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COMMUNITY-BASED TOURISM AND TECHNOLOGY RELATIONSHIP: A BIBLIOMETRIC ANALYSIS

HENDRO NINDITO[1] , SPITS WARNARS HARCO LESLIE HENDRIC[2], SFENRIANTO[3], HARJANTO PRABOWO[4]

[1,2,3,4] Computer Science Department, Bina Nusantara University Program – Doctor of Computer Science,

Bina Nusantara University, Jakarta, Indonesia

E-mail: [1]hendro.nindito@binus.ac.id, [2]spits.hendric@binus.ac.id, [3]sfenrianto@binus.ac.id, [4]harprabowo@binus.edu

ABSTRACT

This study aims to find the direction and objectives of research in the current Community-based tourism (CBT) and relationship with technology domain. We Use the five phases of bibliometric analysis method, we extracted 272 documents from the Scopus database for the period 1991 to 2021 and refined keywords by adding inclusion criteria to produce 176 documents. We analyzed the document metadata with features from the Scopus website, exported it to a RIS-type dataset and then processed it using VosVewer to visually map keywords for further analysis. The result, we found the trend of publications related to this topic by time period, the most influential publications, trends in the main topics and potential topics for future research as well as the relationship between the CBT and IT domains. The Conclusion for this research on this domain has increased publication interest from year to year, but the results visualized that there is no direct relationship between the two and also the density diagram for information technology area is bright, which shows that the novelty level is still high for future research.

Keywords: *Community-Based Tourism; Bibliometric; Visualisation; Technology, VosViewer*

1. INTRODUCTION

Community-based tourism (CBT) is a form of tourism that arises to overcome the adverse effects of conventional or mass tourism [1]. CBT has been used as a diversification strategy for community development, especially in remote areas that have limited alternatives for economic development [2]. The main strength of CBT, particularly in Cultural Tourism, lies in its potential to empower rural communities and make a major contribution to development and poverty alleviation [3]. According to Phuong, Song, & Quang, (2020) model CBT aims to preserve indigenous cultural values. The literature on Community-Based Tourism (CBT) is quite developed and has been recognized in the context of tourism development, namely Sustainable Tourism, Cultural Tourism and Ecotourism [5].

The main challenges in CBT [6] include local capacity, marketing and economic viability. Some literature research have been published to address this problem [7], [8], [9]. How ever, there are not many studies that discuss community-based tourism and its relationship with the use of information technology on the domain of tourism and visualized the topics themes as a holistic study.

In order to fill the gap, the authors aims to conduct research to determine the current state of research in the field of CBT and to seek potential research directions that can bridge this problem. Especially how the direction and role of information technology can be applied to help the community as cultural arts actors in terms of maintaining and promoting culture which will support cultural tourism activities. These directions are the contributions of this research. To study and verify publications in the field of community-based tourism we use the Bibliometric methodology The use of bibliometric methods in written publications applied quantitative methods [10]. Bibliometric analysis identifies a collection of literature, usually linked as a collection of published data on a particular study domain [11]

2. RELATED WORK

Michael Hall in 2011 said that external evaluation of research quality, importance of impact factors and prestige as well as field development

studies in tourism are important results that can be analyzed using Bibliometrics.

Research conducted by Álvarez-García, Durán-Sánchez, & Río-Rama in 2018 [7], by using bibliometric comparative analysis method in the community tourism domain where the document sources used are indexed in the WoS and Scopus databases dealing with aspects such as coverage, correlation between the two bases, overlapping documents and journals, growth, distribution or concentration articles, among others and the period of year of publication 2017.

Other research that has been done in this domain by Graciano & Holanda (2020) which integrating 158 articles in Portuguese, Spanish, and English was published in 64 journals of Integrative Literature Review (ILR) and Bibliometric Studies (BS). This study also shows the fulfillment of three main bibliometric laws: Lotka, Badford and Zipf which place CBT as a subject of development of production.

Explore trends and patterns in sustainable tourism research over the last 25 years using Bibliometric analysis also has been done by Ruhanen, Weiler, Moyle, & McLennan (2015). By analyzing 492 sustainable tourism research papers sourced from 4 journals, most of which are case studies, empirical studies and critical reviews. The findings of this research are theoretical and methodological approaches that have matured but the subject of the theme in sustainable tourism research remains constant. However, this domain is clearly maturing with the move from definitional and conceptual papers to papers focused on testing and applying theory through empirical research.

Research conducted on the domains of tourism and tourism management has been carried out and developed at the international level in recent years [12], [13]. There are not many studies that discuss community-based tourism and its relationship with the use of information technology on the domain of culture-based tourism and visualized the topics themes.

This study proposes research questions, what is the directions, mapping and trend of Community-based Tourism using visual bibliometric analysis? From a bibliometric review, this study aims to visually study mapping and research trends in the field of Community-based Tourism on an international scale in period 1991 – 2021. They will describe by reseach questions bellow:

RQ 1: How is the trend of CBT research based on the number of publications per year?
RQ 2: Which are the Countries of the Auther is the most contributing in the publication of CBT research?
RQ 3: Who are the most contributing authors in publication of CBT research?
RQ 4 : What are subject areas covered in CBT research ?
RQ 4: What are main topics in the field of CBT research ?
RQ 5: What are potentials research topics in future CBT and ICT fields ?
RQ 6: What are Significant articles by Citation size in CBT research ?
RQ 7: What are the relationship beteen CBT and ICT fields ?
RQ 8: What are the relationship beteen CBT and ICT fields ?

3. METHODOLOGY

Pritchard [14], defined the term bibliometrics for the first time as "the application of mathematical and statistical methods to books and other communication media". The central theme of the study underlies the use of bibliometrics in the systematic literature analysis of related keywords, it consists of five steps [15] as figure 1

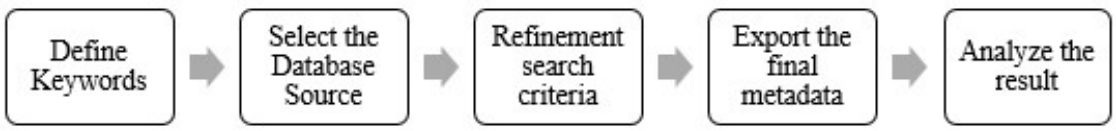

Figure 1: Keywords Network visualization

This bibliometric is used as a method to understand global research trends in a field in Scopus or WoS publikasi publications [16]. Firstly define keywords, this reseach was conduct on 1st Sept 2021 by using a combination of community-based tourism keywords and also information technology that is searched for in the title, abstract

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and keywords section with a publish period until 2021 as:

TITLE-ABS-KEY (("*community-based tourism*" OR "*community based tourism*" OR "*tourism community*") AND ("*ict*" OR "*online*" OR "*mobile*" OR "*technology*" OR "*platform*" OR "*web*" OR "*information*" OR "*virtual*" OR "*digital*")) AND PUBYEAR < 2022.

The result from this search were 272 documents.

Secoundly the selection of database, at this reserch we use the Scopus database for data source. Acording to Baas (2020) [17] "Scopus is among the largest curated abstract and citation databases, with a wide global and regional coverage of scientific journals, conference proceedings, and books, while ensuring only the highest quality data are indexed through rigorous content selection and re-evaluation by an independent Content Selection and Advisory Board".

Thirdly customizing and refinement of research criteria; From the results of the first search, the researcher added the following inclusion criteria: the publication stage is in the final stage, the document type is an article with the journal type in English. So that there are 172 filtered documents such as:

TITLE-ABS-KEY (("*community-based tourism*" OR "*community based tourism*" OR "*tourism community*") AND ("*ict*" OR "*online*" OR "*mobile*" OR "*technology*" OR "*platform*" OR "*web*" OR "*information*" OR "*virtual*" OR "*digital*")) AND PUBYEAR < 2022 AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j"))

Fourthly In the study At this point, the Scopus result metadata has been extracted in the RIS dataset format. This is done so that the results can be further processed with a reference manager software and tools for visualizing bibliometrics

The last, for analysis of the information and discussion of the results, we use the services provided from the Scopus website to perform preliminary analysis and display bibliometric information such as the most contributing countries, the most productive researchers in the CBT domain, number of publications per year, publishers and subjects covered. Then we also clustered topics using Vosviewer 1.6 to visualize the themes of the CBT topics so as to facilitate the analysis of research trends. According to research conducted by Van Eck & Waltman (2010), large maps and displaying co-citation maps from major scientific journals can be handled by VosViewer.

4. RESULT AND DISCUSSION

4. 1. CBT and Technolgy research trend based on number of publications per year (RQ1)

Research on the CBT domain has seen an increasing trend in the number of publications. Starting from 1991 until now, a total of 172 articles have been produced. Publications seem to be increasing, in 2018 as many as 25 articles were produced and in 2020 as many as 33 articles. Until the time the research was carried out, the publication had reached 26 articles and still growing.

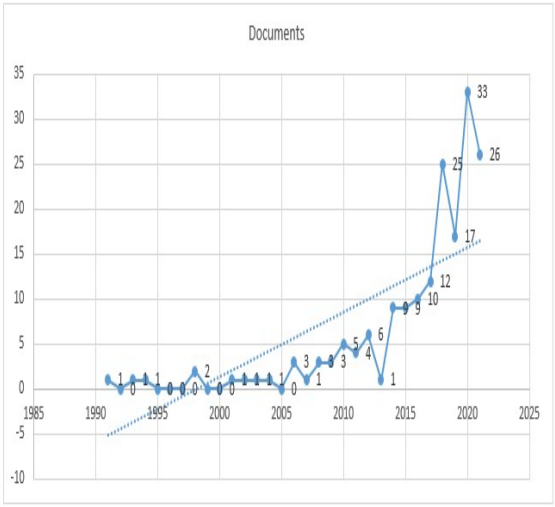

Figure 2: CBT and Technology Research Trend

4. 2. Most productive country in CBT and technolgy research domain (RQ2)

Figure 3 explains that countries that top ten contribute to CBT domain research are South africa with 24 publications, followed by China and Thailand for 23 publications, United States for 21 documents and et cetera. Indonesia also include for the big five contributor in term of quantities, leading for south east asia countries for 19 documents.

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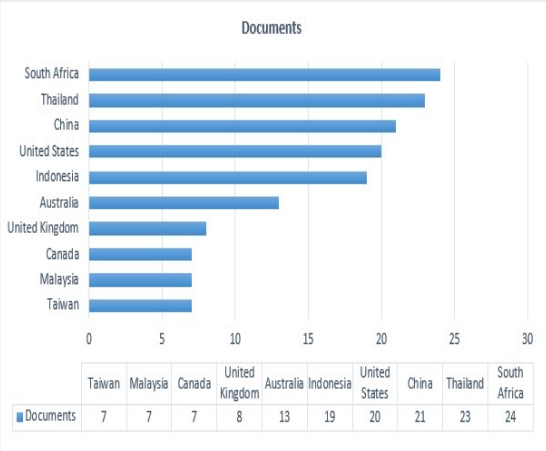

Figure 3: Productive country in CBT reseach

4. 3. Most contributor Author in CBT and technolgy research domain (RQ3)

Figure 4 describes the top ten authors who contributed to the CBT research domain. Where Giampicolli is the largest contributor with 11 documents followed by Mtapuri with 6 documents, Ross with 4 documents and so on. It can be seen that the authors who contributed the most were from countries that contributed the most research in this field.

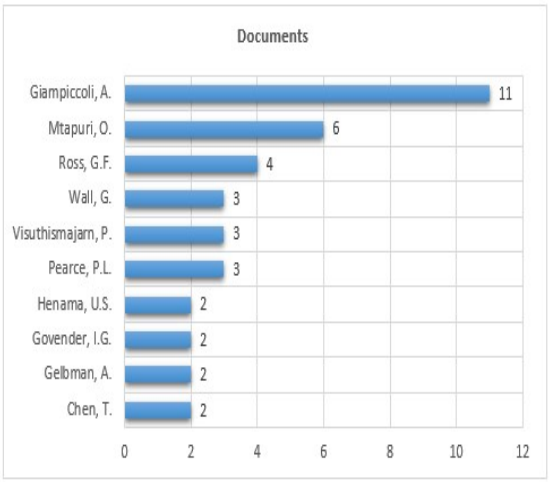

Figure 4: Most Contributor Individual Authors

The next stage, we analyse the result with cluster analysis, we do some steps. frequently occurring keywords will be visualized for bibliometric analysis. This will make it easier for researchers to analyze topics in the Community-based tourism domain that have been studied during the years (1991-2021). Cluster analysis is also applied to interpret the intelligence structure with the VOSviewer Clustering method, is a method which have a merit of setting objects into a group by similarity or dissimilarity. The same cluster will accommodate keywords that are highly correlated with each other. The results of the research data in the previous step will be visualized in three different diagrams, namely (1) data network visualization; (2) overlay visualization; and (3) density visualization.

Firstly in the network data visualization figure below, the frequency of keyword occurrences will reflect the size of the keyword node, where the more frequent the keyword frequency, the greater the node size visualization. The relationship between the two words can be seen from the thickness of the connecting line to the two keywords, where the thicker the line, the closer the relationship [19]. From the results of the keyword refinement process in the previous stage, 1055 keywords were obtained, the minimum occurrence of this keyword was 2 and 172 keywords were generated that appeared according to the

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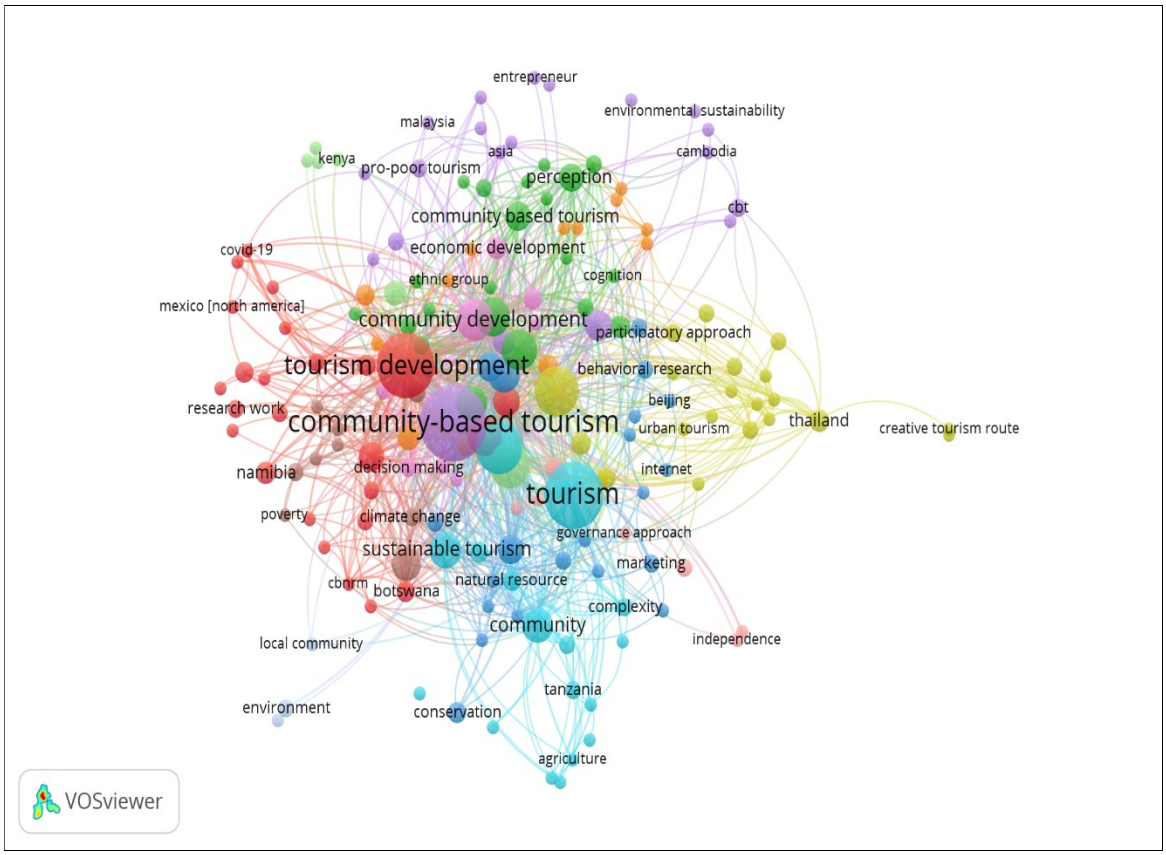

Figure 5: Keywords Network visualization

criteria, these keywords were then mapped into 12 theme clusters, We analysed the moset and less keywords.for further investigatioan as seen in table 1.

Table 1: Cluster Analyze Result

Cluster	Most Frequent	Less Frequent	Keywords
Red Cluster (25 items)	tourism developpent (39), Local participation (14)	Pandemic (2), rural area (2)	Botswana (4), Cbnrm (2), Community resource management (8), Covid-19 (2), Develoing world (2), Indigenous population (3), Indigenous tourism (2), Literature review (2), Local participation (14), Mexico (2), Namiba (5), Pandemic (2), policy making (2), private sector (2), research work (3), resident (2), resilence (2), rural area (2), rural development (2), rural sociaty (3), rural tourism (3), Socioeconomic impact (4), Stakeholder (9), tourism developpent (39), vulnerability (4).
Green Cluster (21 items)	tourist destination (15), heritage tourism (11),	cognition (2), community resilence (2)	China (14), cognition (2), community based tourism (8), community resilence (2), community response (3), conflict (3), conflict management (3), disaster mngement (3), ethnicity (2), game theory (2), heritage tourism (11), local wisdom (2), modeling (2), neoliberalism (2), perception (7), social conflict (2), theoritical study (3), tourism community (5), tourism behaviour (3), tourist destination (15), yunan (2).
Blue	sustainable	Virtual	Behavioural research (3), beijing (2), business development

Cluster (21 items)	development (12), cultural heritage (8)	Reality (2), world wide web (2).	(2), conversation (4), cultural heritage (8), cultural heritage tourism (2), cultural heritages (3), culture (2), destination images (2), empirical analysis (3), internet (2), management (2), marketing (3), quality of life (3), sub-saharan africa (2), sustainable development (12), tourist market (8), united states (2), virtual reality (2), world heritage site (2), world wide web (2).
Yellow Cluster (20 items)	tourism management (23), social capital (5)	sharing economy (2), economic sustainability (2)	Action research (2), community-based (2), community-based tourism (3), creative tourism route (2), information and communication technology (2), information managemen (2), innovation (3), israel (2), local food (2), northeastern region (2), participatory approach (3), rural areas (3), sharing economy (2), social capital (5), thailand(5), tourism management (23), ubon rahcathani (2), urban area (3), urban population (2), urban tourism (2).
Purple Cluster (20 items)	community-based tourism (54), community participation (9)	enterpreneur (2), local economy (2),	Asia (2), cambodia (2), cbt (3), community participation (9), community-based tourism (54), corporate social responsibility (2), economic sustainability (2), enterpreneur (2), environmental sustainability (2), euroasia (2), local economy (2), malaysia (2), pro-poor tourism (3), responsible tourism (2), social development (3), social sustainability (2), south africa (2), southeast asia (2), tourism area life cycle (2), tourism economic (6)
Light blue Cluster (17 items)	tourism (40), ecotourism (26)	inclusive development (2), resource management (2)	Agriculture (2), australasia (2), australia (2), community (11), community(2), compleity (3), ecotourism (26), inclusive development (2), natural resource (4), nature conservation (3), nothern thailand (3), resource management (2), sustainable tourism (12), tazania (3), tourism (40), tourism village (2), village (2).
Orange Cluster (13 items)	proverity alleviation (6), questionary survey (5)	spatial analysis (2), GIS (2)	Carbon emission (2), cultural tourism (3), emission control (2), ethnical grouop (2), ethnic toirism (2), far east (2), Gis (2), lifehood (4), planing method (2), proverity alleviation (6), questionary survey (5), rural population (2), spatioan analysis (2).
Brown Cluster (10 items)	empowerment (10), tourist attraction (4)	Adaptive management (2), coastal zone (2)	Adaptive management (2), climate change (3), coastal tourism (2), coastal zone (2), empowerment (10), indonesi (3), poverity (2), risk assesment (3), tourist attraction (4), shejiang (2)
Light Purple Cluster (8 items)	community development (16), economic development (5)	Co-management (2), state role (2)	Co-management (2), community development (16), decission making (3), economic development (5), planning (4), state role (2), strategy (2), taiwan (3)
light red Cluster (7 items)	Development (5), participation (3)	governance approach (2), income distribution (2)	Development (5), governance approach (2), income distribution (2), independence (2), participation (3), rural community-based (2), social justice (2)
light green Cluster (6 items)	strategic approach (6), sustainability (6)	land use planing (2), monitoring and evaluation (2),	Kenya (2), land use planing (2), monitoring and evaluation (2), protected area (2), strategic approach (6), sustainability (6)

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In this paper, we only show 2 dominant keywords, for keywords that occur most often and rarely appear. The results from this table can be concluded which research still needs to be developed.

Secoundly In this research, the overlay visualization was chosen as a tool to verify the latest trends in the academic field, this tool will classify items based on time units. Items will have different colors based on the year of publication [20]. Terms in the more recent emerging community-based tourism research domain (average year of publication is 2020) will be brighter, in this case in green to yellow.

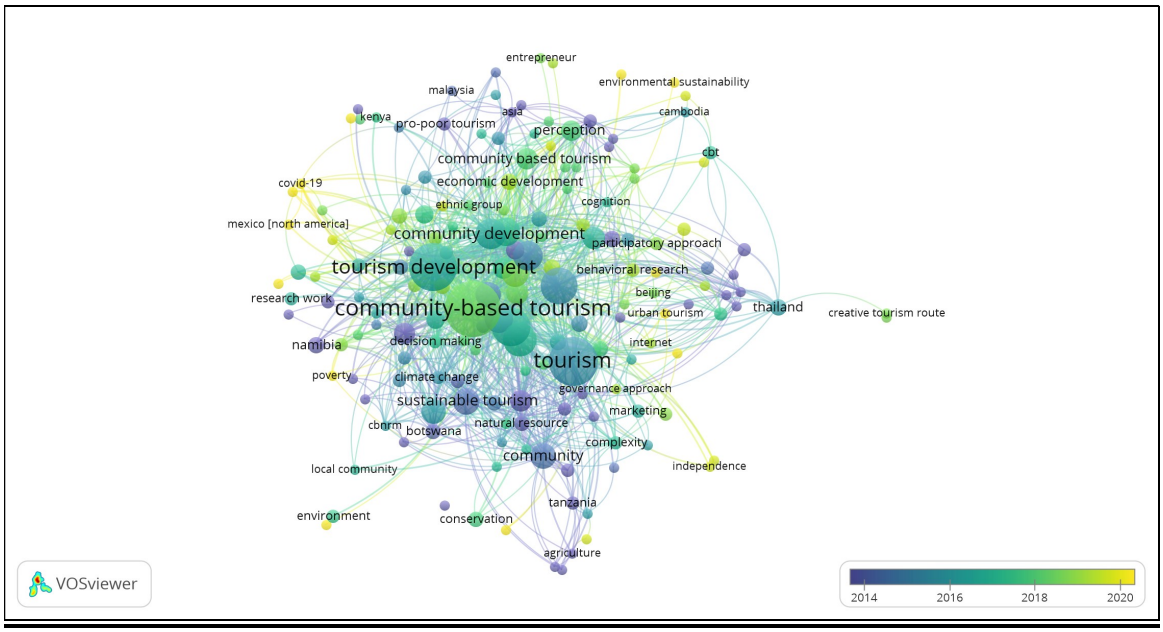

Figure 6: Over layvisualization

Thirdly In item density visualization, keyword occurrences in number will be represented by color. Darker colors will represent a lot of research has been done. Thus, we can see that keywords with lighter colors are interpreted as topics of little research and need further investigation.

Figure 7: Density visualization

4. 4. Subject Areas coverd in CBT domain (RQ 4)

Figure 8 represents publications in the CBT domain from several disciplines where social science is the largest field of science with 128 documents (36.26%) followed by business, management and accounting for 98 documents (27.76%), Environmental science 49 documents (13.8%), Energy 19 documents (5.38%) and The rest of the subject areas contribute to the area of CBT research

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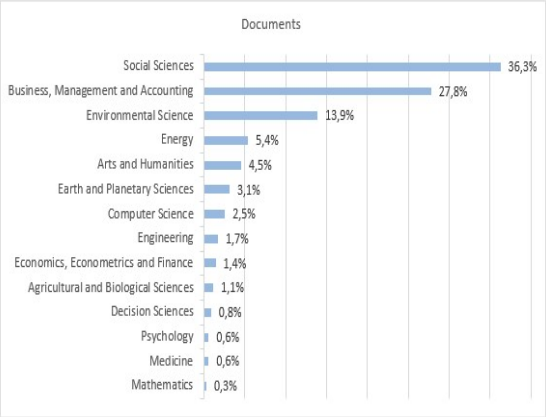

Figure 8: Subject areas coverd in CBT domain

4. 5. Main topics Research in the field of Community-based Tourism (RQ 5).

This study resulted in 12 clusters that describe the research themes studied in the CBT domain. In each theme, there is a dominant keyword that has a high frequency of occurrence, where this will represent a topic that is interconnected in one theme.

For example in the first cluster, the keywords that appear the most are tourism development (39), Local participation (14). While in the third cluster where the keywords that often appear are sustainable development (12), cultural heritage (8). Information in Table 4.1 related to keywords that most appear in each cluster is the handling of RQ 5 where this data is the main topic in research in the field of Community-based Tourism.

4. 6. Potential research topics in future Community-based Tourism and ICT fields (RQ 6)

Some keywords that rarely appear in Table Cluster analysis, can be seen as potential research topics in the future. In this case, keywords that have a low frequency of occurrence that appear in each cluster theme for example in blue cluster are Virtual Reality (2), world wide web (2). Where Virtual Reality technology is commonly used to increase access to cultural experiences and knowledge, increase visitor engagement, as well as new ways of sharing cultural stories by involving multisensory and deeper emotional cognitive contextual relationships with artifacts and objects [21].

In orange Cluster are GIS (2) , spatial analysis (2). Today the evolution of geographic information systems towards web-based and mobile-based [22]. Where WebGIS and MobileGIS technologies will assist people to locate routes to certain places based on their real-time position [23], and so on.

4. 7. Significant articles by Citation size in Community-based Tourism research (RQ 7)

This research shows that Scopus journals have a significant effect on metrics that refer to citations. In Table 4, it refers to the five articles that have the most citations in the field of Community-based Tourism. The significance of articles in this domain is shown by the highest number of citations.

Where the article written by Sebele, L.S entitled 'Community-based tourism ventures, benefits and challenges: Khama Rhino Sanctuary Trust, Central District, Botswana' has been cited as many as 188 pieces and represents the most citations in this field.

Table 2: Top Five Significant Cited Articles

Papers	Authors	Year	Cite
[24]	Sebele, L.S	2010	188
[25]	Salazar, N.B	2012	155
[26]	Mason, Robin Rennie, Frank	2007	111
[27]	Park, Duk-Byeong Lee, Kwang-Woo Choi, Hyun-Suk Yoon, Yooshik	2012	86
[28]	Woosnam, Kyle M	2010	77

4. 8. Relationship between Community-based Tourism domain and Technology (RQ 8)

In the relationship between CBT and information technology, some of the keywords that are quite potential are Information and communication technology (2), virtual reality (2), world wide web (2) and Internet (2).

In visualisation framework figure 3, it is shown that the keywords related to information and communication technology, the World Wide Web, Virtual Realty and the internet have a bright background color so that it can be interpreted that there is not much research in this domain or in other words this domain has a novelty level which is quite high.

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5. CONCLUSION

This research uses a bibliometric approach to verify journal publications in the scopus database. Publications related to the community-based tourism and technology domain, have increased every year. Community-based tourism research has been carried out with an article publication time span of 30 years. The results obtained from this research were to collect 266 publications related to cbt and ict from the scopus database and after being refined based on predetermined inclusion criteria, reduced to 172 articles.

The results achieved indicate research trends in the CBT domain increasingly uphill especially in 2020 where the publication reached 33 documents. The most productive country in CBT and technology research domain is South Africa with the publication of 24 documents. The Most contributor individual author in this domain is Giampiccoli with the publication of 11 documents. The most Subject areas is social science with 36,3%. The main topic in this domain can be devide in 12 clusters. Potential resech in this domain can be seen from less keywords in ech cluster, especially that related to IT and technology. The most cite article is "Community-based tourism ventures, benefits and challenges: Khama Rhino Sanctuary Trust, Central District, Botswana," with 188 cite.

In addition, the data were analyzed using cluster analysis to reveal the main research topics in the field of cbt based on the similarity or dissimilarity of the keyword relationships within the cluster that formed a particular theme, on the other hand, lower keyword frequencies would indicate potential topics for further research as contribution of this research.

Another contribution of this research is to fill the gap of bibliometric analysis that has not been carried out to analyze the community based tourism domain literature since 2018, the relationship between cbt with technology and visualize the relationship between keywords based on their similarities so as to form certain research themes since 1991.

The limitation of this research is the data source taken only from the SCOPUS database due to limited access from researchers, it is highly recommended for further research to expand the database of other sources such as springer, iee plore or web of science (WOS).

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