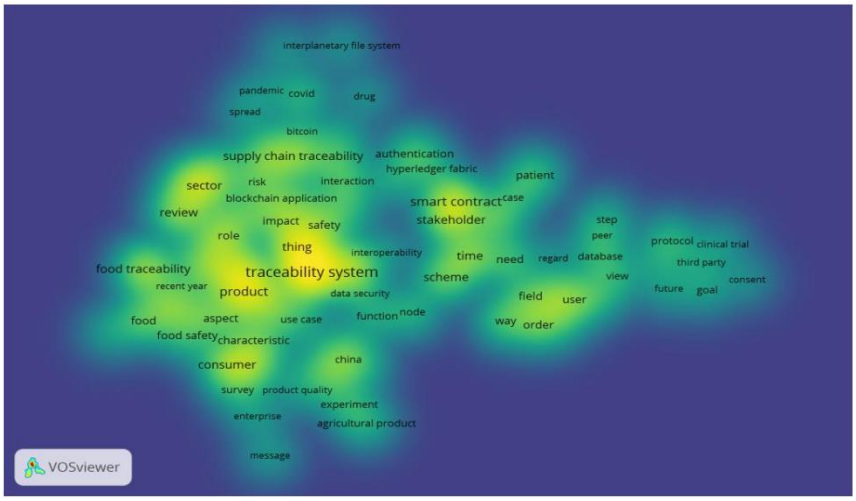

Fig. 3. Bibliometric Processing- Desity Version

The results of the overlay visualization on "fruit traceability" and "traceability using blockchain" in supply chain management in Figure 4 below, shows the year of publication, or in other words, shows the development of new research topics. Topics related to “food traceability” and “agricultural product”, are colored green, which indicates 2020 is the year for the latest publication of these two topics.

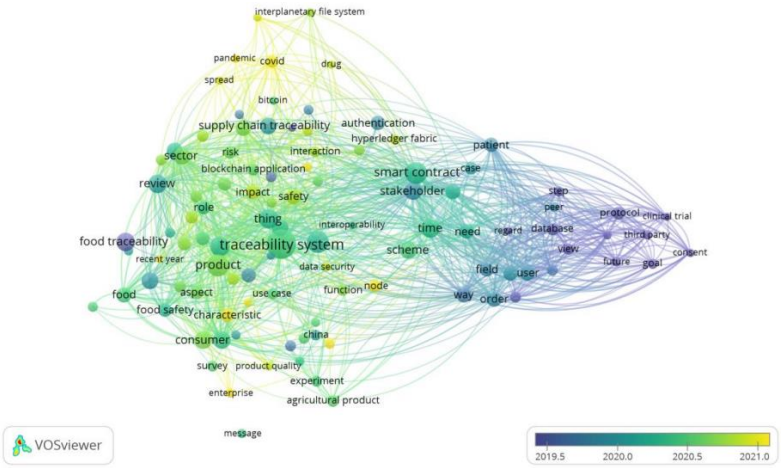

Fig. 4. Bibliometric Processing- Overlay Visualization

VosViewer results show a map of developments in the field of supply chain management. Based on co-word grouped into 4 clusters and 104 items. In the following Figure 5 it can be seen that from cluster 1, there are items: blockchain application, and fruit traceability system. In cluster 3 there are items: agricultural products and blockchain traceability. While in cluster 4 there are items: blockchain platform and supply chain traceability.

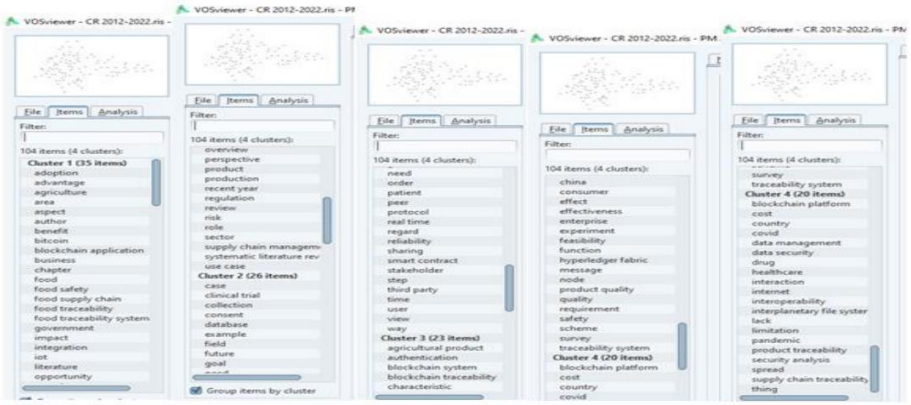

Fig. 5. Bibliometric Processing-Co Words

Meanwhile, based on the co-authorship, VosViewer results show that:

1. Paret, Dominique
2. Laheurte, Jean-Marc
3. Ripoll, Christian
4. Loussert, Christophe

is a prolific writer in the field of "traceability using blockchain" in supply chain management. These results can be seen in the following **Figure 6**.

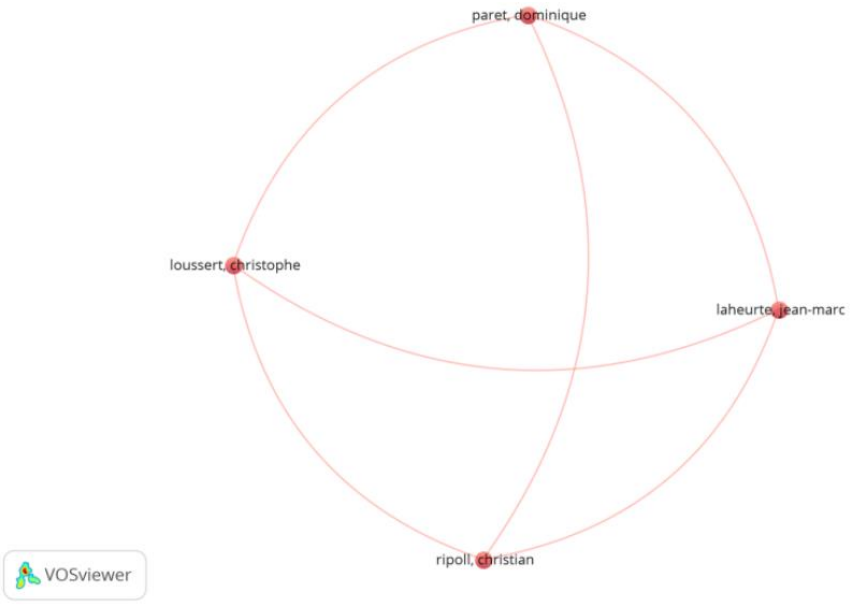

Fig. 6. Bibliometric Processing- Authors

Based on the bibliometric analysis, it can be concluded that there are not many studies that take on the topic of “fruit traceability“ and "traceability using blockchain“. So, it can be said that this research contains a novelty aspect.

4 Conclusion

Based on the bibliometric analysis, it can be concluded that not many studies have focused on fruit traceability and traceability using blockchain. There are also not many researchers who have examined these two topics. Therefore, it can be said that this research contains novelty and has the opportunity to be explored further.

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