E-BUSINESS AND BUSINESS PERFORMANCE RELATIONSHIP: A SYSTEMATIC LITERATURE REVIEW AND BIBLIOMETRIC

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ABSTRACT

Purpose: *The purpose of this study is to assess the connection between e-business and business performance by employing a systematic literature review and bibliometric analysis. The study attempted to scientifically record the intellectual structure, volume, and knowledge-development tendencies.* ***Methods:*** *Data is collected from Scopus databases and analysed it using Microsoft Excel and VOS Viewer software. We created a vast database of 237 peer-reviewed publications published in the previous ten years based on a large amount of literature.* ***Analysis data:*** *To conduct this research, we used bibliometric analysis and the Preferred Reporting Items for Systematic Reviews (PRISMA).* ***Result and discussions:*** *According to preliminary data, there has been a significant rise in the number of publications on e-business and business performance published in the previous ten years, from 2012 to 2012, when compared to the entire time before 2012. The bibliometric study determines the most important journals, authors, and articles on the subject topic.* ***Conclusion:*** *This research shows that by combining the most important aspects of e-business and business performance into one concept, such as "e-business performance," a new research topic can emerge, offering new research opportunities in both the vast area of e-business and the new and current field of business or company performance.*

Keywords: *E-commerce, e-business, and business performance, systematic review.*

INTRODUCTION

E-business is defined as any process carried out by a business organisation using computer-mediated network channels (Atrostic et al., 2000). Meanwhile, e-commerce has become increasingly important in our daily lives. It is reshaping global business and commercial activity. E-business and e-commerce have changed dramatically over the years (Ibem et al., 2021). When discussing this, some individuals use the phrases "e-business" and "e-commerce" interchangeably, however, the concepts are not interchangeable. In a nutshell, e-commerce refers to online buying and selling, whereas e-business encompasses all online transactions (Jovanovic et al., 2020). The "e" stands for "electronic networks" in both cases and refers to the use of electronic network technologies to improve and alter business processes, such as the internet and electronic data exchange (EDI) (Bartels, 2000). In contrast, e-commerce and e-business encompass these operations in addition to a technical infrastructure comprising databases, application servers, security tools, systems management, and legacy systems (Wigand, 1997). In addition, the e-business strategy is more sophisticated, with an emphasis on internal processes and a focus on cost reductions as well as greater efficiency, productivity, and cost savings (Jain et al., 2016)

In light of the tremendous expansion of e-business and e-commerce, it is anticipated that retail e-commerce sales would reach roughly $4,9 trillion by 2021. This number is anticipated to climb by 50% over the next four years, reaching nearly $7,4 trillion by 2025 (Chevalier, 2022). When it comes to the current state of business, one of the determining factors of a company's

performance is e-business. It encompasses new business models as well as the possibility of gaining new revenue or losing some existing revenue to new competitors (Malhotra, 2014; Onyemaechi, 2019). As the e-commerce industry expands, retailers grapple with new technologies and attempt to overcome challenges. The introduction of new technologies, software, and applications, such as augmented reality and IoT (Internet of Things) commerce, has created new challenges and considerations for the performance of e-commerce businesses (Jain et al., 2016; Wright et al., 2000). Besides, because e-commerce conversion margins are razor-thin, getting appropriate traffic to your site is critical. Furthermore, as a result of the e-commerce growth, competition is tough, order fulfilment can be overwhelming, and your return policy is crucial (Cherian & Aravindh Kumaran, 2016; Malhotra, 2014). This advancement makes e-business and e-commerce research extremely beneficial for identifying current trends and challenges that can impact business performance. Several previous research has demonstrated the link between e-business and performance (Jovanovic et al., 2020; Onyemaechi, 2019; Sobihah et al., 2013). However, it is still debatable because the key challenge is determining how to assess the direct impact of such investments in E-commerce (Sobihah et al., 2013). Recognizing the significance of this issue, this study seeks to review and assess previous studies that directly address e-business/e-commerce and business performance. Using a mix of bibliometric, text-mining, and visualisation techniques, the following research questions (RQ) are utilised to show the review activities and process.

1. What is the volume of published articles on e-business and business performance topics?
2. What are the most influential journals, authors, and research papers in the field?
3. Which are the most addressed research keywords (topic) in the domain?

The paper is organised in such a way that it begins with a brief overview of the key definitions of the two concepts, e-business and business performance. The methods used in this investigation, including data collection, extraction, and analysis, are described in the next section of the paper. The research findings are presented in the next section of the article. This paper summarises the study's findings with a discussion and conclusion section that highlights the study's primary findings and their implications, as well as the study's limitations and future directions.

THEORETICAL BASIS

The link between e-business and performance has been proven in several prior studies (Jovanovic et al., 2020; Onyemaechi, 2019; Sobihah et al., 2013). Overall, e-commerce provides traditional firms with an opportunity to increase market share while improving operational efficiency (Duch-Brown et al., 2017; Sobihah et al., 2013). However, it is still debatable because identifying how to quantify the significant effect of such investments in E-commerce is a major challenge (Jovanovic et al., 2020; Sobihah et al., 2013). The advancement of technology in business and commerce has resulted in a tremendous improvement in the business's performance. In addition, lower fixed costs for establishing and sustaining E-commerce, as well as a greater degree of improvement in unit transaction efficiency, enable businesses to achieve efficiency and cost-effectiveness (Feizollahi et al., 2014). As a result, the outputs, or major business results, of an organisation can be compared to the desired outputs to determine its performance (Sobihah & Lukman, 2015).

METHOD

Searching Strategy

A search strategy is a well-structured set of key terms that are used to search a

database. To obtain accurate and comprehensive results, the search strategy will incorporate the key concepts of the keyword search (Piccarozzi et al., 2021; Salameh et al., 2020). To conduct this research, we used bibliometric analysis and the Preferred Reporting Items for Systematic Reviews (PRISMA) (see Figure 1). This method is used because it provides a thorough examination of the knowledge accumulated over time (Carnahan et al., 2010; Visser et al., 2021). There are more than 50 million items in Elsevier's Scopus database, which includes more than 5,000 publishers (De Mauro et al., 2016). At the same time, our university purchased a subscription to the Scopus database. In general, review work is done using bibliometric methods such as selected papers in a database (such as Scopus), filtering, and refining bibliographic data. During this process, the VOSviewer software is used to visualise the data.

Inclusion and exclusion criteria

The search begins with a study of the titles and abstracts of all search results and a comparison to pre-determined criteria. All articles that have passed the selection process were then reviewed and summarized based on the volume of publication, the most influential journals & authors, the most addressed research topics, and the popular methods used in the field. We created a sufficient database of 237 peer-reviewed publications on e-business/ e-commerce and business performance published in the recent ten years (2012-2022) based on the huge volume of literature.

Table 1. Search criteria.

Scopus Category	Searching criteria.	No of article
Topic	"e-business AND e-commerce AND business performance"	1,264
Research years	2012–2022	511
Document type	Article	250
Language	English	242
Publication stage	Final	237

Extraction techniques

Data from 237 journal articles were exported in a file format that could be used by the application as indicated in Table 1. The initial downloaded database, on the other hand, was carefully examined and processed to increase the accuracy of the study findings. In this research, we chose Microsoft excel (.csv) and VOSviewer software for data analysis. VOSviewer is a free tool provided to bibliometric academic researchers, and unlike most computer programmes for bibliometric mapping, it focuses on the graphical display of bibliometric maps. The final Scopus database yields the most useful data when it comes to identifying an article's title, authors, keywords, and citation information, including all of an article's references.

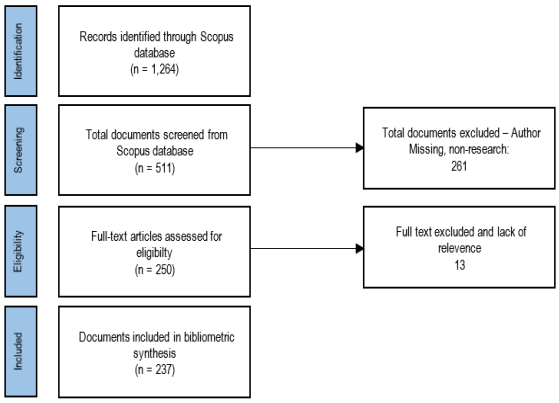


Figure 1. The PRISMA diagram that we used to find, screen, and select articles in our bibliometric review

Choice of synthesis method (Analysis)

Preliminary investigations involved performing descriptive analysis. We created a series of graphs in Excel to find a route associated with the evolution of published papers on e-commerce or e-business and business performance principles through time. Meanwhile, the bibliometric analysis approach was applied in the next phase. In this procedure, citations are utilised to identify the most important articles and researchers in a given field. Scholars' academic importance can be demonstrated using other metrics, such as the H-index, total citations, and citations per publication. In particular, the co-citation analysis can concentrate on journal co-citations, author co-citations, keyword co-citations, and so on, depending on the

intended output. Our sample database was accessed using the VOSviewer software, which allowed us to construct "network maps" based on the links between data from the articles.

RESULTS AND INTERPRETATIONS

1. What is the volume of e-business and business performance articles that have been published?

The number of publications published connected to the concepts of e-business and company performance has increased over time, as shown in Figure 2. The subject and scope of the study on e-business and business performance have received substantial attention from prior studies, according to the number of publications generated. The highest number of papers were published in 2015 (3166), followed by 2018 (1356) and 2020. (1287). However, in 2022, the number of publications falls to 352, a significant decline. This might be linked to the covid19 pandemic, which has been the subject of several investigations.

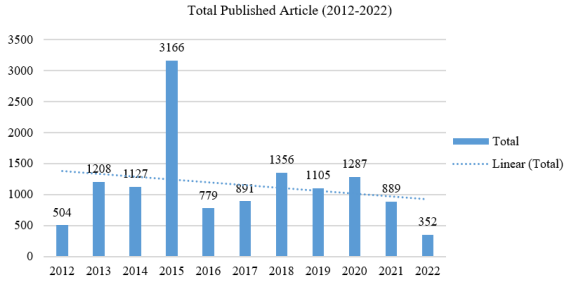


Figure 2. The published articles on e-business and business performance topics

2. Journals, authors, and research publications with the most influence in the field?

The next approach in this investigation is to examine how papers in the sample database are organised according to the journal in which they were published. Table 2 lists the top 15 journals by the number of papers published. Table 3 lists the top ten most cited publications by the author. We discovered that the 15 (out of 195) most highly cited journals publish 20.6 per cent of all articles in the sample database. We found 49 publications in the top 15 journals out of a total of 237. "Information Systems and e-business Management" published the most papers (5), followed by "Enterprise Information Systems" and "International Journal of Scientific and Technology Research," both of which published four articles. Information and Management (153) had the most citations out of the top 15 journals, followed by "Computers and Industrial Engineering (123)" and "Internet Research (94)." This shows that, when compared to journals in the discipline of business management, information technology journals dominate research on the subject of e-business and e-commerce. In addition, according to Table 3, the paper "E-business, organisational innovation, and company performance in manufacturing SMEs: an empirical study in Spain" by Soto-Acosta, P. (2016) has earned the most citations (168). This was closely followed by two additional researchers, F.T.S. Chan (2012) and L. Kang (2017), obtained a total of 98 and 84 citations, respectively.

Table 2. Top 15 Journals.

No.	Journal	Article No.	Total Citation
1	Information Systems and e-business Management	5	30
2	Enterprise Information Systems	4	76
3	International Journal of Scientific and Technology research	4	5
4	Internet Research	3	94
5	International Journal of Productivity and Performance Management	3	14
6	Industrial Management and Data Systems	3	54
7	Journal of Electronic Commerce in Organizations	3	19
8	Computers and Industrial Engineering	3	123
9	Enterprise Information Systems	3	76
10	Information and Management	3	153
11	Information Technology and Management	3	30
12	International Journal of Networking and Virtual Organizations	3	11
13	International Journal of Production Economics	3	80
14	International Journal of Production Research	3	53
15	Journal of Business Research	3	68

Table 3. Top 10 most cited papers by author.

Author(s)	Research Title	Total Citation
Soto-Acosta, P. (2016)	E-business, organizational innovation and firm performance in manufacturing SMEs: an empirical study in Spain.	168
Chan, F.T.S (2012)	An SEM-neural network approach for understanding determinants of inter-organizational system standard adoption and performances.	98
Kang, L (2017)	Remarkable advocates: An investigation of geographic distance and social capital for crowdfunding.	84
Wu, D (2015)		76

Weingarten, F (2013)	A fuzzy preference tree-based recommender system for personalized business-to-business e-services.	75
Zhou, K. Z (2014)	Investigating the impact of e-business applications on supply chain collaboration in the German automotive industry	70
Sharma, G (2015)	The evolving role of managerial ties and firm capabilities in an emerging economy: evidence from China	69
Kumar, R (2015)	The effects of online service quality of e-commerce Websites on user satisfaction.	66
Mazzarol T. (2015)	Critical success factors for the implementation of supply chain management in Indian small and medium enterprises and their impact on performance	55
Theodosiou M., Katsikea E. (2012)	SMEs' engagement with e-commerce, e-business and e-marketing. Antecedents and performance of electronic business adoption in the hotel industry	43

Further examination of the journal co-citation map is based on Figure 3. This study examines the relationship between a journal's citation frequency and its impact (Budler et al., 2021; Zupic & Čater, 2015). This connection is viewed as a key signal that explains the link, similarity, and frequency of citations (Piccarozzi et al., 2021). A total of 5342 sources were discovered in a sample of 237 articles, and a minimum number of source citations was set to 10, yielding a total of 153 journals. On the network map, analysis of joint citations of journals yielded six (6) clusters of various and coherent journal clusters. Cluster 4 (Management Science Journal) is the largest cluster, with 121 items. We can see a tightly grouped set of journals as important with a total citation of 91 and a total strength of 4015. MIS Quarterly (Cluster 1) got the most number of direct citations (231) and the highest number of links strength (10,352). Another notable publication is the Strategic Management Journal (Cluster 3), which has 205 direct citations and a total link strength of 11,078. The Journal of Business Research (Cluster 5) is another notable journal in the group, with 193 direct citations and a total link strength of 8106. "International Journal of Operation & Production Management" (Cluster 6) and "Sustainability" (Cluster 2) include 35 and 29 direct quotes, respectively, with a total link strength of 717 and 337.

Figure 3. The co-citation network analysis of journals (2012-2022)

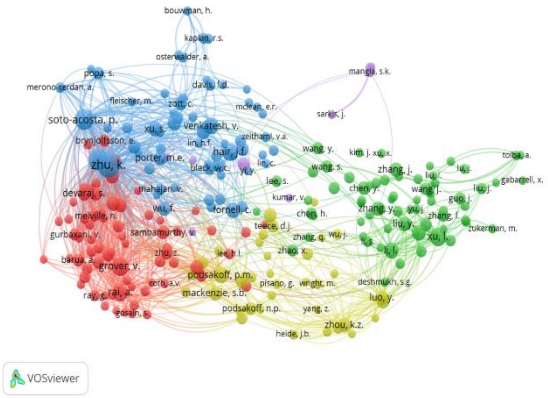


Figure 4. The author co-citation map (2012-2022)

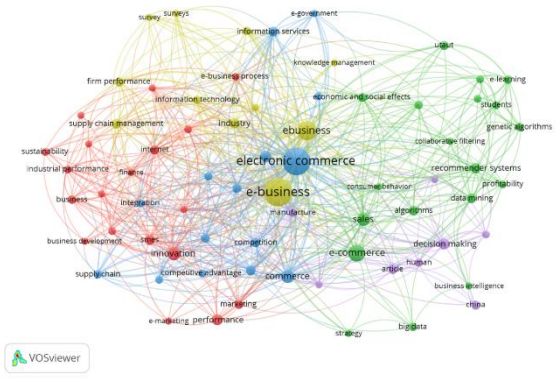
On a network map, author co-citation analysis divides authors into groups based on their co-citation similarities (Börner et al., 2003). The goal is to explain the citations' links, commonalities, and recurrence. Figure 4 shows a map of co-author citations based on 17364 authors, of whom 245 satisfied the condition of having at least 10 citations. The same guidelines used for the citation map and the journal were used for this interpretation. Based on Figure 4, five (5) main clusters were discovered in the citation map with the authors. The blue cluster is the largest, with 211 writers, including a well-known researcher named Zhu, K (2014) and Soto-Acosta, P. (2016). There are 4734 total links in this cluster, with 94 direct citations. Cluster Red has grown to become the second largest, with 199 authors. There are four (4) notable authors in this cluster. The four most prominent authors are Grover, V., Rai, A., Devaraj, S., and Zhao, J. In

comparison, Grover, V. has 48 direct citations with a total link strength of 2634. The third largest cluster is the green one. Xu, L., and Li, Y are the two most prominent authors with direct citations of 49 and 36 respectively. They both have total link strength of 1480 and 1116 respectively. The 4th and 5th clusters are represented by yellow and purple respectively. The yellow cluster has 28 direct citations with a total strength of 1161. While the purple cluster has 25 direct citations and a total strength of 838. The prominent authors of the two clusters are Zhou, K and Gunasekaran, A.

3. The most addressed research keywords in the domain?

The next step in the research was to conduct a keyword co-occurrence analysis, as shown in Figure 5. The keyword co-occurrence analysis also provides useful information about other popular subjects in the research field (Li & Chu, 2017). The goal of this study is to identify commonly investigated themes in the fields of e-commerce/e-business and business performance, as well as their relationships. When a term appears frequently in a document, it indicates that the concepts it represents are extremely tightly connected (Budler et al., 2021; Zupic & Čater, 2015). The co-word analysis' result is critical for identifying current trends and patterns in the discipline (Su & Lee, 2010).

Figure 5. The keyword co-occurrence network map (2012-2020)



The 955 keywords detected in the 237 publications in the sample database were used to create the keywords co-occurrence map. A minimum of four (4) instances of the keyword were required to be included in the results, and numerous 129 publications satisfied this requirement. Furthermore, along with the term, the major component depicted in the event map is the emergence of the keyword based on its popularity and progression through time (Börner et al., 2003). VOSviewer software divides the data into four clusters: Cluster 1 (Red), Cluster 2 (Green), Cluster 3 (Blue), and Cluster 4 (Green) (Yellow). The clusters that arise are all of the various sizes. With a link strength of 200 and an occurrence value of 60, Cluster 3 with keywords "Electronic commerce" is the largest. Cluster 4, which has 65 items, 166 link strength, and 65 occurrences, is the following cluster. Clusters 1 (red-"internet commerce") and 2 (green-"e-commerce") each comprise 22 and 25 items, with link strengths of 31 and 34, respectively. Cluster red, on the other hand, has a lower occurrence than cluster green (7 vs. 22).

The major goal of this study is to use a systematic review of 372 publications from the Scopus database to better understand the link between e-business or e-commerce and company performance. This research detects volumes, years, and intellectual structures based on selected publications, and gathers them continuously using bibliometric analysis. This study's findings are used to draw conclusions and recommend future research directions. The number of articles published between 2012 and 2022 is the first research question addressed in this study. According to preliminary statistics, the number of publications climbed dramatically from 2012 to 2015, reaching 3166. However, this figure dropped drastically in the years after Covid19 hit the world in the year 2019-2022, from 3166 in 2015 to 352 in 2022. These findings suggest that the covid19 pandemic has contributed to the decline in studies on issues related to e-business and business performance. However, several particular research has

been conducted that are extremely pertinent to e-business and the Covid-19 pandemic (Al-Omoush et al., 2020; Carter, 2020; Hasanat et al., 2020; Izzah et al., 2021; Raj S. & Gohain, 2021). In this setting, it is obvious that new aspects of the research have evolved, combining two concepts: "e-business" and "covid-19."

The second goal is to examine the most significant journals, authors, and research articles. The initial findings provided in the co-citation map indicate that many fields colour the articles and journals discovered in the Scopus database analysed, as evidenced by the study of journal citations and co-citations. Several prominent journals on the subject of e-business or e-commerce have been identified as a result of this research. The highest overall link strength is found in MIS Quarterly, The Strategic Management Journal, and the Journal of Business Research. This research also discovered that e-business articles are also published in two key areas: science and management. Journals in the field of science, on the other hand, have a greater influence based on the highest number of citations. Internet Research, Computers and Industrial Engineering, and Information and Management are just a few of them. In general, these findings point to a possible publication venue for researchers working in this field. As the last point of reference for a prominent author and paper publishing, few major names (i.e. Table 3) have contributed to this topic when seen through the lens of a journal reference. Among them are Soto-Acosta, P. (2016) and his paper entitled "E-business, organizational innovation and firm performance in manufacturing SMEs: an empirical study in Spain". According to current trends, interdisciplinary journals continue to receive and accept articles in the fields of e-business and business performance (Bhatti et al., 2020; Lebrun et al., 2021; Verhoef et al., 2021). Even though the covid-19 epidemic has reduced the number of publications published, researchers continue to pay close attention to this discipline, particularly in the area of online purchasing (Carter, 2020; Hassan, 2021).

The third and final goal of this review is to look at keyword co-occurrence to see which keywords or themes are most common in the research field. We used keyword co-occurrence analysis to create a keyword co-occurrence map, which revealed four (4) unique clusters (see Figure 5). This study is significant since it gives information on prominent terms used by previous e-business studies (Jovanovic et al., 2020; Li & Chu, 2017). Furthermore, this analysis is necessary for identifying and comprehending research trends in this discipline (Börner et al., 2003; Su & Lee, 2010). The keywords co-occurrence map was created using the 955 keywords found in the 237 articles in the sample database. To be included in the findings, there had to be at least four (4) instances of the keyword, and 129 publications met this condition. In addition to the phrase, the emergence of the keyword based on its popularity and evolution through time is also displayed in the event map (Börner et al., 2003). This study implies that scholars' interests and emphasis have shifted during the last two decades. Furthermore, because more than 90% of e-commerce articles were written in the previous ten years, the connected keywords appeared significantly in our study of the entire period.

CONCLUSION

Based on the above discussion, we can conclude that a decade ago in the intellectual world through the scientific literature, there was a substantial association between two terms, namely e-business and business performance. Both of these keywords have aided in the advancement of writing and publishing in prestigious publications. Furthermore, despite the fact that the globe will be decimated by the covid-19 pandemic between 2019 and 2022, it has opened a new topic for research. According to

several recent research (OECD, 2020; UNCTAD, 2022), the pandemic's influence on digital transformation and e-commerce activities may aid in the business recovery process. At the same time, in practice, today's shoppers are IT literate, and an increasing number of individuals use internet-based apps in their everyday lives. Digitalization has altered purchasing behaviour while increasing sellers' technological capabilities and skills (Gonzales J., 2020). However, to develop a sustainable digital connection, logistics, and international trade, especially in the areas of digital products and services, governments and policymakers must take a proactive role in fostering a favourable environment.

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