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Bibliometric Analysis of Customers' Purchase Intention in e-commerce

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ABSTRACT

This study aims to conduct a bibliometric analysis of purchase intentions in ecommerce published in 2001 to 2022. This study shows publication trends by utilizing scientific mapping and analyzing publication performance. This study also identified the contributions of authors, journals, countries, and articles using bibliometric analysis. Several countries have contributed to publications of purchase intention in e-commerce. China and the United States have the largest contribution in scientific publications around the world. In addition, "The Journal of retailing and customer services" published the most articles in this field. According to the citation analysis of the author, Gefen D., Karahanna. E, Straub D.W. has a total of 5,315 citations. Another result found that some keywords have large nodes related to their frequency of occurrence and represent information about the relationship between keywords. A visualization of publication trends is presented to serve as a reference and guidance for researchers in future studies.

INTRODUCTION

An analysis of e-commerce has become a subject that should pay close attention to the purchasing intentions of customers. The intention of customers to make purchases through online stores has also become one of the primary forces that propel all of the activity that occurs within the world of online business (Lim et al., 2016). It may be perceived that e-commerce can influence customers' intentions to make a purchase (Dachyar & Banjarnahor, 2017). Therefore, the customer's intention to make a purchase on a specific online shopping website or e-commerce is a component that can predict the customer's real behavior or their choice to make a purchase (Kim et al., 2008). This study is trying to discover to some extent purchase intention and e-commerce have a correlation in some articles and become the major discussion topic. Since purchase intention and e-commerce are become the main topic in some articles journal, it can be said that the researcher will focus on those to in conducting this study. Thus, this study is carried out using bibliometric analysis to discover data publication of articles in journals that have purchase intention and e-commerce as the main topic or the most used keywords. Moreover, the researcher tries to relate between the two keywords that is used by many authors in journal articles throughout the years of publications.

Bibliometrics is an interdisciplinary field of study that makes use of mathematical and statistical techniques to do quantitative assessments of all forms of information carriers (Merigó et al., 2015) and dekeywordsine the patterns of how knowledge is transformed. This methodology is frequently utilized by researchers as a meta-analysis study method in the process of merging and exploiting technology in the analysis of large data. The goal of this strategy is to discover advances in a certain subject (Železnik et al., 2017). The objective of this study is to use bibliometric analysis methods in order to comprehend and understand customers' purchase intention in e-commerce. Additionally, business owners, academicians and researchers can use these data analysis and interpretation results as a reference and guidance for the topic of purchase intention in e-commerce. The results of this study will be discovered by answering to these following questions:

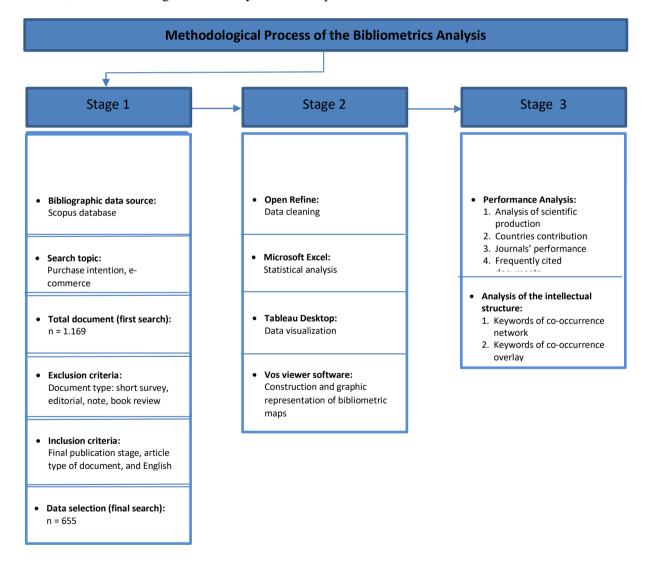
RQ 1: How is the trend of the purchase intention publication in scientific journals?

RQ 2: What are the contributive country to the transformation of this science?

- RQ 3: Which journals that have the most contribution in purchase intention publications?
- RQ 4: Which authors that have the most contribution in purchase intention publications?
- RQ. 5: Which keywords are the most relevance on the subject of this publication?

RESEARCH METHODS

This study applied a bibliometric analysis to get a full understanding and interpretation on the visualization of scientific publication results. Bibliometrics is a tool method technology that was established in 1969 for library information of science. In the course of completing an analysis that calls for a quantitative evaluation of academic publications, it is utilized by a large number of scholars. In addition, researchers are able to identify patterns and anticipate potential outcomes of future study. It gathers the results, which include the publication type, title, keyword, author, and country data (Y. Li et al., 2021). There are two main procedures combined in bibliometrics according to (Noyons et al., 1999) the first one is performance analysis and the second one is science mapping. In this study, bibliometric performance analysis applied some techniques. For example, word frequency analysis, citation analysis, as well as quantifying the number of publications broken down by countries, affiliations, authors, and other information (Thelwall, 2008). In conducting this study, the researcher uses three stages process including search criteria and source identification, software and data extraction, and the last stage is data analysis and interpretation as shown in Picture 1 bellow:



Picture 1. Methodology Process of the Bibliometric Analysis

Source of Data

Bibliometric analysis is useful for researchers who want to analyze publishing trends since it can be used to the evaluation of research results for any subject study (L. L. Li et al., 2009). Subsequently, it is becoming increasingly important to find database sources that are related to the issue at hand in order to filter articles in a multidisciplinary bibliographic database (Thielen et al., 2016). The Scopus database was selected for this specific research endeavor because it contains what is thought to be the world's most comprehensive collection of scientific publication citations and abstracts (De Groote & Raszewski, 2012). Consequently, the database known as Scopus is utilized rather extensively in the field of bibliometrics.

Defining Keywords

It is essential to use keywords that are appropriate and relevant if a researcher want to get the highest possible degree of accuracy in the findings for the study (Achimugu et al., 2014). The selection of keywords will directly impacts the result findings of a bibliometric research study (X. Li et al., 2017). Moreover, the keywords chosen must be filtered in order to get the intended information search. This research uses the keyword criteria that were generated from previous research that identified purchase intention in e-commerce in the field of marketing subject. Some studies have mentioned that purchase intention is a critical influence component of customers' attitude toward market including e-commerce (Hollebeek et al., 2007).

The previous description concepts in purchase intention used as keywords in searching for bibliographical results in the Scopus database. The researcher uses some functions or syntax in mining the data such as (OR & AND) command to search the keywords in Scopus database as follows: (TITLE-ABS-KEY ("purchase intention") AND TITLE-ABS-KEY ("e-commerce" OR "e commerce" OR "electronic commerce" OR "online commerce") AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "english"))

Inclusion and Exclusion Criteria

The analysis of this study is using several steps limitation as inclusion and exclusion criteria in order to ensure that the results are as relevant as possible. It also used to reduce the inconsistency or bias during the literature search. The keywords for article journals are related to purchase intention and e-commerce was carried out in this study. The first stage strategy analysis after deciding the keywords is distribution years of each author. It is decided that the years of 2001 through 2022 would be applied to cover the desired data. The purpose of this stage is to ensure that all relevant keywords would be included, and grab the entire period coverage. The inclusion criteria only classified documents as articles, final publication stage, and the documents are using English language only that is included in the analysis. At the end, 655 articles are used as a final article are included for the literature.

Data Analysis

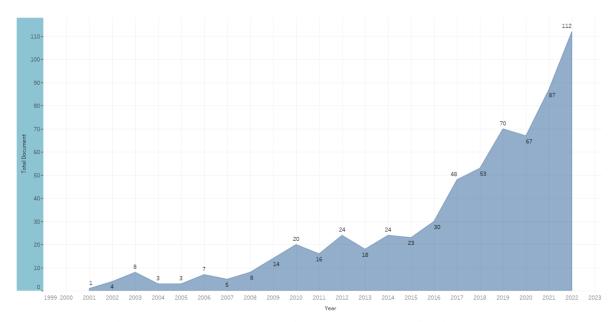
In this study, the obtained articles data are retrieved directly from the Scopus database on December 2022, with CSV (comma-separated values) files format. The next stage, all the data results are evaluated and analyzed using Microsoft Excel 2013 and VOS Viewer software. All the data should be cleaned using OpenRefine application in order to obtain reliable results in analysis. Although most of the bibliometric data seems to be correct, there are still numerous copies data with many keywordss and keywords of the aticle (Zupic & Čater, 2015). The findings of the study are displayed in the form of graphs, tables, and maps in VOS Viewer, all of which make advantage of the program's network visualization functionality. In a bibliometric study, the number of times journal articles are published is studied, with consideration given to the country of origin, the journal publisher, the author, and the articles that are referred or mentioned the most frequently. In addition, a keyword network analysis and an overlay analysis were presented in order to dekeywordsine the most significant research domains as well as the most common keyword themes. This was done in order to provide clarity. With the aid of the VOS Viewer program, we were able to do a network analysis of the connections that existed between the article's keywords. The results are given in the form of a network graph, which is comprised of nodes, such as the keywords, and network lines that link those nodes to one another and have a relation. The nodes are connected to one another by network linesThe frequency with which a keywords or set of keywords occurs in the search results will cause the size of a node to grow in direct proportion to that frequency. The closeness of the ties that exist between keywords is illustrated graphically by a line that represents a common keyword quote, and the overlay of the network demonstrates the degree to which these connections exist. It is possible to be in close proximity to the nodes at any given time since the closeness or distance between nodes dictates how frequently they are joined. This is due to the fact that the aforementioned elements have an effect on the frequency with which they are connected. The color of the nodes that surround a node has a high association density. It is used to differentiate between the nodes by using the colors and create clusters. After that, an overlay analysis was carried out between the primary research with its newest publication interest. It makes it possible for the researchers to dekeywordsine the study themes that are now on the most recent research issue.

RESULTS AND DISCUSSION

After all the stage process is completed, a bibliometric analysis will perform to obtain a research result. (Merigó & Yang, 2017) shown that the capacity to get an overall view of a certain subject of study is where the usefulness of bibliometric analysis originates. The study of the use of numerous methodologies to dekeywordsine qualitative and quantitative changes in the topic of scientific inquiry is known as bibliometrics analysis. The concept of bibliometrics encompasses a wide range of activities, including the creation of a publishing profile for a certain topic, as well as the analysis of structural and trend features of research conducted within a given field (Systems et al., 1986). The bibliometric approach may be subdivided into two different subfields: performance analysis and scientific chart mapping, which is also known as bibliometric mapping. Both of these keywordss refer to different aspects of the method. The procedure starts out with an analysis of the performance from the preceding period (Noyons et al., 1999).

Publication Trends

After reviewing the qualifications for inclusion and exclusion criteria, the following 655 article type of documents are used and analyzed in this study. As seen in Picture 2, research on purchase intention in e-commerce was first published in 2001 by Salisbury, W.D., et al in Industrial Management & Data Systems. In the first ten years of publication, It is clear that there has been some expansion, albeit there have only been 116 publications published thus far. Beginning somewhere around the year 2009, there was a discernible increase in the total number of publications on this subject. As a direct consequence of this outcome, the trend of the publishing in buy intention has been continuously growing from one year to the next. 2017 marked the beginning of the first big surge, which happened at a time when both the internet and e-commerce were seeing rapid expansion (Giddings, 1997). It demonstrates that the publishing rate has continued to rise up to the present year in 2022 with a total of 112 articles, as shown by the fact that there are.



Picture 2. Purchase Intention in e-commerce Publication Trends

Countries' Contribution to Purchase Intention in e-commerce Research

Based on the result of the data, there are 67 countries identified. It is separated into two categories developed and developing countries who have published research related to purchase intention in e-commerce is identified. According to the findings, China and United Stated have the most contribution to the publications with the number of 160 (China) and 146 (US). However, Asian countries such as Taiwan, South Korea, India, Indonesia and Malaysia also have significant contribution that become the most of the top ten countries. Following number are the total of countries' contribution to the publication Taiwan (68 articles), South Korea (54 articles), India (51 articles), Indonesia (38 articles), Malaysia (35 articles), Spain (34 articles), and United Kingdom (32 articles) as can be seen in Picture 3.

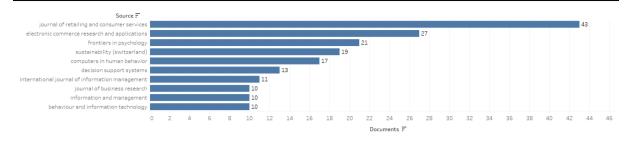


Picture 3. Top 10 Countries Publication

Journal Contribution to Purchase Intention in e-commerce

Articles about purchase intention in e-commerce are published in a variety of journals, one of it is the Journal of Retailing and customer services. Because of the rapid expansion of this subject, scholars now have access to a vast array of academic materials, including specialized publications to the proliferation of the field. Besides, theoretical frameworks in the field of purchase intention and e-commerce are increasingly being employed to explain particular phenomena (Peña-García et al., 2020). As a direct consequence of this, publications pertaining to this topic are published in a variety of journals in order to provide an explanation for the phenomenon that is found in their research. Picture 4 illustrates the 10 journals that have made the most significant contributions to these fields and have had the most significant influence. It is possible to employ it in the process of classifying journals and the papers they include. In this investigation, the data from the journals are ranked from one to ten according to the amount of contribution each one made.

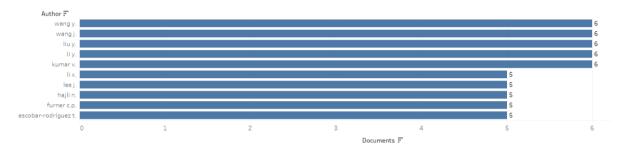
It was discovered that there are 655 papers published in different publications that are linked to the topic. The journal that has the most articles published is the "Journal of retailing and customer services," which has published 43 articles. This is followed by "Electronic commerce research and application," which has published 27 articles, "Frontiers in psychology," which has published 21 articles, "Sustainability (Switzerland)," which has published 19 articles, "Computers in human behavior," which has published 17 articles, "decision support system," which has published 13 articles, and "International Journal of information management," which It is possible to assert that the Journal of retailing and customer services is the publication that has the most papers that contribute to the field, and this may represent the author's choice of journal in which to publish their article.



Picture 4. Top 10 Journal in Purchase Intention in e-commerce

Authors' Contribution to Purchase Intention in e-commerce

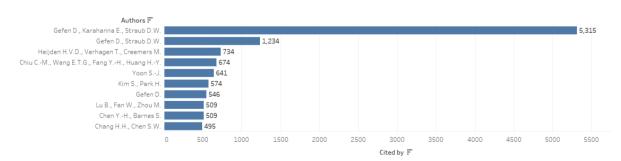
An analysis into the field of purchase intention in e-commerce research found that Wang Y., Wang J., Liu Y., and Li Y are the most contributive authors in this publication with the total number of six articles. The year publication of the analysis is limited to scholarly publications which published between 2022 and 2022 that addressed issues concerning on the customers' purchase intention in e-commerce. According to the result data, there are significant number between the writers in keywordss of the quantity of documents that they have published.



Picture 5. Top 10 Authors Publish on Purchase Intention in e-commerce

The Most Cited Authors in Purchase Intention in e-commerce Research

Throughout the years of publication study, a variety of publications have published a number of notable studies on the subject of using purchase intention in e-commerce. Publications may be categorized based on the total number of citations that they have received. It is one of the ways that can be used to identify the contribution of the authors (Merigó et al., 2015), which is used as the method of previous study. It is considered that the total number of citations of an article paper receive, reflects the level of influence, productivity, and contribution from the scientific community. Based on the result on the Scopus database, it can be discovered that the most cited authors in the study field of purchase intention in e-commerce as informed bellows:



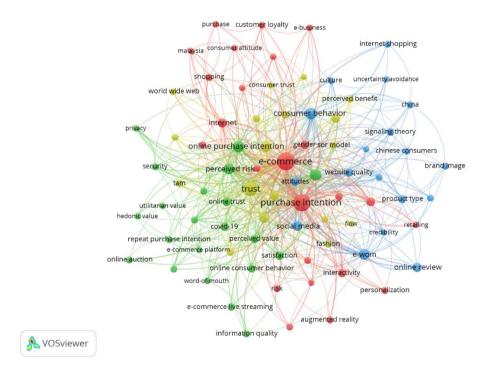
Picture 6. Top 10 Authors' Citations on Purchase Intention in e-commerce Publications

In additions, among the 655 articles discovered in this study; Gefen D., Karahanna. E, Straub D. W., is considered as the most notable author with the total number of citations 5.315. Followed by the second author Gefen D., Straub D. W., with the total number of citations 1.234 which is quite far from the highest author. Along with the third author who is Heijden H.V.D., Verhagen T., Creemers

M., that have 734 citations in this field. After that, Chiu C. M., Wang E.T.G., Fang Y. H., Huang H.Y., (674 citations), Yoon S. J., (152 citations), Kim S., Park H., (574 citations), Gefen D. (546 citations), Lu B., Fan., Zhou M., (509 citations), Chen Y. H., Barnes S., (509 citations), and the last author in the top 10 position is Chang H.H., Chen S.W., with total number of 495 citations. All the information regarding to the total number of citations are represented in Picture 6.

The Most Used Keywords in Studies

This study is trying to present the analysis of the most used keywords distribution in the publication. The utilization of VOS Viewer is used to get an interactive co-occurrence map. The result presents that there are top 5 keywords in purchase intention in e-commerce publications. Additionally, a keyword for overlay visualization map also obtained and will be described in this section. Additional help for scientific research may be obtained through the use of co-occurrence keywords, which can effectively indicate research hotspots in a certain subject area (Shi & Liu, 2019). This approach is a method that is frequently used to evaluate the significance of publications by analyzing the connections that exist between citations or between keywords that appear in such articles (Hsiao & Chen, 2020). The use of VOS viewer software in this study is very important because it generates the co-occurrence network—of purchase intention in e-commerce as can be seen in Picture 6. After inputting the meta data of the keywords analysis, it obtained a total of 1744 keywords for all 655 publications that were related to purchase intention in e-commerce. From 1744 keywords appeared, it meets 81 thresholds for the minimum number of 5 occurrence of a keyword. It displayed in the following image bellows:



Picture 7. Network Visualization of Keywords

The sizes of the nodes and the keywords that are displayed in the picture serve as visual representations of the nodes' respective weights. The size of the knot is directly proportional to the weight, and the length of the word is also directly proportionate to the weight (Alfonzo et al., 2014). The link between the two nodes explains the significance of the keywords in regard to their physical distance from one another. It may be deduced from the ties that exist at shorter distances that such connections are more likely to be stronger. It is clear by looking at the picture that there is a connection between the two keywordss, which indicates that they were first used in tandem. When a line is more substantial, there is an increased possibility that it may be found in a cluster. (Hernández-Torrano & Ibrayeva, 2020). A cluster is constructed from nodes of the same color as one another. VOS viewer

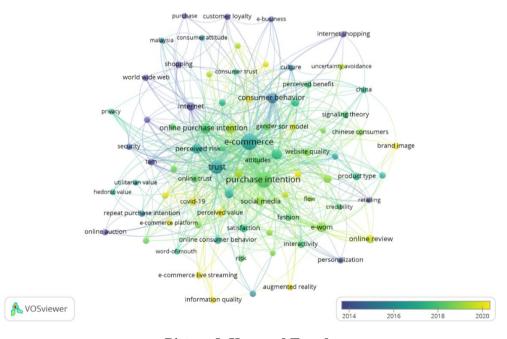
categorizes the published keywords associated with purchase intention in e-commerce into nine distinct groups or clusters.

The keyword "e-commerce" is the most frequently used, with 258 occurrences. The second position that appeared frequently is "purchase intention" (227 times), trust (113 times), customer behavior (53 times), online shopping (52 times), online purchase intention (46 times), e-wom (40 times), perceived risk (39 times), social commerce (29 times) and social media (28 times) that is represented in Table 3. Those ten most influential keywords are described in the subject of this study. Furthermore, e-commerce and purchase intention are having the highest level of occurrence frequency in this study. The strength link between those two nodes is represented in the co-occurrence visualization in VOS Viewer.

Trends Keywords in Studies

VOS Viewer performs an analysis on the keyword that appear most frequently throughout the publishing year. It is plain to observe that the trend of the keywords throughout the course of the period 2001-2022 was evaluated. The hue of each node is an indication of the typical number of publications that have been linked to the keywords connected with that node over the years (Tang et al., 2017). The nodes that are depicted by the color blue are those that correspond to the keywords that were used the most often at the beginning of our study period. Meanwhile, there are also a greater number of yellow nodes, which correlate to keywords that have been used more lately in a publication. By categorizing the keywords that are used the most frequently, it is able to dekeywordsine which subjects are discussed the most and which are not.

Referring to Picture 8, several keywords considered as a newer area of research in the field of purchase intention in e-commerce. Those keywords are online review, brand image, covid-19, e-commers live streaming, e-commerce platform, information quality and perceive value that has been uncovered by doing an analysis on the high-frequency keywords used in publications published between 2014 and 2020 as the most current publication dates. It is plausible to deduce that there is not yet a general understanding of buy intention in e-commerce, which presently overlaps with aspects associated to e-commerce keywords. This assumption is supported by the themes that have been discussed before.



Picture 8. Keyword Trends

CONCLUSION

An analysis of purchase intention in e-commerce bibliometric methods indicated the emergence of worldwide research trends throughout the years of this study. The keywords are used to get the articles from the Scopus database is considered to be the most relevant. In total, 655 documents were obtained related to this discussion topic. In 2001 it is marked as the beginning of the first production of purchase intention publications. Subsequently, in 2017 there is a significant growth in the number of these publications compared to the previous years. Based on the results obtained in this study, China and United States have the most contribution to the publications followed by the other Asian countries such as Taiwan, South Korea, India, Indonesia and Malaysia which also have significant contribution that considered as the most of the top ten productive countries. These nations have produced the most articles that have been published anywhere in the globe. Several publishers already publish articles on purchase intention in e-commerce on a continuous basis, with the "Journal of retailing and customer services" being the most active journal in this topic of retailing and customer services. According to the analysis of cited paper in all over the world, there is a widely cited papers conducted by Gefen D., Karahanna. E, Straub D. W. It is considered as the most notable author with the total number of citations 5.315. In addition, five authors have published six documents that have the same number with the other top five authors. Thus, it is considered as the influential authors in this study.

In addition, the author's study of the keywords revealed nine different clusters. It is showing that there are nine different groupings of keywords that are connected to one another. The color associated with each cluster served as a visual representation of the cluster such as, the keywords "e-commerce) "purchase intention", "times", "trust"," customer behavior", "online shopping", "online purchase intention", "e-wom", "perceived risk", "social commerce", "social media" and "e-commerce". The findings of this study are having a relevant implication to the global purchase intention and e-commerce. It can be used as a guidance for future research in accordance to the most relevant keywords areas at any time. Lastly, it can be concluded that these findings can give contribution and assistance to academics, business owners, and researchers to discover relevant information about purchase intention in e-commerce as the research.

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