

A Bibliometric Study of E-commerce Reputation

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Abstract

Purpose: This study aims to investigate an overview of the reputation of e-commerce from 2001-2021. **Research design, data and methodology:** This study uses a bibliometrics technique involving published results from the Scopus database. Keyword tracking uses the terms e-commerce + reputation. The data collected meets the criteria for the type of journal publication. Data was collected using the Publish or Perish (PoP) program and exported into VOSviewer. Bibliometrics examines certain fields of science based on several components such as author and co-author, citation and co-citation, keywords related to theme mapping, origin, and source of publication. Data was collected using the Publish or Perish (PoP) program and exported into VOSviewer. **Results:** The results show the total citations from 118 papers are 1429, with citations per paper of 12.11 and citations per year of 68.05. The trend of publications from 2001-2021 shows the dynamics of increasing or decreasing, but this trend is still developing. **Conclusions:** This paper also presents articles that have contributed greatly to the study of e-commerce reputation, the most productive authors, and clustered themes regarding e-commerce reputation. Reputation is an important area of e-commerce research. Reputation is also essential factors for e-commerce in facing business competition and needs to be a consideration for digital business practitioners.

Keywords: Image, Trust, Marketplace, Online Business, Digital Business

JEL Classification Code: M10, M31, M39

1. Introduction

The development of e-commerce as a competitive advantage in organizations cannot be separated from the increased usability of information and communication technology (ICT). The application of e-commerce as an alternative business option provides more profit than traditional channels (Villa, Ruiz, Valencia, & Picón, 2018).

This growth followed the number of companies using the internet to support corporate business transactions with consumers and business to business (Agag, 2019). E-commerce has developed from time to time and is used by companies as a communication channel in establishing relationships with customers (Hu, 2016). E-commerce, in practice, is often used as a tool to reduce economic disparities between countries (Villa et al., 2018) and as a source of competitive advantage offered to sellers and buyers, especially in developing countries (Duran & Grandon, 2006).

Regarding its development, e-commerce is still in the spotlight and is experiencing debate related to ethical issues (Harris, Coles, & Davies, 2003) and its impact on trust (Mumu, Saona, Mamun, & Azad, 2021). E-commerce is a business opportunity vulnerable to violations such as security and privacy issues (Stead & Gilbert, 2001). The

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more open use of the internet has led to consumer trust problems. The lack of regulations related to e-commerce has led to problems such as intellectual property rights, investment, and consumer rights (Maury & Kleiner, 2002). Harris et al. (2003) revealed several problems related to developing ethics, such as privacy, security, authenticity, consumer rights, data protection. Ethical issues in e-commerce have consequences for consumer trust (Sharma & Lijuan, 2014). The security aspect in transactions is an important part of consumer trust that determines the success of e-commerce (Mumu et al., 2021). Associated with efforts to deal with the crisis of consumer confidence, reputation is important in maintaining or increasing consumer trust (Ba & Pavlov, 2002). Some statements such as "I trust you because of your good reputation" and "I trust you despite your bad reputation" (Wu, Li, & Kuo, 2011) are a form of reputation's role as a major component in building trust. The reputation system is important for e-markets because they play a role in helping consumers make decisions (Fouliras, 2011). The reputation system has a strong relationship with consumer trust, which ultimately consequences the purchasing decision process (Najafi, Kamyar, Kamyar, & Tahmassebpour, 2017). The reputation of the online market is also believed to increase company profitability (Xu, Liu, Wang & Stavrou, 2015).

Several studies have proven the importance of reputation in online transactions, such as Chen, Zheng, Xu, Liu, & Wang (2018) and Thompson and Haynes (2017). Mohamed, Azizan, & Jali (2013) and Tadelis (2016) stated that the reputation system also contributes to building and forming a trust. The e-commerce system makes it difficult for consumers to evaluate products directly and depends on the seller's reliability and accuracy (Melnik & Alm, 2002). This limitation causes a risk that consumers must consider in making a purchase. One thing that consumers consider in reducing risk is reputation, such as evaluating negative or positive feedback (Josang, 2007). E-commerce reputation is an important thing that is useful for each marketplace's competitiveness because it has a role as the main component for consumers in making purchasing decisions. Reputation has benefits in overcoming information inefficiency for consumers in online markets (Bertarelli, 2015). The reputation of e-commerce can foster consumer trust and create convenience for consumers in the buying process (Wei, Yu, & Chen, 2017).

The importance of a study on e-commerce reputation is needed to provide a comprehensive overview of the research discussion on this topic. Research on bibliometric e-commerce has been conducted by Villa et al. (2018) with a different perspective, namely the factors of e-commerce adoption, and has not discussed the reputation of e-commerce and development. The current study uses bibliometrics to identify reputation aspects in e-commerce

and its development. The results of this investigation are expected to provide a broad and clear picture of e-commerce from a reputational point of view based on previous studies. This description is expected to provide direction and future research opportunities for e-commerce researchers and business people in making policies regarding strategies and tactics to build e-commerce reputation.

2. Methods

The study in this paper uses bibliometrics techniques to identify ethical problems in e-commerce and their developments. Bibliometrics is a technique used to investigate trends in the development of science in certain fields using publication sources such as books, journals, book chapters, and proceedings. This analysis is specifically used to investigate scientific reference sources cited in a journal, map the scientific field of a journal, and classify scientific articles according to a research field. Bibliometrics examines certain fields of science based on several components such as author and co-author, citation and co-citation, keywords related to theme mapping, origin, and source of publication.

Bibliometrics analysis includes co-authorship analysis used to find relationships between various studies based on research documents produced by researchers. The co-authorship network is a tool to uncover the direction of collaboration and identify researchers and institutions leading research (e Fonseca, Sampaio, de Araújo Fonseca, & Zieker, 2016). Co-authorship network analysis can help address this, substantially contributing to academic development (Morel, Serruya, Penna, & Guimarães, 2009). Co-occurrence analysis reveals the research topic statistically through counting paired data in the collection unit. This method plays an important role in identifying the value of academic discipline (Buzydlowski, 2015; Chen, Chen, Wu, Xie, & Li, 2016). Bibliographic coupling analysis is a method for grouping technical and scientific documents, facilitating scientific information and document retrieval (Jarneving, 2007). Co-citation analysis is useful for mapping the specialization of research subjects, and the single-link cluster method is applied for grouping co-cited articles. Co-citation clustering only reveals a portion of the literature relevant to the research topic identified from the cited literature. The inter-cluster linkages correspond to cognitive relationships at a higher level than research specialization (Jarneving, 2007).

Data on e-commerce reputation is collected through the Scopus database. Scopus is recognized as a reputable and quality publication source (Hou & Li, 2014) in the field of social and quantitative analysis (Donthu et al., 2020).

Keyword tracking uses the terms "e-commerce + reputation". The data collected meets the criteria for the type of journal publication. Data was collected using the Publish or Perish (PoP) program and exported into VOSviewer. Bibliometrics analysis includes a citation and co-citation, bibliographical coupling, and keyword co-occurrence.

3. Results

3.1. Publication Trend

The data collected through the Scopus database using Publish or Perish (PoP) were 119 papers with 51 articles, one review, and 67 proceedings/conference papers. The data collected was then checked for completeness from author data to abstracts, and 118 complete papers were found. The tracked years ranged from 2001-2021, with 68.05 citations per year. The total citations from 118 papers were 1429, with citations per paper of 12.11. The development of the number of publications and citations related to the theme from 2001 to 2021 is presented in the following table:

Table 1: Trends of Publication 2001-2021

No	Year	Publications	Citations
1	2001	2	256
2	2003	1	315
3	2005	2	23
4	2007	5	179
5	2008	8	124
6	2009	4	20
7	2010	12	45
8	2011	11	70
9	2012	8	17
10	2013	6	30
11	2014	8	24
12	2015	10	119
13	2016	7	92
14	2017	6	43
15	2018	3	29
16	2019	8	23
17	2020	9	12
18	2021	8	8

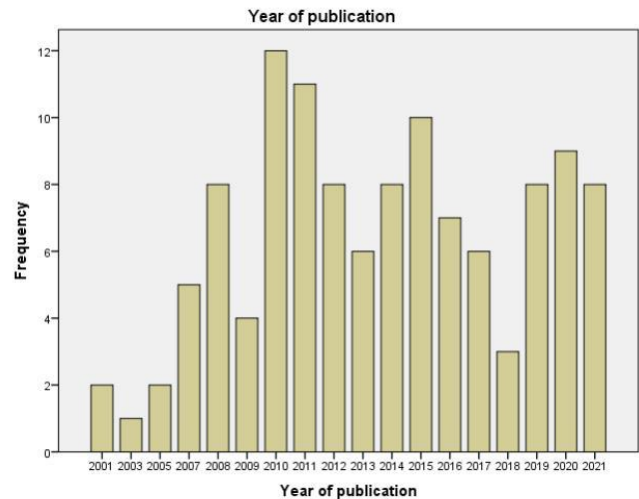


Figure 1: Publication Trends

The number of publications data is taken from the Scopus database with the keywords reputation + e-commerce or reputation + electronic commerce. Based on table 1 and figure 1, it can be seen that the trend of publications regarding e-commerce reputation has dynamically increased from 2001 to 2021. The highest number of article publications in 2010 was 12 papers despite experiencing a vacuum in 2002, 2004, 2006. The highest citations were in 2013. The development of e-commerce discussions was also caused by the pandemic condition (Gecit, 2021).

3.2. Most Cited Publication

Documented data shows the contribution of each publication source for citation. The articles with the most citations are shown in Table 2.

Table 2: Most Cited Paper

Rank	Paper	Sources	Year	Citations
1	A reputation-based trust model for peer-to-peer e-commerce communities	Proceedings - IEEE International Conference on E-Commerce, CEC 2003	2003	315
2	Reputation and e-commerce: EBay auctions and the asymmetrical impact of positive and negative ratings	Journal of Management	2001	240
3	Seeing is believing: The transitory influence of reputation information on E-Commerce trust and decision making: Research Note	Decision Sciences	2007	89
4	Reputation-oriented trustworthy computing in e-commerce	IEEE Internet Computing	2008	87

	environments			
5	Reputation-based trust mechanism for P2P e-commerce systems	Ruan Jian Xue Bao/Journal of Software	2007	81
6	Hidden semi-Markov model-based reputation management system for online to offline (O2O) e-commerce markets	Decision Support Systems	2015	56
7	E-commerce reputation manipulation: The emergence of reputation-escalation-As-A-service	WWW 2015 - Proceedings of the 24th International Conference on World Wide Web	2015	40
8	Reputation premium and reputation management: Evidence from the largest e-commerce platform in China	International Journal of Industrial Organization	2016	37
9	An interval type-2 fuzzy logic based framework for reputation management in Peer-to-Peer e-commerce	Information Sciences	2016	31
10	Reputation evaluation for choosing a trustworthy counterparty in C2C e-commerce	Electronic Commerce Research and Applications	2011	31

Based on the search results for the number of publication citations summarized in table 2, it can be seen that the article entitled "A reputation-based trust model for peer-to-peer e-commerce communities" published in 2003 with the highest number of citations amounted to 315. This article was published in Proceedings-IEEE International Conference on E-Commerce, CEC 2003, written by Xiong, L and Liu, L. The paper with the second-highest number of citations is entitled "Reputation and e-commerce: eBay auctions and the asymmetrical impact of positive and negative ratings " which was published in 2001 with 240 citations. This article was written by Standifird, SS published in the Journal of Management published by SAGE Publications Inc. The next paper with the third highest number of citations is entitled "Seeing is believing: The transitory influence of reputation information on E-Commerce trust and decision making: Research Note" which was published in Decision Sciences in 2007 with a total of 89 citations. This article was written by Fuller, MA, Serva, MA, and Benamati, J, published by Wiley-Blackwell Publishing Ltd. Articles that have many citations can be used as references in discussing topics that researchers want to explore in more depth.

3.3. Most Productive Authors

A productive author is an author who produces many publications in this field and has published citations of

articles. The following is a list of authors and their affiliates classified as productive in reviewing the theme of e-commerce reputation, presented in Table 3.

Table 3: Productive Authors

Rank	Author	Affiliation	Document	Citation	Link strength
1	Gutowska, A	University of Wolverhampton, U.K.	6	51	0
2	Li, Y	Huazhong University of Science & Technology, Wuhan, China	5	24	4
3	Lui, J C S	The Chinese University of Hong Kong, Hong Kong, China	5	21	7
4	Xie, H	The Chinese University of Hong Kong, Hong Kong, China	5	21	7
5	Rahimi, H	Northumbria University, U.K.	4	15	0
6	Li, J	Chongqing University, China	4	8	0

Based on the author's search, the most prolific in writing about e-commerce reputation is Gutowska, A affiliated with the University of Wolverhampton, U.K. with 6 documents citing 51. The next author who published five documents was Li, Y from Huazhong University of Science & Technology, Wuhan, China, with citations of 4. Lui, JCS from The Chinese University of Hong Kong, Hong Kong, China with citations of 24 and Xie, H from The Chinese University of Hong Kong, Hong Kong, China with citations of 21. Authors who have a total of 4 documents are Rahimi, H, who is affiliated with Northumbria University, UK, with citations of 15, and Li, J from Chongqing University, China, with eight citations. Regarding the collaboration between authors is presented in figure 2.

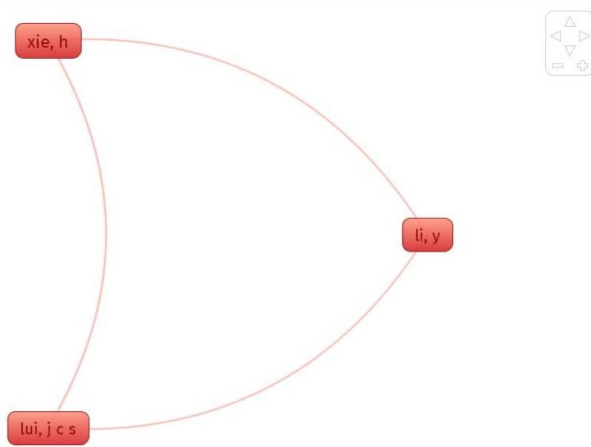


Figure 2: Co-authorship Network

Based on figure 2, the results of the mapping of the co-authorship network can be identified that the authors who have the most collaboration networks are Xie, H which is affiliated with Chongqing University, Shazhengjie, Shapingba, Chongqing, China with Lui, JCS which is affiliated with The Chinese University of Hong Kong, SAR. The total link strength between Xie, H, and Lui, JCS is 7. Xie, H has joint publications with Lui, JCS entitled "Enhancing Reputation via Price Discounts in E-Commerce Systems: A Data-Driven Approach" and "Trading Discount for Reputation". ? On the Design and Analysis of E-Commerce Discount Mechanisms". Xie, H, and Lui, JCS has a joint publication with Li, Y, affiliated with the University of Science and Technology of China, Hefei, Anhui, China. Li, Y has a link strength of 4 with other authors.

3.4. Theme Co-occurrence Network

Co-occurrence network theme analysis shows the relationship between the main and special themes. There are 12 theme sections that are searched through VOSviewer and grouped into 3 clusters. The results of the search for themes based on keywords and abstracts are presented in table 4 and visualized in figure 3.

Table 4: Keywords Related Publication

Rank	Keywords	Occurances	Total link strength
1	Reputation	93	1.05
2	E-commerce	78	0.89
3	Trust	59	1.00
4	Approach	46	1.19
5	Seller	36	1.39
6	Buyer	27	1.45
7	Effect	22	0.96
8	Algorithm	20	0.36

9	Data	19	1.02
10	Customer	17	0.67
11	Business	16	0.42
12	Service	15	0.68

Some of the keywords that came out during the search included reputation as the main theme with an occurrence of 93 and a total link strength of 1.05. The next keywords are e-commerce (occurance= 78, link strength= 0.89), trust (occurance= 59, link strength= 1.00), approach (occurance= 46, link strength= 1.19), seller (occurance= 36, link strength = 1.39), buyer (occurance= 27, link strength= 1.45), effect (occurance= 22, link strength= 0.96), algorithm (occurance= 20, link strength= 0.36), data (occurance= 19, link strength= 1.02), customer (occurance= 17, link strength= 0.67), business (occurance= 16, link strength= 0.42), and service (occurance= 15, link strength= 0.68). The results of the visualization of the relationship between themes based on the keywords that appear are visualized in figure 3.

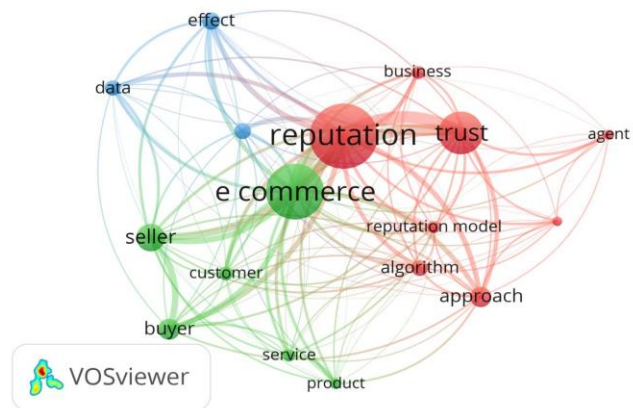


Figure 3: E-commerce Reputation Theme Network

Based on the visualization analysis using VOSviewer, it is known that there are three clusters grouped based on the linkages in the form of red, green, and blue. The first cluster discusses the main theme of reputation, directly related to trust. This cluster connects several themes regarding the approach used to increase the reputation and trust of consumers. The use of algorithms is used to study and develop a routing model of e-commerce. Trust and reputation are applied in business. A possible opportunity for further research in this cluster is the agents used in building trust and reputation in e-commerce. The next cluster concerns the main theme of e-commerce that is closely related to sellers. Reputation is an important part that sellers who have direct relationships with buyers, customers, services, and products need to be built. The theme section that has the opportunity to be studied further

is e-commerce products that are related to e-commerce reputation. The third cluster tries to link data, effects, and analysis in building e-commerce reputation. The third cluster discusses research and data usage and its impact on e-commerce reputation. The three main themes that have been clustered have branches of discussion that can be considered for in-depth research.

4. Conclusion and Future Research

Bibliometric analysis is useful in tracing and mapping a particular field of study. The results of a bibliometric search provide an overview regarding the development of research, related publications from both authors who actively produce publications, and collaboration between authors. The search for interrelated themes provides information on the relationship between variables and opportunities for future research. Based on the results of the Scopus database investigation regarding e-commerce reputation, it can be concluded that the trend of themes regarding e-commerce reputation has changed from time to time from 2001 to 2021. Scopus index 118 complete papers from 2010-2021 with annual citations of 68.05. The total citations of the 118 papers were 1429, with citations per paper of 12.11.

The contribution of the e-commerce reputation article that received the largest citation was "A reputation-based trust model for peer-to-peer e-commerce communities," written by Xiong, L, and Liu, L. This article was published in the Proceedings-IEEE International Conference on E-Commerce in 2003, with citations of 315. Articles are the most widely referred to by other researchers and can be a good reference source in assessing the reputation of e-commerce. The most productive author who studied the theme of e-commerce reputation was Gutowska, A, which produced six documents with 51 citations. The author with the most collaboration network was Xie, H, affiliated with Chongqing University-China with Lui, JCS affiliated with The Chinese University of Hong Kong SAR.

Based on keyword analysis on frequently occurring themes, three clusters were formed in the discussion of e-commerce reputation covering the main theme of reputation, directly related to trust. Several themes related to the reputation approach use algorithms to review and develop the reputation model. The next cluster concerns the main theme of e-commerce which is connected between sellers, buyers, customers, services, and products. The last cluster connects data, effects, and analysis in building e-commerce reputation. Several specific themes can be used as research opportunities based on identifying keywords, including agents, products, and services related to e-commerce reputation. This study has limitations because it only discusses e-commerce reputation in general. The factors that are antecedents for e-commerce reputation

have not specifically been discussed in this article, so further research can focus on antecedent factors that play a role in e-commerce reputation. Based on bibliometric mapping, there are several research areas that can be used as references for further research, namely regarding agents who connect trust with e-commerce, developing reputation models and implementing e-commerce trust in services.

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