BIBLIOMETRIC ANALYSIS OF ONLINE DIGITAL BUSINESS FOR INDIGENOUS AND ETHNIC COMMUNITY USING VOSVIEWER

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Abstract: *This study aims to conduct a bibliometric analysis using the Scopus database to examine the research trends in online digital business within the global indigenous ethnic community from 2012 to 2022. Based on the criteria acquired, 192 articles were identified from 267 papers. The articles have undergone analysis from an international journal that Scopus index. This study uses a combination of mapping analysis and the VOSViewer application. In addition to utilizing VOSViewer, this study employed the Scopus Online Database to retrieve and evaluate scholarly citations. The keyword is "Online Digital Business for Indigenous and Ethnic Community." The findings indicate a consistent annual growth in online business research on Indigenous and Ethnic communities. The United States is the leading contributor to global analysis, followed by Australia in second place. The analysis of the trajectory of Online Business for Indigenous communities research from 2012 to 2022 reveals the existence of six distinct clusters. The findings of this study have the potential to offer valuable help to researchers investigating online and digital commercial initiatives targeted toward indigenous and ethnic communities worldwide. Additionally, these results can serve as a guiding framework for future research endeavors in this area. This review is a valuable reference point for future research on Online Digital Business among Indigenous communities.*

Keywords: *Bibliometrics Analysis, Research Trends, Literature Review, E-Business, Ethnic Community*
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Introduction

Entrepreneurship is widely acknowledged to significantly impact both the economy and society, primarily through its contribution to the increase in national income (Dahalan et al., 2013). Entrepreneurship innovation typically refers to generating new resources or acquiring preexisting resources to develop new products (Kohar et al., 2012). Most developing nations are considering making entrepreneurship a priority to assist the underprivileged in raising their level of living. The government of Malaysia has implemented numerous initiatives through a range of programs, such as the Malaysia Plan and the New Economy Plan. In the Twelve Malaysian Plan, Economic Empowerment focuses on new sources of growth, including Industrial Revolution 4.0, *the digital economy*, the aerospace industry, integrated regional

development, and growth enablers such as sustainable energy sources and infrastructure connectivity (Mail, 2020; MAMPU, 2021; PMO, 2021). The government now strongly emphasizes entrepreneurship in addition to helping the country develop its human resource base for a higher standard of living, especially for underprivileged and rural product producers.

The Ministry of Rural Development of Malaysia (MRD) has initiated and empowered more programs to target *Orang Asli* or Indigenous communities to venture into entrepreneurship online (Balqis Jazimah Zahari, 2022). The initiative is to ensure that the Orang Asli community can cultivate digital entrepreneurship in the future, thus being able to expand the market for their products throughout the country. Among the ministry's programs are Carnival of Indigenous Entrepreneurs (KUOA) and Desamall@KPLB, which connect MRD entrepreneurs and agencies with online shopping portals such as Shopee and Lazada. In addition, MRD, through the Orang Asli Development Department (JAKOA), allocated RM10.9 million for the Orang Asli Entrepreneurship Program from 2016 to this year (Balqis Jazimah Zahari, 2022). The Malaysian government took such programs and budget allocation initiatives to boost rural income and facilitate small enterprises' growth via online and offline marketing.

The post-COVID-19 pandemic has demonstrated a significant surge in the online business sector's growth trends (Csordás et al., 2022; Schmuck, 2020). Online business or Digital Business is the implementation of business practices through digital technology to transition conventional businesses towards digital transformation (Hong et al., 2023). The techniques include the ability to plan, implement, and manage digital marketing or e-commerce platforms (Masrianto et al., 2022). The significance of digital marketing lies in enhancing the customer experience through promoting and engaging customers via online media. The intent is to secure support from loyal customers and acquire more new customers (Masrianto et al., 2022; Schmuck, 2020). Digital marketing positively impacts consumer purchasing behavior, thus improving business performance (Hong et al., 2023; Iglesias-Cuzcano et al., 2022).

In business competition, entrepreneurs among the indigenous communities are also advised to adopt the development of digital technology in their business. There are several studies on the implementation of digital business among the indigenous communities, including the research on the digital knowledge management for indigenous weaving craft entrepreneurs in Indonesia (Permatasari et al., 2023), the study on the implementation of digital marketing tools, and the strategies of tourist attractions in indigenous communities area (Evangelista, 2022), and the study on identifying the factors that impact the adoption of ePayment systems to stimulate consumer interest in acquiring products manufactured by Indigenous entrepreneurs (Kurniasari & Yulian Pompeng, 2022).

However, from these previous studies, no research has discussed bibliometrics analysis with the mapping of analysis method in the online digital business for the Indigenous community research field for the last ten years, with the use of VOSViewer to obtain information on the development and novelty of the research topics. Hence, the present study examined the research progress in online digital business over ten years (2012-2022) using the VOSviewer software mapping tool. It is anticipated that it will serve as a foundational step in identifying the research focus, particularly in areas of study.

Bibliometric data analysis become one of the alternative research areas of literature review that many authors are working on. The analysis capability in the Biliometrics technique allows research publications metadata to be visualized in line with the development of the existing

research. The visualization of data is called mapping. Most researchers commonly use several mapping and visualization tools: VOSViewer, CiteSpace, Biliometrix, Gephi, and Sci2 (UCI, 2023). This research employs VOSViewer as the preferred data mapping and visualization as it is free to use and has the capabilities to perform bibliometrics mapping, including co-authors maps, citations maps, co-citations maps, bibliographic coupling maps, and co-occurrence maps (D. F. Al Husaeni & Nandiyanto, 2022; D. N. Al Husaeni & Nandiyanto, 2022).

The primary objective of this study is to comprehensively investigate the research domain of online digital business in the context of Indigenous communities, focusing on academic papers published between 2012 and 2022. The analysis will be performed utilizing Bibliometrics as a statistical method to evaluate the platform elements covered in these papers. Bibliometric analysis is a statistical methodology employed to quantify and assess the prevalence of developing trends within a specific domain of research (Hao et al., 2018; Mustapha et al., 2021). Bibliometrics use mathematical methodologies to conduct quantitative analyses of research publications on a specific subject (Chen et al., 2014). Moreover, it can evaluate the quality of studies, analyze the main areas of primary research, and predict the direction of future research efforts (Bornmann, 2008; Abbas et al., 2020; Alsharif et al., 2012). The study will examine the Scopus online database, which contains many influential research papers and provides integrated analytical features for producing visual representations. Following this, the outcomes of the search conducted on the Scopus Database can be exported to different apps, such as VOSviewer, to enable subsequent scrutiny and analysis.

Methodology
This study utilizes a Bibliometrics analysis step consisting of Five stages as suggested by (Zupic & Čater, 2015) (See Figure 1), including Step 1: Research Design; Step 2: Data collection; Step 3: Data Analysis; Step 4: Visualization of Data; and Step 5: Interpretation. The keyword "Online Digital Business for Indigenous Ethnic Community" searches for all publications related to the topics or published data according to title, keywords, and abstract criteria. The data-gathering process was carried out in August 2023, wherein 192 articles were identified from 267 papers using the established standards. The articles have undergone analysis from an international journal that Scopus index. The data storage from Scopus has historically included formats such as RIS and CSV. Additionally, VOSViewer software has been employed to visualize research trend data on Online Digital Business for Indigenous communities from 2012-2022.
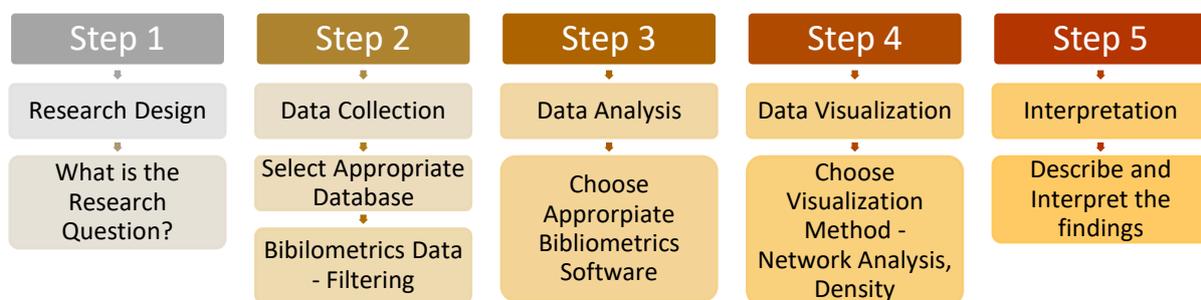
Step 1	Step 2	Step 3	Step 4	Step 5
Research Design	Data Collection	Data Analysis	Data Visualization	Interpretation
What is the Research Question?	Select Appropriate Database	Choose Approrpiate Bibilometrics Software	Choose Visualization Method - Network Analysis, Density	Describe and Interpret the findings
	Bibilometrics Data - Filtering			

Figure 1: Research Scheme Of Bibliometrics In Online Digital Business For Indigenous Community Topics

Bibliometrics means combining, managing, and investigating bibliographic information from scientific publications (Verbeek et al., 2002). It also comprises complex techniques, such as document co-citation analysis and general descriptive statistics, such as publishing journals, publication year, and principal author classification (Wu and Wu, 2017). An iterative sequence of suitable keywords, literature search, and analysis are required for an effective literature review, bibliography building, and achieving reliable results (Fahimnia et al., 2015). Furthermore, to guarantee the inclusion of top-tier publications, only articles published in carefully peer-reviewed and high-quality academic journals were considered to exclude books and conference proceedings (Liu et al., 2015).

Research Design
The present study employs a bibliometric analytic approach to examine scientific publications on "online digital business for the indigenous community." The analysis centers its attention on two distinct components: The study aims to employ bibliometric mapping techniques to analyze the patterns and developments in online digital business. Additionally, it analyzes keywords utilized in scholarly articles to identify research clusters and get insights into the research topics related to indigenous communities. This study aimed to visually represent and examine the scientific collaborations among prominent contributors in studies that had not been explored in previous research endeavors. Our primary objective was to address the following research questions :

1. What is the distribution of online digital business for Indigenous Community publications over the last decade?
2. What are the most cited Authors and Journals in the online digital business for Indigenous Community research?
3. What are the most productive countries in the online digital business platforms for Indigenous Community research area?
4. What are the primary research keywords for the last decade of online digital business platforms for the Indigenous Community?

Data Collection
The data utilized in this study were exclusively sourced from Scopus, a preeminent abstract and citation database renowned for its comprehensive collection of peer-reviewed scholarly literature. Hence, the research dataset encompassed a multitude of prominent journals focusing on online business and indigenous community resources. This analysis has provided insights into the evolution of research interests in the online digital business for indigenous communities. Furthermore, the study employed a screening sequence to determine the search terms for article retrieval. The study was initiated by querying the Scopus database with "online digital business indigenous ethnic."

TITLE-ABS-KEY (online OR digital AND business AND indigenous OR ethnic) AND PUBYEAR > 2012 AND PUBYEAR < 2022)

Afterward, the query string was revised so that the search terms "online" OR "digital " should be focused on business for "indigenous" OR "ethnic" communities. This process yielded 267 results, which were additionally scrutinized to include only research articles in English and article reviews were also excluded. The final search string refinement included 192 articles used for bibliometric analysis. As of August 2023, all articles from the Scopus database relating to online and digital business on indigenous communities were incorporated into the study.

Data Analysis

The bibliometric meta-data was subjected to analyses of co-authorship, bibliographic coupling, keyword co-occurrence, and citation using VOSViewer software. Bibliographic coupling is a method used to establish linkages between various elements within the academic domain, including publications, journals, and authors (Djeki et al., 2022). These ties are determined based on shared resources, specifically when a particular publication is referenced in several sources. In this context, the occurrence of a reference to the same publication in two distinct sources is considered an instance of bibliographic coupling. Data sets containing the study publication year, publication title, author name, journal, citation, and Keyword in PlainText format were acquired from the Scopus database from 2012 to December 2022. They were analyzed in VOSviewer software version 1.6.15. This software was utilized to analyze and form maps using VOS clustering and mapping methods. VOSViewer is an alternative to the Multidimensional Scaling (MDS) approach (Van Eck and Waltman, 2010). It is similar to the MDS approach in terms of its aim, which focuses on placing items in low-dimensional areas so that the distance between them accurately reflects the relatedness and similarity of any two items (Appio et al., 2014). Furthermore, applying visualization techniques through VOSviewer to the data set uncovered patterns built on mathematical relationships, and analyses such as keyword co-occurrence, citation analysis, and co-citation analysis were performed.

Result and Discussion

This study presents an overview of the research conducted on online digital business for Indigenous Communities during the past ten years. The findings in this review were discussed following the research questions.

Research Question 1

What is the distribution of online digital business for Indigenous Community publications over the last decade?

Figure 2 illustrates the number of scholarly articles on online digital business within indigenous communities from 2012 to 2022. The frequency of publications has exhibited periodic growth, with a projected increase anticipated in the year 2023. The analysis reveals that most papers were published recently, specifically between 2020 and 2022. From 2012 to 2016, the average number of publications was 13 dedicated to online digital business for indigenous communities. There was a slight decrease in the publications in 2017, with only seven documents. However, authors started publishing more, with 24 publications in 2020, 29 in 2021, and 37 in 2022. The remaining papers were disseminated throughout the subsequent years, as depicted in Figure 2 and Table 1.
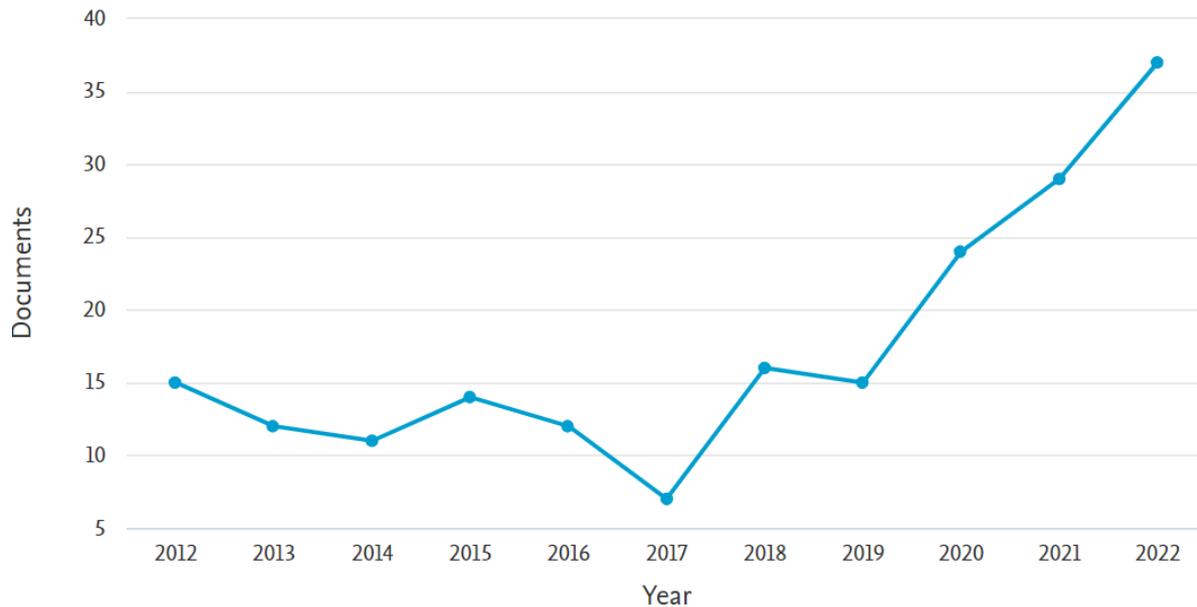
Figure 2: Distribution of Publication by Year

Table 1: Development Of Online Digital Business For Indigenous Ethnic Communities

Year of Publications	Number of Publications
2022	37
2021	29
2020	24
2019	15
2018	16
2017	7
2016	12
2015	14
2014	11
2013	12
2012	15
AVERAGE	19.2

Research Question 2

What are the most cited Authors and Journals in the online digital business for Indigenous Community research?

In the content analysis for the most cited articles and journals, *'The Most Cited Articles,' 'Times Cited,'* and *'Publisher'* were chosen as the analysis criteria presented in Table 2.

Table 2: The Top 10 Highly Cited Authors And Journals On Online Digital Business For Indigenous Ethnic Communities In 2012-2022

Authors	The Most Cited Articles	Year	Journal	Times Cited	Publisher
Matamoros-Fernández A.	Platformed racism: the mediation and circulation of an Australian race-based controversy on Twitter, Facebook and YouTube	2017	Information Communication and Society	190	Routledge
Chucholl C.	Invaders for sale: Trade and determinants of introduction of ornamental freshwater crayfish	2013	Biological Invasions	133	Kluwer Academic Publishers
Brockhaus M.; Di Gregorio M.; Mardiah S.	Governing the design of national REDD +: An analysis of the power of agency	2014	Forest Policy and Economics	102	Elsevier B.V.
Bonina C.; Koskinen K.; Eaton B.; Gawer A.	Digital platforms for development: Foundations and research agenda	2021	Information Systems Journal	100	John Wiley and Sons Inc
Hegde D.; Tumlinson J.	Does social proximity enhance business partnerships? theory and evidence from ethnicity's role in U.S. venture capital	2014	Management Science	97	INFORMS Inst. for Operations Res. and the Management Sciences
Shapka J.D.; Law D.M.	Does One Size Fit All? Ethnic Differences in Parenting Behaviors and Motivations for Adolescent Engagement in Cyberbullying	2013	Journal of Youth and Adolescence	83	Springer Science and Business Media, LLC
Jugert P.; Eckstein K.; Noack P.; Kuhn A.; Benbow A.	Offline and Online Civic Engagement Among Adolescents and Young Adults from Three Ethnic Groups	2013	Journal of Youth and Adolescence	65	Springer Science and Business Media, LLC
Schippers M.C.; Scheepers A.W.A.; Peterson J.B.	A scalable goal-setting intervention closes both the gender and ethnic minority achievement gap	2015	Palgrave Communications	54	Palgrave Macmillan Ltd.

Sloan P.; Legrand W.; Simons-Kaufmann C.	A survey of social entrepreneurial community-based hospitality and tourism initiatives in developing economies: A new business approach for industry	2014	Worldwide Hospitality and Tourism Themes	45	Emerald Group Publishing Ltd.
Rhee S.C.; Woo K.-S.; Kwon B.	Biometric study of eyelid shape and dimensions of different races with references to beauty	2012	Aesthetic Plastic Surgery	42	-

Table 2 shows that the most productive journal concerning online digital business for indigenous and ethnic communities was "Information Communication and Society," with the most cited article, namely *"Platformed racism: the mediation and circulation of an Australian race-based controversy on Twitter, Facebook and YouTube"* of 190 citations, followed by "Biological Invasions" with the article *"Invaders for sale: Trade and determinants of the introduction of ornamental freshwater crayfish"* obtained total citation of 134, in addition to "Forest Policy and Economics" with 102 citations. Moreover, the distribution of the most productive journals concerning online digital businesses is presented accordingly in Table 2.
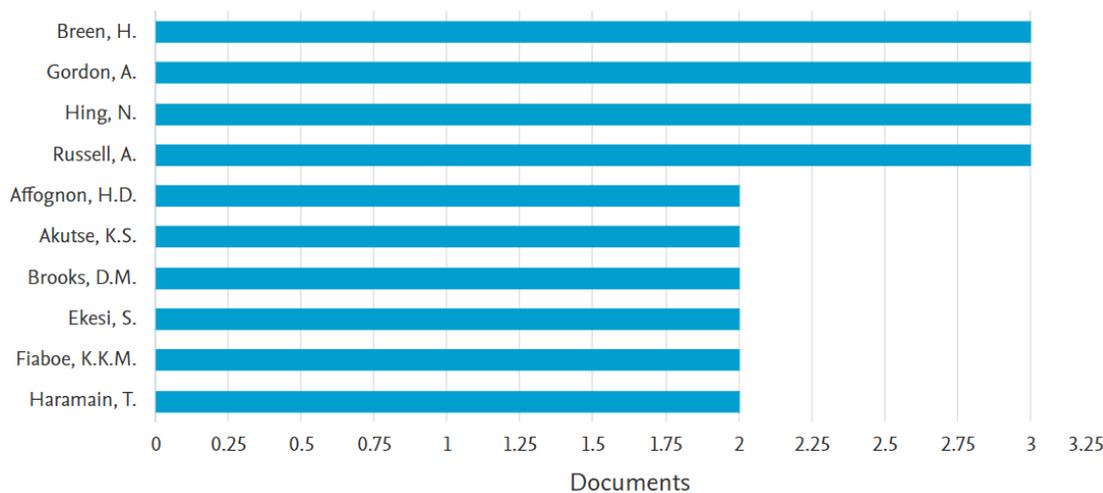

Figure 3: Number Of Publication By Authors

On the other hand, RQ2 also investigated the most authors with the number of publications in the online digital business for indigenous community research area. In the content analysis made for the authors in the research area, most authors published the article on average of 2 publications. The highest number of publications is three by Breen, H., Gordon, A., and Hing, N., as shown in figure 3.

Research Question 3
What are the most productive countries in the online digital business platforms for Indigenous Community research area?

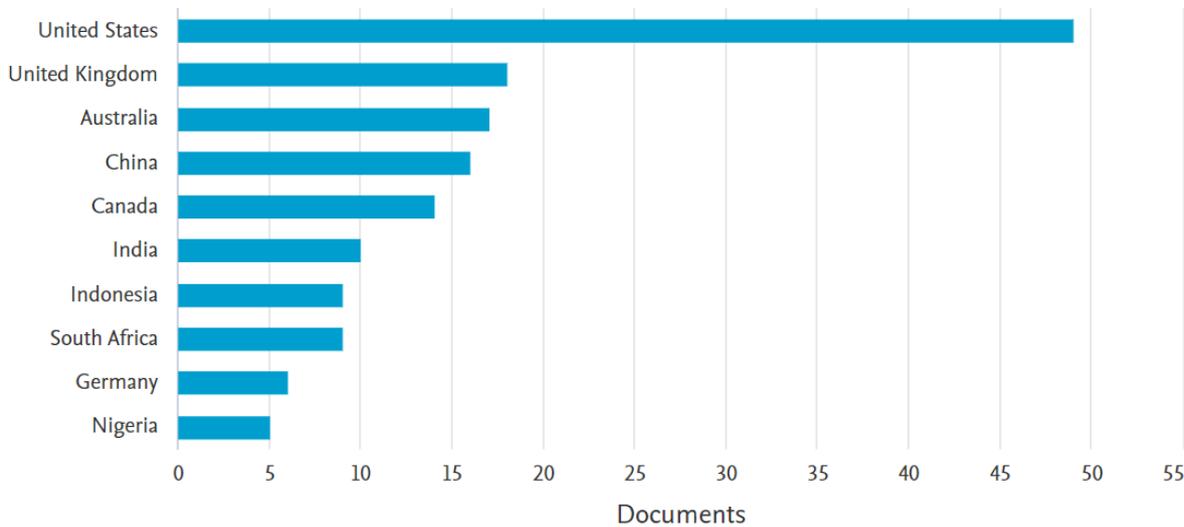Compare the document counts for up to 15 countries/territories.

Figure 4: List Of The Most Productive Countries In The Research Area

Table 3 and Figure 4 present the rankings of the ten most productive countries in online digital business for indigenous community research. From a national perspective, most countries/cited areas have consistently shown interest in all research topics on indigenous and ethnic communities. In contrast, different countries and regions demonstrated a distinct inclination towards particular tendencies. The dataset's examination determined that the publications on online digital business for indigenous communities encompass 52 countries. Notably, the majority of these publications originate from the United States (49), followed by the United Kingdom (18), Australia (17), China (16), Canada (14), India (10), Indonesia, and South Africa, with nine publications each. Additionally, Germany accounts for six journals, Nigeria for 5, and the remaining publications are distributed among other countries such as Taiwan, Hong Kong, Malaysia, UAE, Sweden, Romania, Poland, and France.

Table 3: Number of Publications By Country Affiliations

Country/Territory	Number of Publications
United States	49
United Kingdom	18
Australia	17
China	16
Canada	14
India	10
Indonesia	9
South Africa	9
Germany	6
Nigeria	5

Figure 5: Publication by Authors
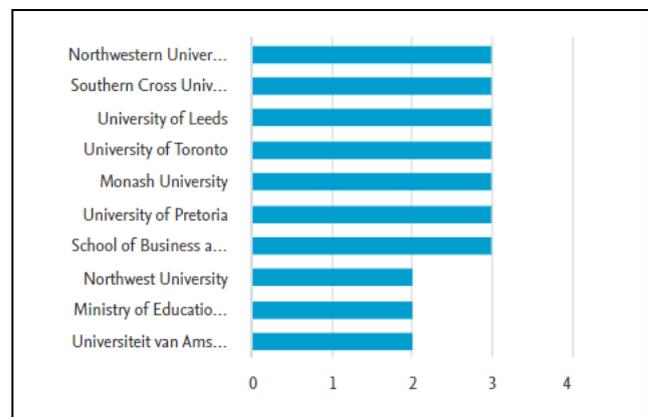
The analysis also reveals that the publications were written by the top 10 organizations and institutions, as shown in Figure 5, namely Northwestern University, Southern Cross University, University of Leeds, University of Toronto, Monash University, University of Pretoria, and School of Business and Tourism, with the maximum of 3 publications for each university.

Meanwhile, Northwest University, the Ministry of Education of the Republic of China, and Universiteit van Amsterdam contributed two publications.

Research Question 4

What are the primary research keywords for the last decade of online digital business platforms for the Indigenous Community?

The article data underwent computational mapping. VOSviewer is employed for computational mapping. Based on the outcomes of computational mapping, 34 items were identified. The various components of mechanical engineering education in data mapping are categorized into four clusters. Each cluster has a different number of items, different item types, and different cluster colors. Each item in the cluster that forms a circle has a different effect on the size of the circle. The frequency with which the circle appears determines its occurrence. The larger the circle, the more frequently the keyword is used, while the smaller the circle, the less often the keyword is used. (D. N. Al Husaeni & Nandiyanto, 2022).

Cluster Resulting from the VOSViewer Mapping with the Keywords

The 4 clusters obtained from the VOSViewer mapping using the keywords "online digital business" and "indigenous community" are as follows:

(i) **Cluster 1** has 13 items marked in red (see Figure 6); the 13 items are commerce, China, commercial phenomena, COVID-19, developing countries, e-commerce, electronic commerce, entrepreneurship, internet, marketing, social media, social networking (online), and sustainable development.
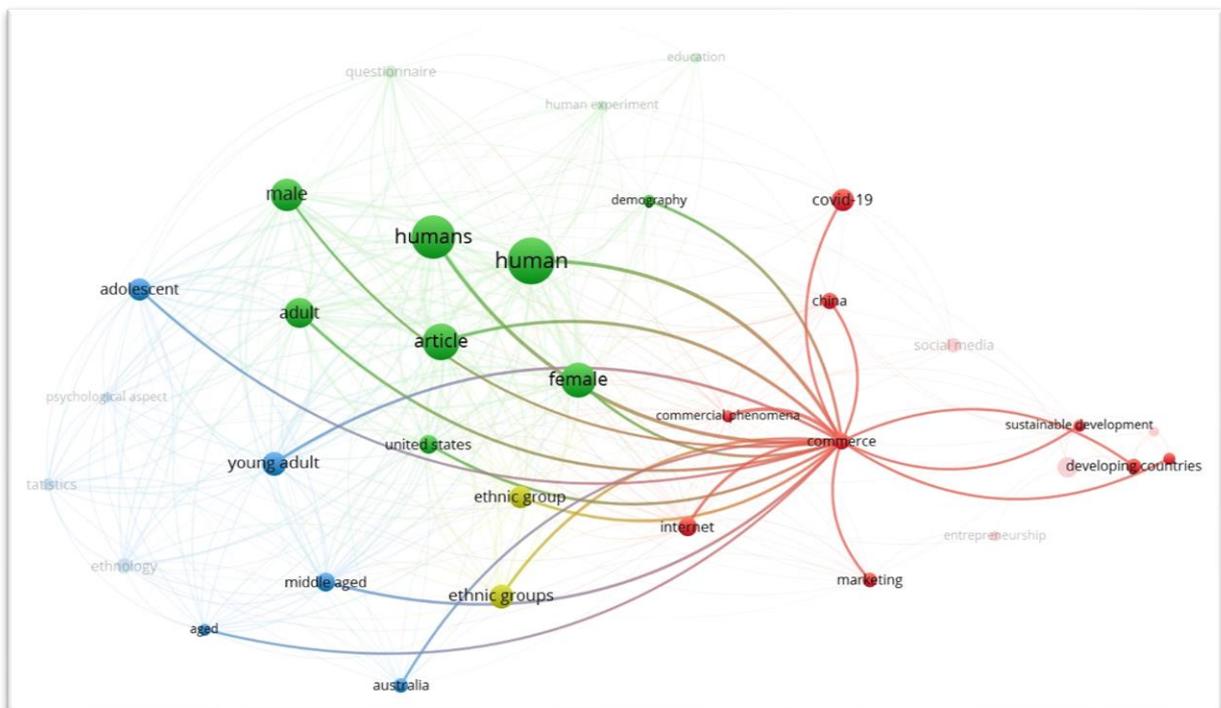

Figure 6: Cluster 1: Network Visualization of Commerce Term

(ii)   **Cluster 2** has 11 items marked in green (see Figure 7); the 11 items are adult, article, demography, education, female, human, human experiment, humans, male, questionnaire, and the United States.
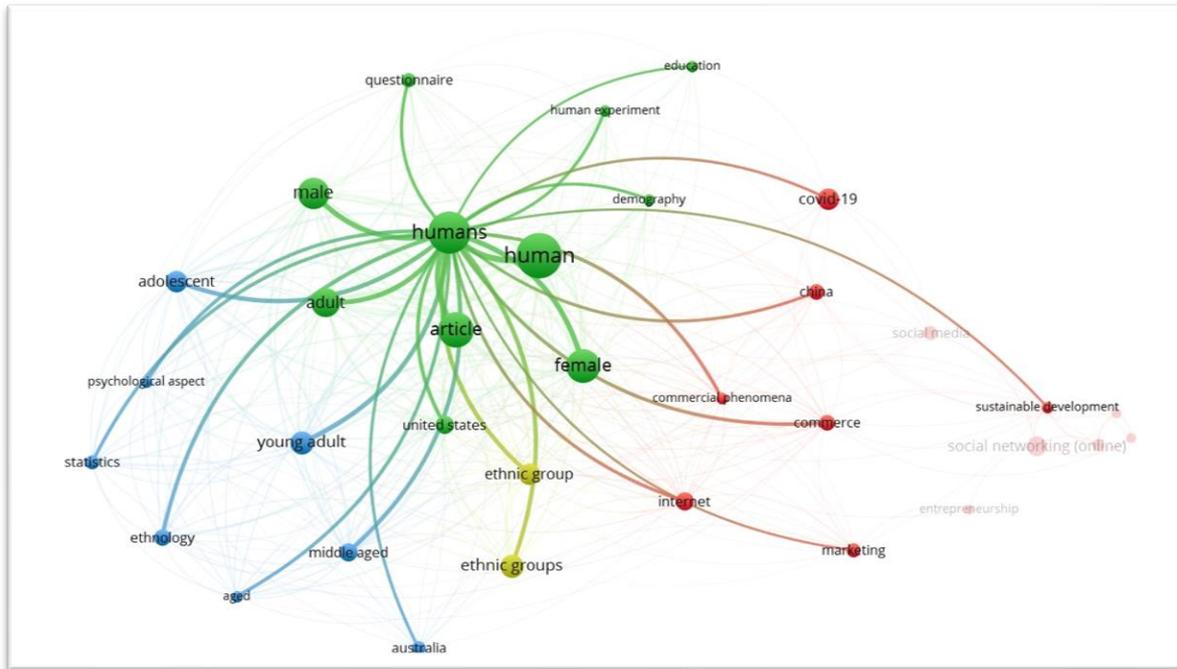

Figure 7: Cluster 2: Network Visualization of Human Term

(iii)   **Cluster 3** has 8 items marked in blue (see Figure 8); the 8 items are adolescent, aged, Australia, etnology, middle-aged, psychological aspect, statistics, and young adult.
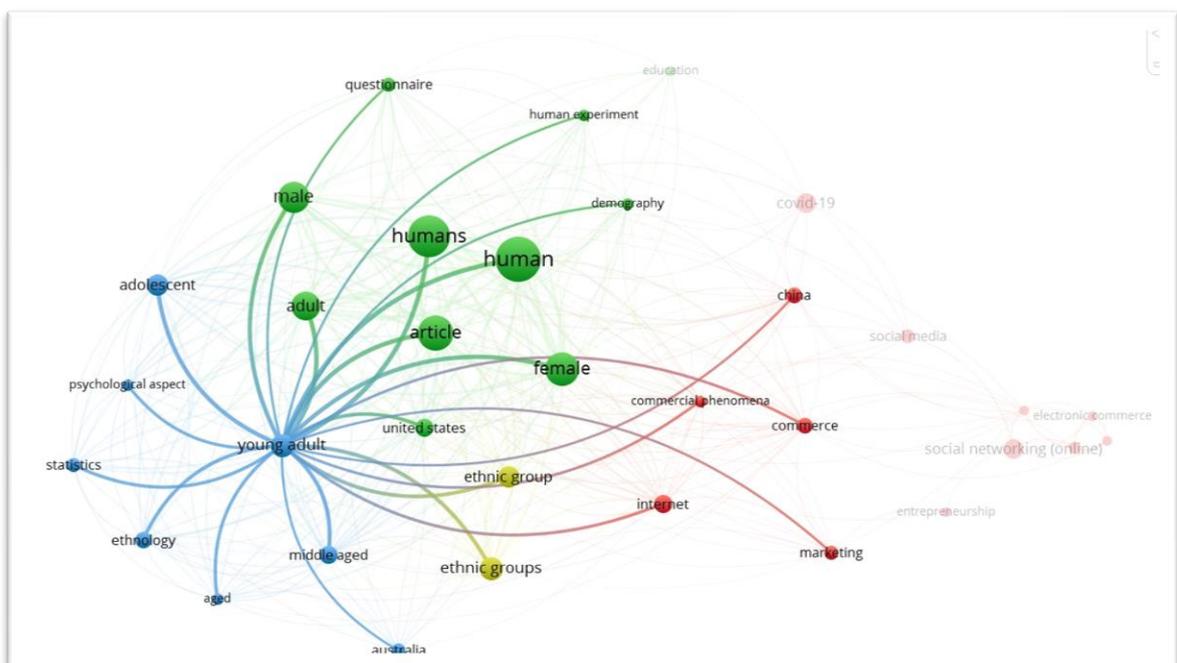
Figure 8: Cluster 3: Network Visualization Of Young Adult Term

(iv)   **Cluster 4** has 2 items marked in yellow (see Figure 9); the 2 items are ethnic and ethnic groups.
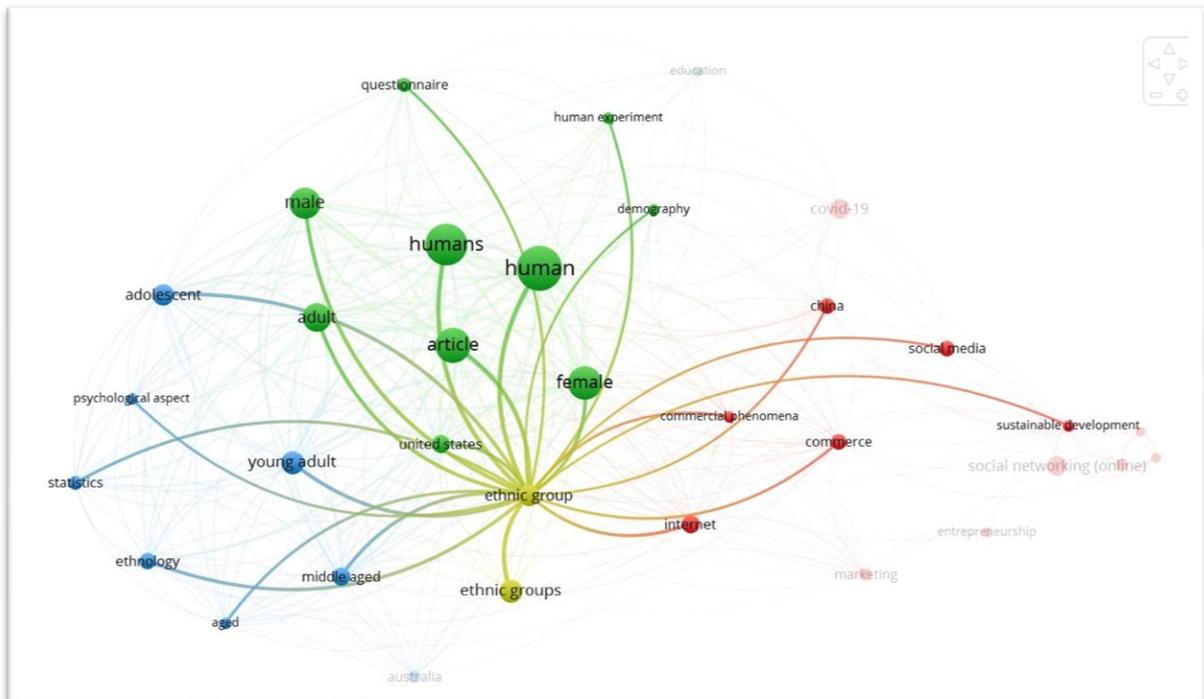

Figure 9: Cluster 4: Network Visualization of Ethnic Group Term

Visualization Of Online Digital Business For Indigenous Ethnic Community Topic Area Using Vosviewer

VOSViewer be able to generate three different types of Visualization form, namely, Network Visualization (Figure 10), Overlay Visualization (Figure 11), and Density Visualization (Figure 12). Relationships in network visualization are represented by a network or line connecting one term to another.

Figure 10 shows the clusters of each researched topic area in network visualization. The keywords used in this study are "Human," "Article," and "Female," which are in cluster 2, which is marked in green, become the most extensive circle, implying the most frequently used keywords in the topic area.
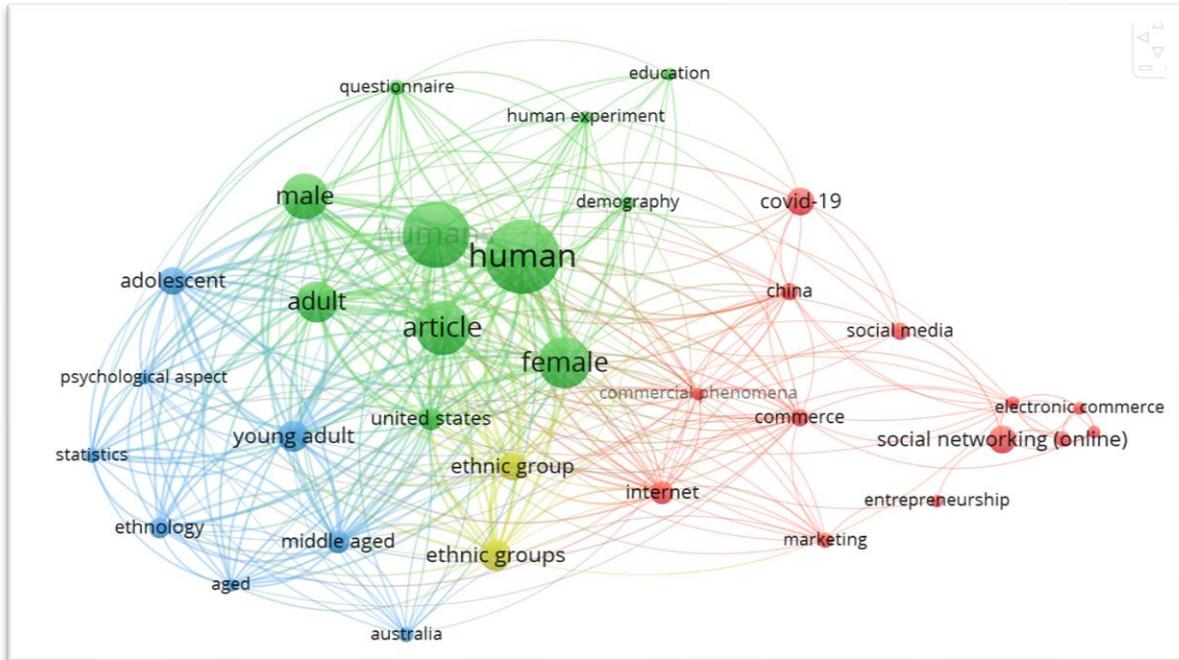
Figure 10: Network Visualization Of The Topic Area

Figure 11 depicts the geometry of the visualization overlay. In this form of visualization, we can see the year in which the most keyword research was conducted. Figure 11 demonstrates that "Human" was extensively researched from late 2016 to early 2018.
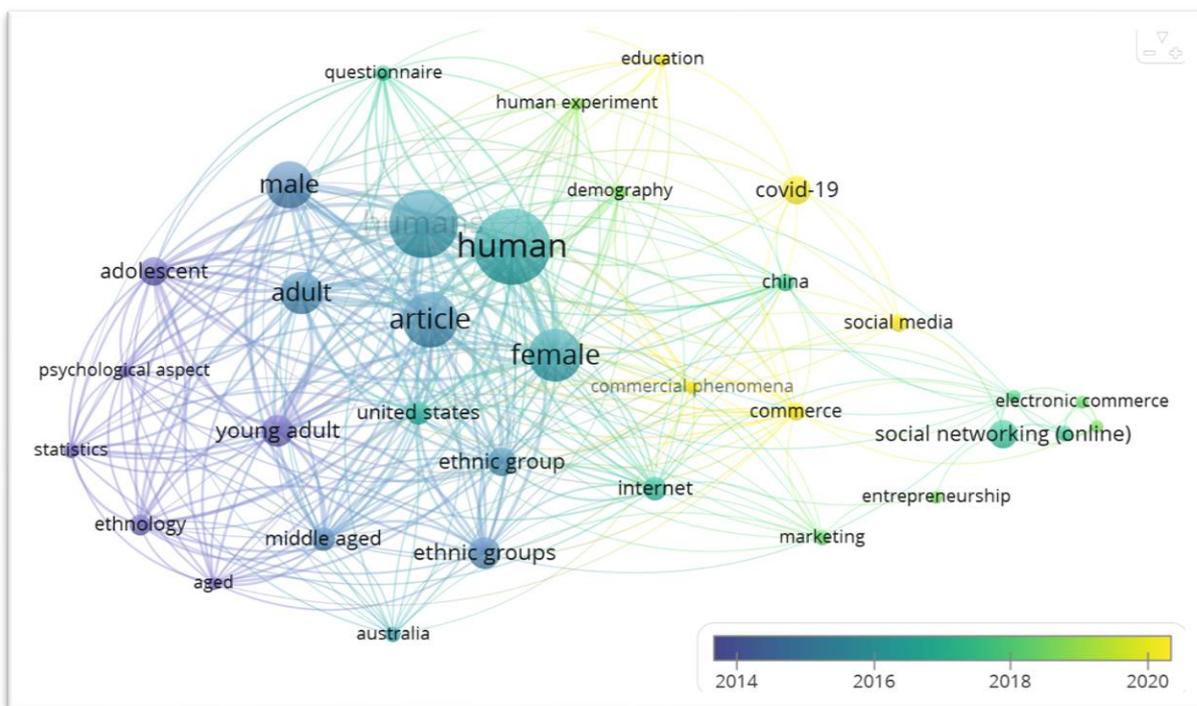

Figure 11: Overlay Visualization Of The Topic Area

Figure 12 depicts the density visualization's shape. This keyword density visualization reveals how frequently or infrequently prospective keywords like "Online Digital Business" are

researched. The color of the term is the indicator that determines how often the keyword is researched. The darker or more transparent the color, the more often the term is studied, and the dimmer the color, the less often the term is studied. Figure 12 shows that research on human, female, male, article, adult, electronic commerce, social networking, and ethnic groups has shown the highest studies.
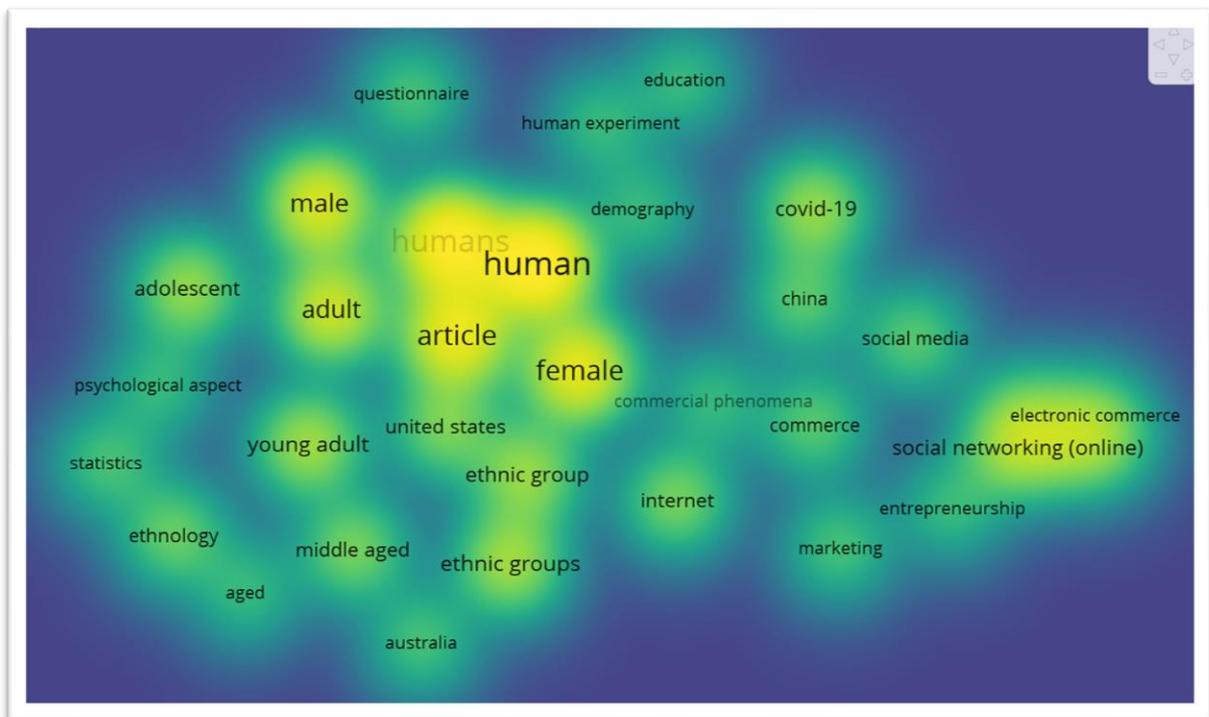

Figure 12: Density Visualization Of The Topic Area

Conclusion
The purpose of this study was to conduct computational mapping analysis on the bibliometric data of research publications. The data collection process in this study was facilitated through the Scopus Online Database. The received material is subject to filtration using the keyword "Online Digital Business for Indigenous Community." The bibliographic data utilized in this study encompass the topic, title, keyword, and abstract. 192 papers pertinent to the research were identified and published from 2012 to 2022. The findings of this analysis indicate a consistent annual growth in the number of documents produced between 2012 and 2022 on the research topic. Several of the acquired articles have received over 100 citations. Upon searching using the designated keyword, it was seen that the search yielded four distinct clusters, each containing a varying number of items. Each categorization is represented by a circular shape distinguished by a unique hue. The size of the circular shape frequently indicates the frequency of usage of a given term. The study's findings suggest a significant opportunity for research on online digital commerce within indigenous and ethnic communities. This opportunity is further supported by the relatively low number of publications in this area over the past decade.

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