Mapping the Landscape: A Comprehensive Bibliometric Analysis of Strategic Information Systems Research 1973-2023

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Abstract

Purpose: The purpose of this study is to conduct comprehensive and in-depth research in the field of strategic information systems using bibliometric analysis. This involves identifying publication trends, main authors, main institutional contributors, key contributing countries, main keywords, and research gaps within the field.

Methodology: The methodology employed bibliometric analysis tools, including VOSviewer, Biblioshiny, BiblioMagika and OpenRefine. Data were collected from the Scopus database based on research titles, then audited and cleaned using these tools, resulting in the inclusion of 408 publications in this study. Tables and analytical figures were then extracted from these publications using bibliometric analysis tools.

Results - This study accomplished its objectives through comprehensive bibliometric analysis, examining various aspects including publication trends, document types, source titles, languages, subject areas, keywords, geographical distribution, authorship, active institutions, and citations. The analysis uncovered the field of strategic information systems' significance since 1973, with a consistent stream of publications, including 16 in 2023, and an annual citation density of 231.90, highlighting its ongoing relevance. Importantly, this study serves as the first bibliometric paper that explicitly addresses strategic information systems, addressing a notable research gap. Furthermore, the analysis identified a need to bridge the gap between strategic information systems and related fields, such as supply chain management.

Limitations - This study exclusively utilized the Scopus database, allowing future researchers to explore similar research using alternative databases like Web of Science (WOS). Additionally, there is potential for further investigation into connecting the field of strategic information systems with other disciplines, and we encourage future researchers to explore this avenue.

Originality/Value - This study used high-quality data from Scopus and was rigorously audited through analytical tools and manual checks to ensure accurate results. It significantly enriches

the topic of strategic information systems. It is the first bibliometric paper that explicitly addresses strategic information systems, providing great value to researchers interested in this field.

Keywords: Strategic Information Systems, Information Systems, Bibliometric Analysis, Sis, Strategic.

Introduction

Strategic Information Systems (SIS) has been a topic of significant importance and interest to Information Systems (IS) professionals since the 1970s (Hoque et al., 2016). SIS are systems that contribute significantly to organizational decision-making (Akhgar et al., 2011). The concept of SIS was introduced, and numerous efforts were made to incorporate such systems to gain a competitive advantage (Chang & Hosseinian-Far, 2015). Strategic Information Systems (SIS) are essential for organizations as they contribute to decision-making, support the implementation of information technology, and align with business strategies. SIS aligns information systems development with business goals, emphasizing the construction of appropriate information systems to support strategic objectives (Issa-Salwe et al., 2010). The importance of SIS lies in its ability to support the implementation of information technology and systems for operational and strategic purposes, ultimately contributing to improved business performance (Chan et al., 2006). As businesses grapple with unprecedented challenges and opportunities presented by the digital transformation, the importance of SIS in driving strategic decision-making, enhancing operational efficiency, and fostering innovation has never been more pronounced.

Furthermore, aligning IS/IT plans with business strategies is essential for enhanced business performance, particularly in the face of environmental uncertainty, which increases the need for effective information processing and the importance of the firm's information systems (Melander et al., 2016). The sustainability of SIS is a critical consideration, with the choice of a strategic information system and the design of the introduction phase is crucial for future success (Maulani & Mubarok, 2020). Additionally, strategic planning for information systems is increasingly recognized as a critical component of corporate plans and an important focus area for good IT governance (Suroso et al., 2018). Evidently, the absence of information systems strategic planning can lead to difficulties in achieving organizational objectives.

In summary, Strategic Information Systems (SIS) are paramount to organizations as they enable informed decision-making, align IT with business strategies, and contribute to competitive advantage and improved performance. SIS helps organizations adapt to uncertainty and leverage technology effectively in an ever-changing business landscape. This study will comprehensively and meticulously examine the field of strategic information systems, aiming to identify the contributing factors and elements while pinpointing potential research gaps. The research will be structured into sections addressing the study's problem, research questions and objectives, previous studies, research methodology, bibliometric analysis tools, research results, discussion, and conclusion.

Significance and Utility of the Study

The significance of our study is multifaceted, offering substantial contributions to academia, industry practice, and policy formulation. By systematically mapping the intellectual landscape of SIS research, we not only identify prevailing research trends and gaps but also illuminate the path for future inquiries. This endeavor is particularly crucial as it provides a

solid foundation upon which both scholars and practitioners can build to advance the understanding and implementation of SIS in pursuit of sustainable competitive advantages. Moreover, the utility of our research extends beyond the academic realm. For industry practitioners, our findings offer valuable insights into the evolution of SIS strategies and their practical implications, enabling more informed strategic planning and investment decisions. Policymakers can also draw on our analysis to understand the role of SIS in driving technological innovation and economic competitiveness, guiding the formulation of policies that foster a conducive environment for digital transformation.

In addressing the critical need for a comprehensive bibliometric analysis within the field of SIS, our study fills a notable gap in the literature. Despite the abundant research on various aspects of SIS, a holistic examination of the field through the lens of bibliometric analysis has been conspicuously absent. This oversight not only hinders the synthesis of existing knowledge but also obscures the identification of emergent themes and research opportunities. By bridging this gap, our research offers a panoramic view of the SIS domain, highlighting its interdisciplinary nature and its intersection with contemporary issues such as digitalization, cybersecurity, and artificial intelligence. By delineating the contours of past and present research, we aim to illuminate pathways toward future innovation in strategic information systems. In doing so, our study not only enriches the academic discourse on SIS but also serves as a beacon for strategic decision-making in the digital age.

Problem Statement

The landscape of strategic information systems (SIS) has rapidly evolved due to technological advancements, globalization, and changing business paradigms, leading to a critical gap in understanding the current state of research within the field (Tripathi et al., 2021). This gap is characterized by a lack of comprehensive bibliometric analyses that systematically map and assess the intellectual structure, trends, and emerging themes in the strategic information systems literature. Understanding the evolution of SIS research is crucial for identifying influential theories, frameworks, and methodologies that have shaped the field, providing a foundation for future research (Suroso et al., 2018). Additionally, insights into the practical applications of SIS concepts can aid strategic decision-making in organizations, and a comprehensive understanding of the current state of SIS research can inform policy initiatives that promote innovation and competitiveness (Hammouri et al., 2015). Furthermore, the success of strategic information systems planning is a key area of interest, with studies focusing on evaluating the outcomes and effectiveness of the planning process (Hammouri et al., 2015). Understanding the factors and conditions that influence the utilization of strategic information systems is also crucial for enhancing organizational planning and decision-making (Aali et al., 2014; Janaputra et al., 2021) Despite the importance of strategic information systems, more bibliometric research is needed. When exploring various scientific databases and examining research that explicitly addressed the topic of strategic information systems, we noticed a clear gap in bibliometric studies, as no study uses bibliometric analysis in strategic information systems. Therefore, this bibliometric study is the first one that explicitly addresses the topic of strategic information systems and uses this analysis method.

This research aims to provide a comprehensive and current overview of the Strategic Information Systems (SIS) research landscape, filling a gap in the field of bibliometric studies. The study seeks to offer valuable insights to researchers, practitioners, and policymakers by examining SIS from various angles. It intends to uncover publication trends, key contributors, influential institutions, global research activity variations, prevalent themes, emerging topics,

and gaps within the SIS domain. Ultimately, this analysis aims to enhance understanding of the field's evolution, guide decision-making, and inform future research directions, addressing the critical need for more comprehensive research in the SIS field. The objectives of this study were distinguished by their comprehensiveness and diversity to enrich the field of strategic information systems. Achieving the objectives of our research requires answering the following research questions:

- What patterns can be observed in the publication trends within the Strategic Information Systems field, and how have these patterns evolved over time?
- Who are the most prolific contributors to the Strategic Information Systems field, and what are their research's central themes and subjects?
- Which institutions wield the most influence in the Strategic Information Systems domain, and how have they shaped the field's development?
- How does the level of activity in the Strategic Information Systems field vary across countries, regions, and periods?
- Which documents in the Strategic Information Systems field have garnered the highest citation counts, and what are the predominant themes and subjects addressed in these influential works?
- What are the prevalent keywords and themes in the literature on Strategic Information Systems, and how have they changed over time?
- What themes and topics emerge from the co-occurrence analysis among author keywords in the literature on Strategic Information Systems?
- What gaps exist in the field of strategic information systems, and which are the most important areas that can be connected to it?

Literature Review

This part aims to provide an overview of bibliometric analysis to give a clear idea about it, and then the concept of strategic information systems is clarified according to previous studies.

Bibliometrics Analysis

Bibliometrics involves quantitatively assessing the publication patterns of both broad and detailed forms of communication, including an analysis of authorship through mathematical and statistical calculations (Sengupta, 1985). As described by Pitchard, bibliometrics aims to enhance comprehension of the dynamics of written communication and the characteristics and development of a particular field.

In recent years, bibliometric analysis has gained wide popularity in business research, and this popularity has spread as a result of the availability of many bibliometric analysis programs such as biblioMagika, Gephi, Leximancer, and VOSviewer, and scientific databases such as Scopus and Web of Science (Donthu et al., 2021; Khan et al., 2021). Specifically, there has been an increase in the number of publications that utilize bibliometrics, with an average of 1021 publications in the past ten years. This rise can be attributed to the expansion of scientific research itself (Naveen et al., 2021). In addition to the possibility of using it in various disciplines, from information systems to business research. There are many benefits to using bibliometric analysis, such as the possibility of dealing with large amounts of scientific data and providing high-quality scientific research (Verma & Gustafsson, 2020)

Consequently, well-executed bibliometric studies can establish robust foundations for advancing a field in innovative and meaningful ways. This empowers scholars to (1) obtain a

comprehensive overview, (2) pinpoint knowledge gaps, (3) generate new ideas for exploration, and (4) position their intended contributions to the field.

Bibliometric research aims to reveal future research trends, learn about patterns of cooperation and research components, and explore the intellectual background of a specific field in the existing literature.

Through bibliometric analyses, one can identify and depict proficient researchers, organizations, countries, and their interrelationships. Additionally, it allows for comparative assessments. Koehler categorized individuals studying bibliometrics into four groups (Koehler, 2001).

1. The research focused on citation analysis,
2. Investigations centered on co-citation analysis,
3. Exploration of the effectiveness of individuals, organizations, or countries,
4. Research on information products like books, articles, and patents.

Bibliometric mapping serves as a potent tool for examining the configuration and evolution of scientific domains. Scholars can employ bibliometric maps to enhance their comprehension of the specific field they are engaged in (Noyons,2004: Van et al., 2010). Despite its merits, the application of bibliometric analysis in business research is relatively recent, and in many cases, its potential still needs to be fully realized. This limitation occurs when bibliometric studies rely on a restricted set of bibliometric data and techniques, providing only a fragmented understanding of the field under investigation (Brown et al., 2020).

Strategic Information Systems

Recently, there has been a growing focus on generating business value through the utilization of Information Systems (IS) and Information Technology (IT) resources (Marabelli & Galliers, 2017). The effective incorporation of IS into business strategy processes is recognized as crucial for Chief Information Officers and Chief Executive Officers (Anwar & Hasnu, 2016).

Strategic Information Systems (SIS) is a collection of IS applications supporting an organization's business plans (Sabherwal & Chan, 2001). This support aims to facilitate the process and content of business strategy in accomplishing its goals. These applications encompass operational support systems, business collaboration systems, management IS, and decision support systems (Laudon & Laudon, 2006; O'Brien & Marakas, 2007).

SIS plays a role in enhancing a company's ability to coordinate and integrate, thereby increasing its capacity to modify existing strategies (Jääskeläinen & Luukkanen, 2017). Aali et al (2014) provide insights into the necessary factors and conditions for using SIS, emphasizing its role in achieving strategic goals, increasing productivity, and creating a competitive advantage. These studies collectively underscore the critical role of SIS in organizational success, particularly in the public sector, during economic crises, and in gaining a competitive edge.

Overall, the literature review on strategic information systems highlights the significance of SIS, its alignment with organizational strategies, and its role in achieving competitive advantage, especially during economic challenges.

Methods
Data Strategy and Collection
In this study, literature directly related to the topic of strategic information systems was identified based on the Scopus database. The data was collected from research published in

reputable international journals through total reliance on the Scopus database, as it is the largest database of citations for more than 20,000 journals covering the fields of technology, social sciences, arts, and humanities (Fahimnia et al., 2015). We extracted and used data from the Scopus database on September 27, 2023. The timeline of the current study is open to enrich the research and know all the details of strategic information systems, starting from the first research published on this topic, which was the period (1973-2023). The following keywords were used to search for relevant articles related to the topic of the study, such as strategic information systems OR— strategic information system OR—SIS OR— strategic AND information AND systems. We focused on the title of the articles only because it directly represents the relevant topic, which is important in achieving the objectives of the current research. The article's title draws readers to information related to the research (Chen, 2010). **814** files were obtained, and to maintain the integrity of the bibliometric analysis, we only included journal articles subjected to peer review in this paper. This precaution aimed to ensure relevance and adherence to standards and transparency for readers. Our analysis excluded papers from conference proceedings, books, book chapters, and other publication formats, so we obtained **433** papers. After focusing on articles in the English language, only **411** were obtained. We meticulously checked for duplicate documents and eliminated any irrelevant ones among the retrieved papers, so we obtained **408** papers used in this study, as shown in Figure (1), the Prisma flow chart (Moher, 2015).

Data Cleaning and Harmonisation

The process of cleaning and harmonizing data is crucial in bibliometric analysis because the research results are directly affected by the accuracy and validity of the data used. The more accurate the data is, the more accurate the results will be. Since the Scopus database contains some duplicate and missing data, we had to clean and process that data with complete accuracy and credibility.

The data-cleaning and harmonization process was conducted as follows:

First: After specifying the data for the current study, we downloaded it from the Scopus database in three formats (Scopus Export Refine Value.csv, scopus.csv (TRUNCATED), scopus.csv (NOT-TRUNCATED).

Second: We examined missing data using **biblioMagika**®, a tool that operates in Microsoft Excel and was developed by Ahmi (2023). Through **biblioMagika**®, we verified and processed missing data for (Authors' Full Names, Authors with Affiliation, Single Name Author, Affiliation, Country).

Third: After completing the processing of missing data, we cleaned and harmonized the data manually (Authors' Full Name, Affiliation) and then (Authors' Keywords) using the **OpenRefine** software (https:// openrefine. org/) (Ahmi, 2023).

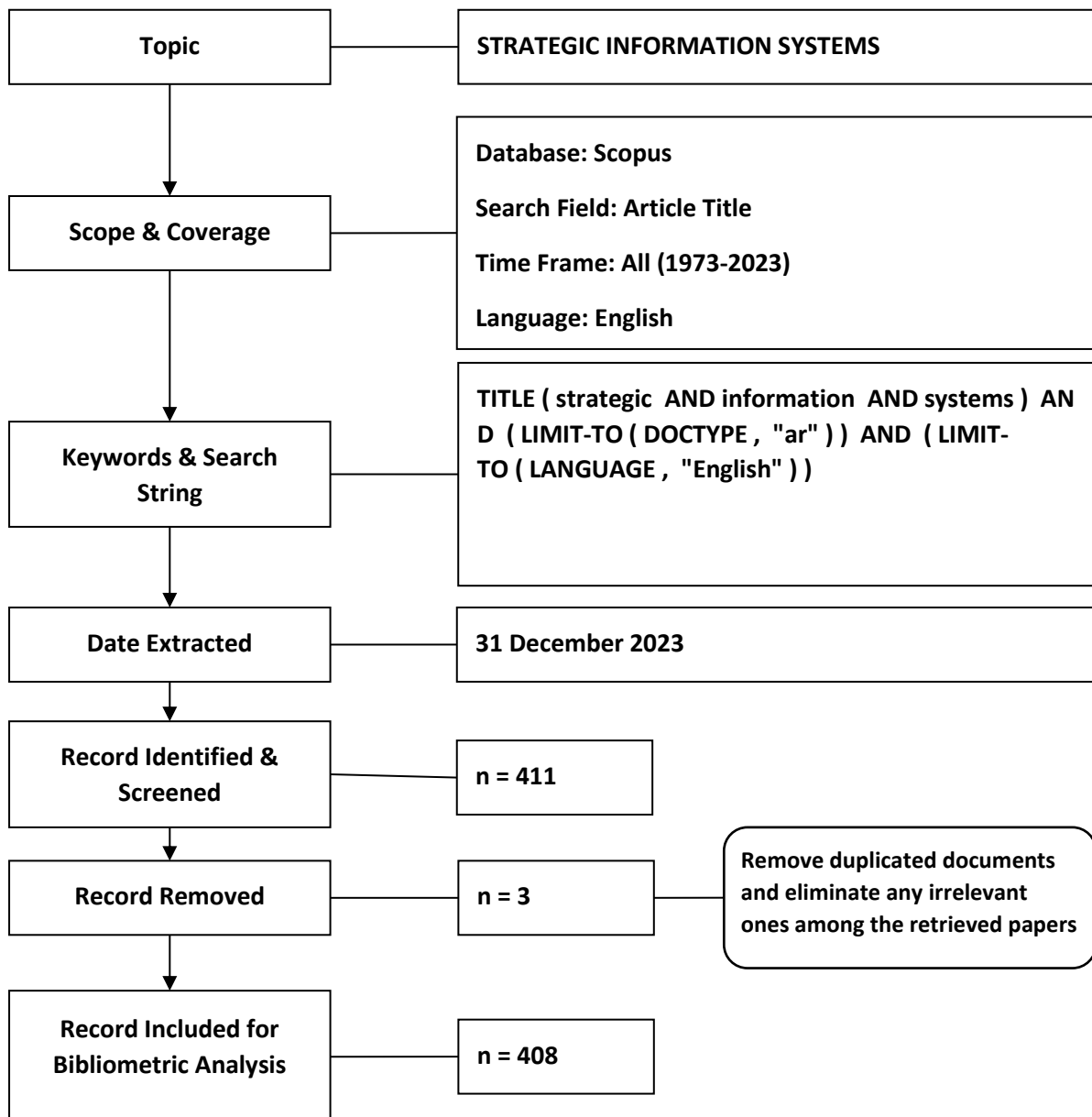| Topic | → | STRATEGIC INFORMATION SYSTEMS |

| Scope & Coverage | → | Database: Scopus

Search Field: Article Title

Time Frame: All (1973-2023)

Language: English |

| Keywords & Search String | → | TITLE (strategic AND information AND systems) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) |

| Date Extracted | → | 31 December 2023 |

| Record Identified & Screened | → | n = 411 |

| Record Removed | → | n = 3 | Remove duplicated documents and eliminate any irrelevant ones among the retrieved papers |

| Record Included for Bibliometric Analysis | → | n = 408 |

Figure (1): PRISMA Flow Diagram of the search strategy

Bibliometric Analysis Tools

For our bibliometric analysis, we employed **Bibliometrix** (http:// www. bibli ometr ix. org) an R-based package for quantitative bibliometric analysis, and **VOSviewer** (http:// www. vosviewer. com) Van Eck & Waltman (2010) tools, to gather valuable insights from the data. Biblioshiny served as a powerful data retrieval and processing platform, enabling us to collect relevant bibliographic information from various sources efficiently. Additionally, VOSviewer played a pivotal role in visualizing and analyzing the bibliometric data, allowing us to generate insightful maps, graphs, and clusters highlighting key trends and relationships within the research landscape. In conjunction with these dedicated bibliometric analysis tools, we also utilized **biblioMagika**® to generate tables. Based on these three tools we assessed several bibliometric metrics, including main information (total publications (TP), number of cited publications (NCA), the number of cited publications (NCP), total citations (TC), citations per paper (C/P), citations per cited paper (C/CP), citations per author (C/A), h-index and g-index),

Highly Cited Documents, Highly Cited Documents, Top 20 productive institutions, Top 20 productive country, and Most Frequent Author keywords.

Results
Document and Source Type
According to the bibliometric analysis, all 408 publications are categorized as articles. This classification is attributed to the research's strong scientific orientation, as articles typically undergo peer review, signifying a high standard of research quality and academic rigor in this particular field. Additionally, journals dominate the publication landscape, comprising 97.79% of the total. This statistic indicates that most research within the realm of strategic information systems is disseminated through academic journals, underscoring the prevalent use of the English language in this research field, as shown in Table (1).

Table (1)
Document Type, Source type, and Languages

Document Type	TP	%		Source Type	TP	%		Language	TP	%
Article	408	100.00%		Journal	399	97.79%		English	408	100.00%
				Book	3	0.74%		Croatian	1	0.25%
				Book Series	3	0.74%		Spanish	1	0.25%
				Trade Journal	1	0.25%				
				Conference Proceeding	1	0.25%				
				Undefined	1	0.25%				

Subject Area of SIS Field
This study classifies the published documents based on their subject area, as summarized in the provided data. The distribution of research shows a prominent emergence from Computer Science (204 documents, 50.00%), followed closely by Business, Management, and Accounting (199 documents, 48.77%). Decision Sciences also contribute significantly to the research pool with 123 documents, accounting for 30.15%. Other notable subject areas include Social Sciences with 105 documents (25.74%), Engineering with 60 documents (14.71%), and Medicine with 42 documents (10.29%). Additionally, contributions are observed in Economics, Econometrics and Finance (21 documents, 5.15%), Mathematics (20 documents, 4.90%), and Environmental Science (18 documents, 4.41%). Other notable subject areas include Social Sciences with 105 documents (25.74%), Engineering with 60 documents (14.71%), and Medicine with 42 documents (10.29%). Additionally, contributions are observed in Economics, Econometrics and Finance (21 documents, 5.15%), Mathematics (20 documents, 4.90%), and Environmental Science (18 documents, 4.41%). However, other subject areas also published articles on SIS as reported in Table (2).

Table (2)

Subject Area of SIS Field

Subject Area	TP	%	Subject Area	TP	%
Computer Science	204	50.00%	Energy	6	1.47%
Business, Management and Accounting	199	48.77%	Health Professions	6	1.47%
Decision Sciences	123	30.15%	Agricultural and Biological Sciences	4	0.98%
Social Sciences	105	25.74%	Biochemistry, Genetics and Molecular Biology	4	0.98%
Engineering	60	14.71%	Materials Science	4	0.98%
Medicine	42	10.29%	Chemical Engineering	3	0.74%
Economics, Econometrics and Finance	21	5.15%	Multidisciplinary	3	0.74%
Mathematics	20	4.90%	Chemistry	2	0.49%
Environmental Science	18	4.41%	Immunology and Microbiology	2	0.49%
Arts and Humanities	11	2.70%	Pharmacology, Toxicology and Pharmaceutics	2	0.49%
Nursing	10	2.45%	Physics and Astronomy	2	0.49%
Earth and Planetary Sciences	8	1.96%	Veterinary	1	0.25%
Psychology	8	1.96%			

Publication Trends

The dataset in Figure (2) provides valuable insights into publication trends within the field of study, showcasing fluctuations in research output over the years. Two standout years are 1991 and 2023, which were marked by substantial increases in research activity. In 1991, the field experienced a surge in research with 22 publications, likely driven by emerging trends, robust funding, and increased collaboration, evidenced by a noteworthy citation count of 583, signifying significant and lasting contributions. Also, this peak could be attributed to various factors, including the advent of the internet, the proliferation of personal computing, and the increasing recognition of IT as a strategic business tool. Moreover, there is a contextual factor, as the early 1990s were a period of significant change in the global economy and business practices, which likely necessitated new strategies and research in information systems.

In contrast, 2023 emerges as a recent year of heightened research output with 16 publications, potentially influenced by evolving trends, advanced research tools, efficient data collection methods, and a rise in international collaboration. Moreover, this recent peak suggests an ongoing and renewed interest in strategic information systems, driven by new technological advancements like AI, big data, and cloud computing or by evolving business models in the digital era.

While the publication count in 2023 is lower than in 1991, it underscores the field's ongoing dynamism. It presents an intriguing avenue for further investigation into the factors behind these notable shifts in research activity.
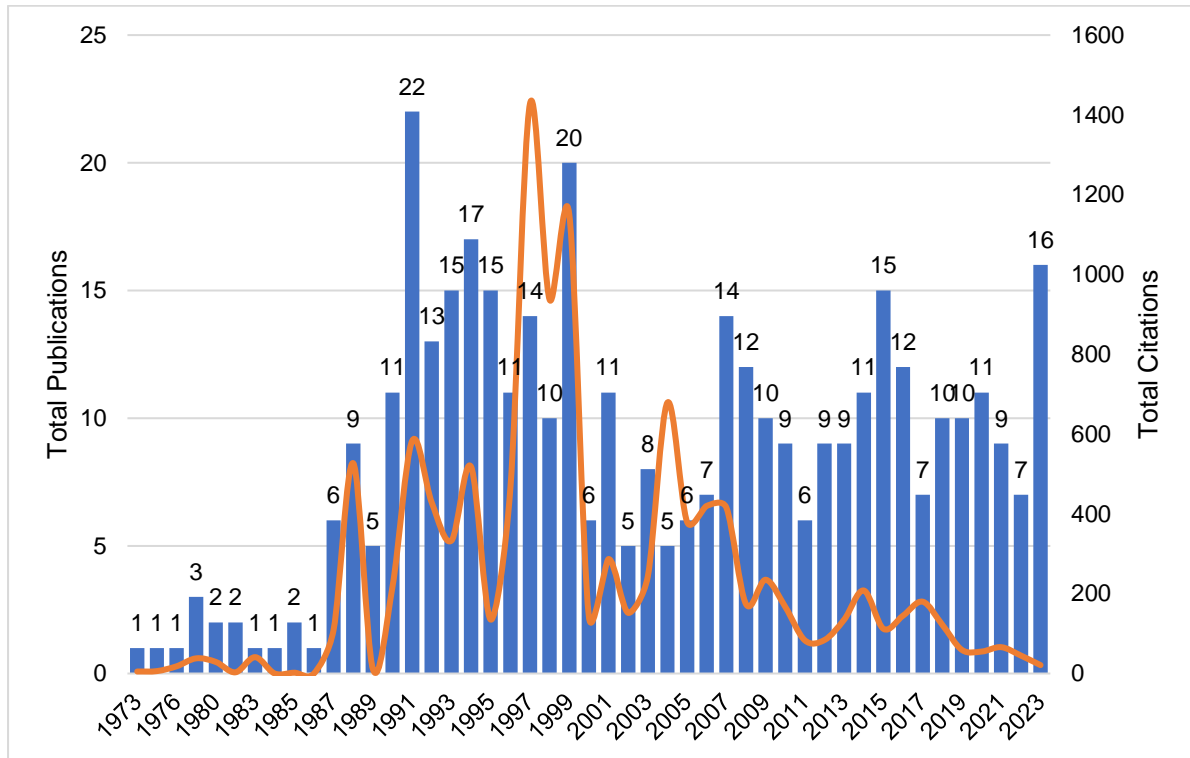
Figure (2): Total Publications and Citations by Year

Publication by Source Title

In the realm of Strategic Information Systems research, a careful analysis of publication trends by source title sheds light on the influential journals and their impact on the field. Among the journals that have published at least 5 documents, several noteworthy platforms have emerged as primary contributors to research dissemination, as shown in Table (3). The Journal of Strategic Information Systems stands out prominently, having published 20 articles with a remarkable total citation count of 1514. This suggests its growing significance as a primary publication venue for strategic information systems research. The International Journal of Information Management follows closely, with 16 publications and a total citation count of 451, reflecting its substantial influence in the field. The journal Information and Management also commands attention, with 15 publications and a noteworthy total citation count of 967. These journals, characterized by high citation per paper ratios, are instrumental in shaping the landscape of strategic information systems research. Additionally, the Journal of Management Information Systems and MIS Quarterly: Management Information Systems exhibit relatively fewer publications but a substantial impact, with high citation counts per paper and noteworthy h-indices. These insights into source titles provide researchers with valuable guidance for staying abreast of the latest developments and selecting appropriate publication outlets for their work, thereby facilitating the dissemination of research in the domain of strategic information systems.

Table (3)
Most Active Source Titles

Source Title	TP	NCA	NCP	TC	C/P	C/CP	h	g	m
Journal of Strategic Information Systems	20	43	20	1514	75.70	75.70	16	20	0.48
International Journal of Information Management	16	41	16	451	28.19	28.19	11	16	0.31
Information and Management	15	32	15	967	64.47	64.47	12	15	0.27
Journal of Management Information Systems	10	18	9	443	44.30	49.22	6	10	0.16
MIS Quarterly: Management Information Systems	7	17	7	1706	243.71	243.71	7	7	0.19
International Journal of Business Information Systems	7	17	6	49	7.00	8.17	4	7	0.25
Journal of Information Technology	7	12	5	141	20.14	28.20	5	7	0.14
Decision Sciences	6	13	6	559	93.17	93.17	6	6	0.18
European Journal of Information Systems	6	11	5	184	30.67	36.80	5	6	0.18
Information Resources Management Journal (IRMJ)	5	8	5	69	13.80	13.80	3	5	0.09

Publications by Authors

The dataset in Table (5) highlights several prolific authors who have made significant contributions to the field of Strategic Information Systems. Among them, **Albert L. Lederer** emerges as the most productive author with 17 publications, a matching number of cited publications, and an impressive total citation count 1712. Lederer's work demonstrates an average of approximately 101 citations per paper, underlining his substantial impact in the domain. His h-index of 15 and g-index of 17 further underscore his sustained influence. Following closely, **Vijay Sethi and William R. King** both have nine publications each, with high citation counts of 1079 and 577, respectively. Sethi's work garners an average of nearly 120 citations per paper, reflecting his substantial influence.

Similarly, King's research averages approximately 64 citations per paper. Both authors have h-indices and g-indices of 8 and 9, respectively, highlighting their significant contributions to the field. **Henry E. Newkirk, Varun Grover, and Albert H. Segars** have also made noteworthy contributions, with seven, six, and five publications, respectively, and substantial citation counts per paper. Their research averages around 71, 228, and 271 citations per paper, demonstrating their impact. The authors Gottschalk, Sabherwal, Powell, and others have contributed significantly to the field, albeit with fewer publications. In general, these authors have played pivotal roles in advancing the field of Strategic Information Systems through their prolific research contributions, evidenced by their publication records, citation counts, and indices. Their work has significantly enriched the scholarly discourse and understanding in this domain.

Table (5)

Most Productive Authors in SIS Field

Author's Name	TP	NCP	TC	C/P	C/CP	h	g	m
Lederer, Albert L. (35584326900)	17	17	1712	100.71	100.71	15	17	0.42
Sethi, Vijay (7102307261)	9	9	1079	119.89	119.89	8	9	0.22
King, William R. (7401988427)	9	9	577	64.11	64.11	8	9	0.16
Newkirk, Henry E. (6602553181)	7	7	494	70.57	70.57	6	7	0.29
Grover, Varun (7006625568)	6	6	1367	227.83	227.83	6	6	0.20
Segars, Albert H. (6701769760)	5	5	1355	271.00	271.00	5	5	0.17
Gottschalk, Petter (7005252180)	4	3	191	47.75	63.67	3	4	0.12
Sabherwal, Rajiv (6701836761)	3	3	376	125.33	125.33	3	3	0.09
Powell, Philip (7102280905)	3	3	67	22.33	22.33	3	3	0.12
Goyal, D.P. (56596326500)	3	3	15	5.00	5.00	2	3	0.13
Martinsons, Maris G. (7003341477)	3	3	415	138.33	138.33	3	3	0.10
Yoshikuni, Adilson Carlos (57194798766)	3	3	28	9.33	9.33	3	3	0.50
Galliers, R.D. (7003834429)	3	3	53	17.67	17.67	3	3	0.09
Hirschheim, Rudy (6701576604)	2	2	348	174.00	174.00	2	2	0.09
Akhgar, Babak (14008530100)	2	2	16	8.00	8.00	2	2	0.15
Fletcher, Keith (7102536207)	2	2	28	14.00	14.00	2	2	0.07
Friedman, B.A. (7201672891)	2	2	12	6.00	6.00	2	2	0.06
Wright, George (24431598700)	2	2	28	14.00	14.00	2	2	0.07
Ward, John M. (55449078000)	2	2	585	292.50	292.50	2	2	0.10

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

The VOSviewer software was employed to generate a network visualization (refer to Figure 3) that illustrates the collaborative connections among various authors. This visualization utilized a partial count approach and relied on data from authors who had contributed to at least one document related to strategic information systems. The visual elements, including color coding, circle size, font size, and line thickness, convey the intensity of associations between authors. Authors who share similar colors are typically affiliated and often collaborate closely in their research endeavors. With the setting of the fractional counting method and a minimum number of 5 citations per author, out of the 869 authors, 486 meet the threshold, and 27 authors have been selected. The most-cited publications are divided into eight different colored clusters. We can observe that Lederer and Aubrey are the most representative authors in the red cluster. The node distance between the two scholars is not close. The green cluster has four scholars. Wiliam Premkumer Lederer and Aubrey are the most representative authors, and their work is closely related. The blue cluster has four scholars. Vijay and Edward are the most representative authors, and their work is closely related.

Interestingly, Vijay is closely related to the scholars in both the blue and green clusters. The Yello cluster has four scholars. Thompson and James are the most representative authors, and their work is closely related. The purple cluster has three scholars. Henry and Cidambi are the most representative authors, and their work is closely related. The sky cluster has three scholars; Kiku and Lie Chei are the most representative authors, and their work is closely

related. The orange cluster has three scholars. Rajiv and Rudy are the most representative authors, and their work is closely related. The last cluster is brown and has only two scholars, Biplab and Jaimit.
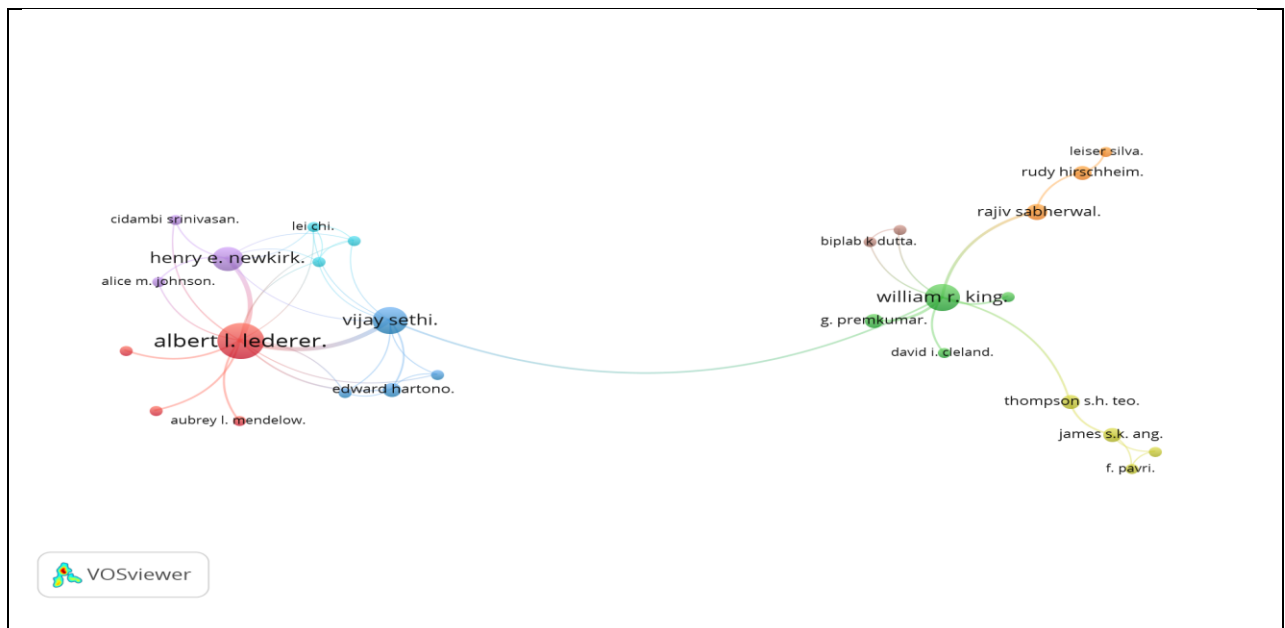
Figure(3): Network Visualization Map of SIS Research Co-authors

Publications by Institutions

Table (6) presents an overview of institutions contributing to publications in the field of Strategic Information Systems, including their respective publication counts, total citations, number of cited publications (NCP), and relevant metrics. The University of **Pittsburgh** is a notable contributor to research in Strategic Information Systems, with 14 publications and a substantial total citation count of 1628. This indicates an impressive average of approximately 116.29 citations per paper. The institution exhibits high research productivity with 14 cited publications, reflecting its significant contributions to the scholarly discourse. With an h-index of 12 and a g-index of 14, the University of Pittsburgh showcases a consistent scholarly impact in this domain.

Similarly, the University of **Kentucky** demonstrates a strong research presence, with 12 publications and 1009 total citations, averaging around 84.08 citations per paper. This institution maintains a commendable research output with 12 cited publications, highlighting its substantial contributions to the field. The University of Kentucky's h-index of 10 and g-index of 12 signify its significant scholarly impact. Other institutions, such as East Carolina University, the University of Warwick, and the University of South Carolina, also make valuable contributions to the field. These institutions display varying research productivity and impact levels, as indicated by their respective publication and citation metrics.

In summary, the provided data offers insights into the publication landscape of Strategic Information Systems research across different institutions. It highlights the University of **Pittsburgh** and the University of **Kentucky** as leading contributors in terms of both research output and citation impact. These findings underscore the significance of these institutions in advancing knowledge and understanding in the field of Strategic Information Systems.

Table (6)

Most Productive Institutions with a Minimum of Three Publications

Institution	TP	TC	NCP	C/P	C/CP	h	g	m
University of Pittsburgh	14	1628	14	116.29	116.29	12	14	0.24
University of Kentucky	12	1009	12	84.08	84.08	10	12	0.36
East Carolina University	7	494	7	70.57	70.57	6	7	0.29
University of Warwick	6	118	6	19.67	19.67	5	6	0.15
University of South Carolina	6	1267	6	211.17	211.17	6	6	0.20
City University of Hong Kong	6	387	5	64.50	77.40	5	6	0.20
University of Bath	4	54	4	13.50	13.50	3	4	0.10
National University of Singapore	4	105	4	26.25	26.25	4	4	0.13
Norwegian School of Management	4	108	3	27.00	36.00	2	4	0.07
Queensland University of Technology	4	131	4	32.75	32.75	3	4	0.11
Universiti Kebangsaan Malaysia	4	82	3	20.50	27.33	2	4	0.12
Loughborough University	4	727	4	181.75	181.75	3	4	0.11
University of Houston	4	369	4	92.25	92.25	4	4	0.12
Brunel University	4	50	3	12.50	16.67	3	4	0.09
Nanyang Technological University	4	560	4	140.00	140.00	4	4	0.15
Iowa State University	3	171	2	57.00	85.50	2	3	0.06
Universiti Teknologi MARA	3	10	1	3.33	10.00	1	3	0.07
University of Manchester	3	135	3	45.00	45.00	3	3	0.10
Institute of Management Technology	3	15	3	5.00	5.00	2	3	0.13
State University of New York at Buffalo	3	580	3	193.33	193.33	3	3	0.08
Islamic Azad University	3	31	2	10.33	15.50	1	3	0.08
Sheffield Hallam University	3	25	3	8.33	8.33	3	3	0.12
Monash University	3	67	3	22.33	22.33	3	3	0.10

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Publications by Countries

Table (7) provides a comprehensive analysis of publications in the field of Strategic Information Systems, categorized by the contributing countries. This analysis unveils several notable trends and insights:

United States Dominance: The United States stands out as the predominant contributor to research in Strategic Information Systems, with a substantial total of 156 publications and a remarkable 6409 total citations. This significant presence underscores the United States' leading role in shaping the discourse and development of knowledge in this field. The country exhibits a strong h-index of 42 and a robust g-index of 80, reflecting both productivity and impact.

Rise of Asian Nations: Asian countries are emerging as influential players in the realm of Strategic Information Systems research. With 20 publications, China exhibits substantial growth and impact, signaling its commitment to advancing research in this field. Among these, with 14 publications, Malaysia showcases a burgeoning research profile, signaling the country's growing expertise in this domain. Other Asian countries like India, Indonesia, Singapore, and South Korea also contribute actively, reflecting a shift in the global research

landscape. Their growing presence may be attributed to increased investments in education and technology.

European and North American Presence: Traditional research powerhouses like the United Kingdom, Canada, Germany, and France maintain a solid presence in the field, showcasing their commitment to advancing knowledge in the Strategic Information Systems field.

Table (7)
Most Productive Countries Contributed to the Publications

Country	TP	TC	NCP	C/P	C/CP	h	g	m
United States	156	6409	133	41.08	48.19	42	80	0.82
United kingdom	64	1706	56	26.66	30.46	21	41	0.57
Australia	27	508	25	18.81	20.32	12	22	0.34
China	20	621	16	70.08	82.97	13	20	0.42
India	14	100	14	7.14	7.14	6	10	0.25
Indonesia	14	43	9	3.07	4.78	3	6	0.12
Malaysia	14	189	10	13.50	18.90	5	13	0.20
Iran	13	137	10	10.54	13.70	6	11	0.35
Canada	13	1093	12	84.08	91.08	8	13	0.17
Singapore	12	865	12	72.08	72.08	9	12	0.29
South Korea	9	175	9	19.44	19.44	5	9	0.15
Germany	9	134	9	14.89	14.89	6	9	0.14
France	7	174	6	24.86	29.00	5	7	0.16
Norway	7	196	5	28.00	39.20	3	7	0.10
Taiwan	7	81	7	11.57	11.57	4	7	0.19
Finland	6	231	6	38.50	38.50	5	6	0.15
Spain	6	109	6	18.17	18.17	5	6	0.15
Italy	5	109	5	21.80	21.80	4	5	0.22

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; and g=g-index.

Then, we explored international cooperation between countries based on the most cited publications in strategic information systems. This examination includes using VOSviewer software to visualize collaboration patterns across countries. As shown in Figure (4), we evaluated the collective strength of associations between countries below and set a minimum number of documents for each country as a minimum. For clarity, we used the full names of countries in our analysis. The United States clearly maintains a dominant position, engaging in cooperative efforts with the remaining countries. In this visual representation, the closeness of a contract between two entities indicates the strength of their collaborative relationship, a concept explained by (Fabrikant et al., 2009). It is worth noting that the United States cooperates closely with Australia, the United Kingdom, China, and Canada. The Netherlands enjoys strong relations with Germany, Finland, India, and Turkey, all of which are European countries.

Interestingly, as shown in the figure below, the top five countries with the highest number of citations also appear as major collaborators. This finding underscores the importance of international partnerships (Mohamed et al., 2020). It highlights how such collaborations can

significantly impact the production of highly cited research publications (Moosa & Shareefa, 2020).
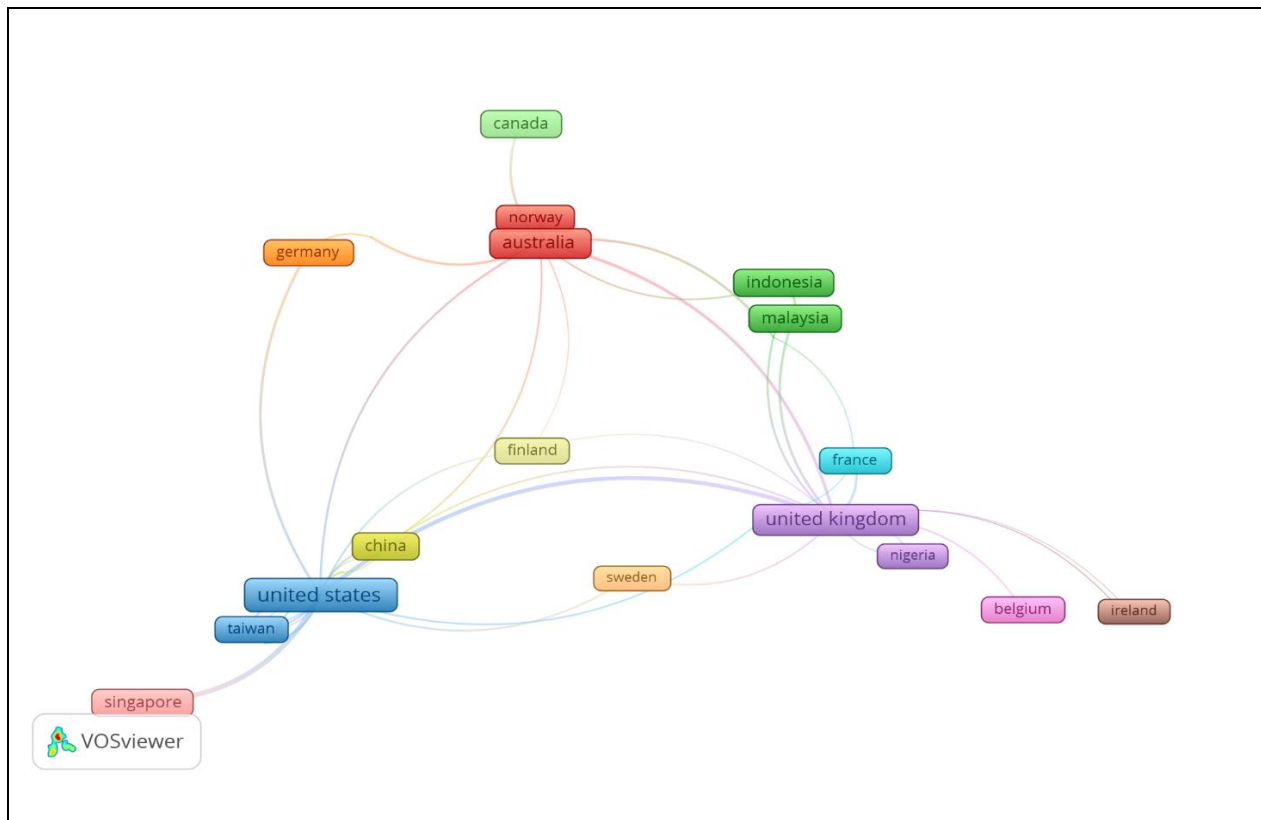

Figure (4). Network Visualization Map of the Co-authorship by Countries

Citation Metrics of SIS

The analysis of citation metrics for the field of Strategic Information Systems presented in Table (8) reveals several key findings. From 1973 to 2023, the field has generated 408 publications, indicating a consistent interest in the subject matter, with an annual average of around 8 publications. In the field of citation analysis, we assess the influence of documents related to strategic information systems by examining how often they are cited by other scholarly works (Baker et al., 2020). To conduct this analysis, we employed biblioMagika® tools and utilized VOSviewer software for data examination and visualization. These publications have garnered a substantial total of 11,595 citations, with each paper receiving an average of 28.42 citations, highlighting the field's impact and significance. When considering only the cited papers, this average increases to 34.51 citations per paper, underlining the quality of the research. Collaboration is a notable aspect, with an average of 2.45 authors per paper, emphasizing the interdisciplinary nature of research in this field. The citation density of 231.90 citations per year underscores the ongoing relevance of Strategic Information Systems research.

Furthermore, each author in the field has been cited, on average, 11.61 times, indicating their substantial contributions. The h-index of 52, g-index of 98, and m-index of 1.02 demonstrate a robust core of highly cited publications and a balanced distribution of citations. Additionally, 11,255 citations are concentrated within the h-core, emphasizing the influence of seminal works. Overall, these metrics underscore the field's enduring impact, collaborative nature, and continued relevance in the field of information systems and management research.

Table (8)
Citations Metrics of SIS

Main Information	Data
Publication Years	1973 - 2023
Total Publications	408
Citable Year	51
Number of Contributing Authors	999
Number of Cited Papers	336
Total Citations	11,595
Citation per Paper	28.42
Citation per Cited Paper	34.51
Citation per Year	231.90
Citation per Author	11.61
Author per Paper	2.45
Citation sum within h-Core	11,255
h-index	52
g-index	98
m-index	1.02

Highly Cited Documents in SIS Field

Table (9) presents a selection of highly cited articles in the field of Strategic Information Systems, along with relevant source titles, total citations, and citations per year. Among the notable articles, "Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment," authored by Chan, Huff, Barclay, and Copeland in 1997, stands out with 827 total citations, emphasizing its significant impact within the domain. This article was published in the "Information Systems Research" journal, underlining the journal's importance as a platform for influential research in Strategic Information Systems. Other source titles, such as "MIS Quarterly: Management Information Systems" and "Decision Support Systems," also contribute significantly to the field, as indicated by including their articles in this list. These findings underscore the pivotal role of specific journals in disseminating and advancing impactful research in the field of Strategic Information Systems.

Table (9)
Top 10 Highly Cited Articles

No.	Author(s)	Title	Source Title	TC	C/Y
1	Chan et al (1997)	Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment	Information Systems Research	827	30.63
2	Segars & Grover (1998)	Strategic information systems planning success: An investigation of the construct and its measurement	MIS Quarterly: Management Information Systems	558	21.46
3	Peppard & Ward (2004)	Beyond strategic information systems: Towards an IS capability	Journal of Strategic Information Systems	535	26.75

4	Martinsons et al (1999)	The balanced scorecard: A foundation for the strategic management of information systems	Decision Support Systems	346	13.84
5	Kettinger et al (1994)	Strategic information systems revisited: A study in sustainability and performance	MIS Quarterly: Management Information Systems	340	11.33
6	Lederer & Sethi (1988)	The implementation of strategic information systems planning methodologies	MIS Quarterly: Management Information Systems	335	9.31
7	Ang & Cummings (1997)	Strategic Response to Institutional Influences on Information Systems Outsourcing	Organization Science	334	12.37
8	Newkirk & Lederer (2006)	The effectiveness of strategic information systems planning under environmental uncertainty	Information and Management	212	11.78
9	Choudhury (1997)	Strategic Choices in the Development of Interorganizational Information Systems	Information Systems Research	197	7.30
10	Hirschheim & Sabherwal (2001)	Detours in the path toward strategic information systems alignment	California Management Review	195	8.48

Top Keywords of SIS Field
Certainly, author keywords play a pivotal role in helping researchers identify emerging trends. Additionally, as Wen and Huang (2012) advocated, analyzing author keywords is vital for gauging the development of research topics. After eliminating duplicates resulting from slight variations in spelling (e.g., "Strategic Information Systems" and "Strategic Information System"), our analysis, presented in Figure (5), highlights the most actively used author keywords during the second decade of the millennium. Further investigation involved mapping the co-occurrence of author keywords provided for each document using VOSviewer, a software tool designed for constructing and visualizing bibliometric networks. In this analysis, we focused on keywords that occurred at least three times, resulting in the identification of 55 keywords. The network visualization in the Figure below illustrates the relationships between keywords, with colors, circle sizes, font sizes, and line thickness indicating the strength of these associations (Sweileh et al., 2017). Keywords sharing the same color appear together frequently. For instance, the diagram suggests that keywords such as "Information systems," "performance," "issp," "strategy," "strategic performance," "culture," and "management information system," all marked in green, are closely related and tend to co-occur. Each distinct color in the Figure represents a cluster, and a total of nine clusters are discernible in this visualization. Cluster one (in red) encompasses 13 items related to the theme of strategic information systems, while cluster two (in green) comprises 9 items associated with information systems. Cluster three (in blue) includes 7 items linked to IS planning. Cluster four (in yellow) contains 6 items related to strategic management. Cluster

six (in sky blue) involves 4 items centered around strategic planning. Cluster seven (in orange) encompasses 4 items related to strategic alignment. Cluster eight (in brown) consists of 3 items tied to competitive advantage, and finally, cluster nine (in pink) contains 3 items related to strategic decision-making.
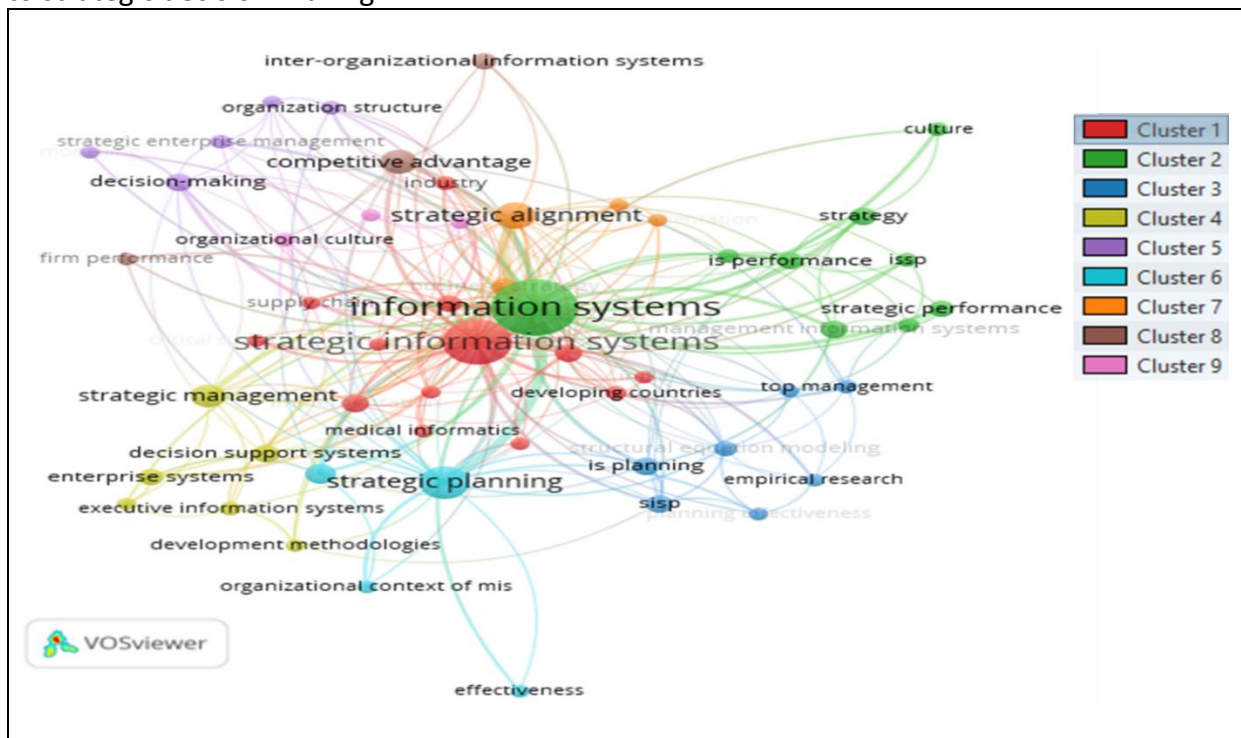

Figure (5). Network Visualization of the Author's Keywords

Thematic Evolution in Strategic Information Systems

The provided Sankey diagram illustrates the thematic evolution in the field of Strategic Information Systems (SIS) from 1973 to 2023, as shown in Figure (6). This diagram was created using **Biblioshiny** software. This visualization helps us understand how research themes have developed and shifted over time, reflecting the changing priorities and innovations within the field. A Sankey diagram illustrates different themes' interconnectedness and historical development (Aria et al., 2020). Each box on the map represents a theme, and the size of the boxes is relational to the frequency with which the theme occurs (Srivastava, 2021). The connections between the boxes, represented by flows, demonstrate the evolutionary pathways of these themes, and the thickness of the connecting lines indicates the strength of the relationships between the themes.

From 1973-1996, the diagram indicates that foundational themes such as 'information systems' and 'IS planning' were prominent. This period likely focused on establishing and understanding information systems as a crucial component of strategic management within organizations.

Transitioning into the period from 1997-2010, the focus has broadened, incorporating themes like 'business strategy,' 'competitive advantage,' and 'environmental scanning.' The emergence of 'decision support systems' and 'planning effectiveness' during this time reflects a maturation in the field, where IS integration into strategic decision-making processes becomes more pronounced.

Moving into the most recent period, 2011-2023, we see the continuation of 'information systems' as a central theme, but now alongside 'implementation' and 'strategy.' The

emergence of 'enterprise systems' and 'strategic performance' indicates a shift towards more integrated and performance-oriented research. The 'IS strategy concept also gains prominence, suggesting an alignment of information systems with broader organizational strategies.

The flows between the periods highlight the evolution and interconnection of themes. For example, the consistent presence of 'strategic planning' across all periods underscores its enduring importance. However, the theme's evolution from a standalone concept to one interconnected with 'strategy' and 'enterprise systems' in the latest period suggests a deepening complexity and a shift towards more holistic and integrated approaches.
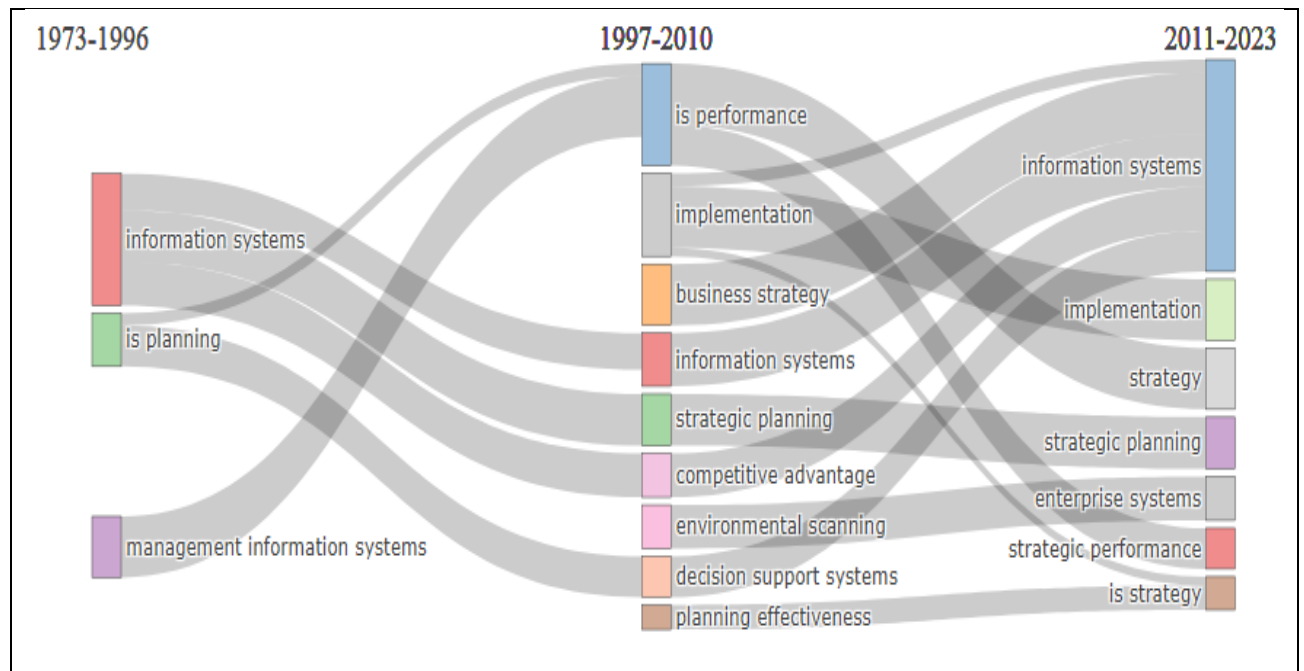

Figure (6): Thematic Evaluation Based on Authors' Keywords

Thematic Map of SIS Field

Thematic map plot research themes are based on two dimensions: centrality and density. Centrality (Relevance degree) reflects how interrelated a theme is with others within the network, signifying its importance to the structure of the research field. Density (Development degree) indicates the internal strength of the network and how well-developed the theme is. According to Figure (7) of the Thematic map diagram, we can notice the:

- **Basic Themes** are situated in the lower right quadrant. These themes have high centrality, meaning they are highly interconnected with other research areas and are significant to the structure of the research field. However, they have a lower density, suggesting they are still evolving, and there is more to be developed within these themes.

- **Motor Themes,** which would be in the upper right quadrant, are both well-developed (high density) and central to the field, indicating that they are mature and significantly impact the research domain.

- **Emerging or Declining Themes** are found in the lower left quadrant. They still need to be well-developed or central, indicating they are either new and emerging or losing relevance and declining.

- **Niche Themes** are located in the upper left quadrant. These themes have well-developed internal links (high density) but are less central to the overall research field, indicating they are specialized areas within the field.

In this SIS diagram, "information systems," "strategic planning," "management information systems," and "organizational culture" are identified as Basic Themes. They are crucial to the research field's structure and are likely to be the focus of extensive study and discussion, yet they have the potential for further development and exploration. These themes are foundational to the domain of Strategic Information Systems and represent areas where research is actively contributing to the body of knowledge, providing a backbone for both theoretical and applied advancements in the field.
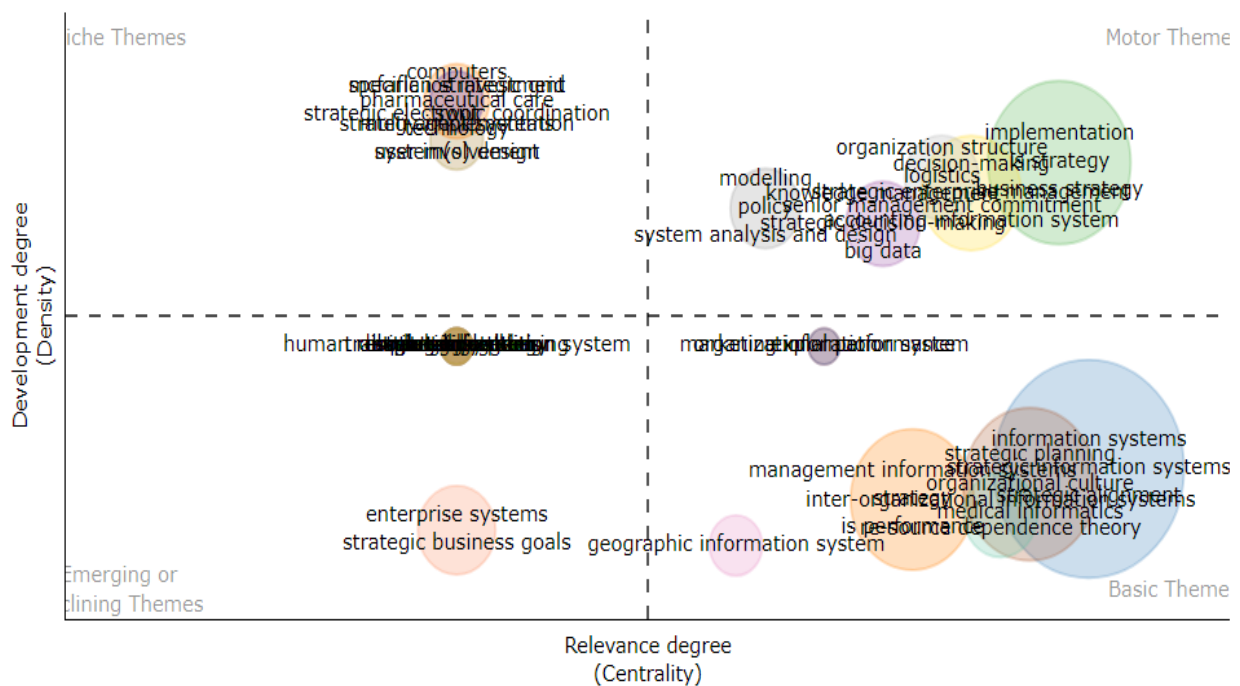

Figure (7): The Strategic Thematic Map of the Author's Keywords

Discussion

In this study, the field of strategic information systems is highlighted as an important field capable of achieving competitive advantage for companies. In light of the rapid developments and changes, business organizations face many challenges that require them to develop strategic plans based on accurate information. Information systems play a crucial role in our current time as they are one of the main elements in the survival of many organizations in the business market. By noting the importance of both strategic plans and information systems, strategic information systems were created to enable organizations to face these challenges in addition to obtaining competitive advantages. A bibliometric analysis method was used to explore the field of strategic information systems in detail to highlight the most cited authors, influential papers and journals, and the most active research areas in strategic information systems. The current research reached many important and interesting results. Despite the importance of bibliometric analysis in many fields, the field of strategic information systems lacks this type of research. All research questions were answered, and various objectives were achieved to enrich the topic of strategic information systems. The research areas of strategic information systems are diverse. However, they are significantly concentrated in three areas, which are computer science (204 documents, 50.00%), closely followed by business,

management, and accounting (199 documents, 48.77%), and then decision sciences also significantly in the research group with 123 documents, representing 30.15%. Based on the outputs of the **Biblioshiny** software, strategic information systems trends have developed over the past five decades. However, they have focused directly on **"information systems," "strategic information systems,"** and **"information systems planning"** as main topics alongside "strategy." The continued presence of "strategic planning" across all periods confirms its permanent importance and direct connection with "information systems." **Albert L. Lederer** is the largest contributor author to the production of special research in the field of strategic information systems, with 17 publications and an impressive number of citations reaching 1712, which indicates its importance in this field. Next come authors **Vijay Sethi and William R. King**, with 9 each with high citation counts of 1079 and 577, respectively. One of the standout papers in the field is the 1997 article titled "Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment," written by **Chan, Huff, Barclay, and Copeland**, which has garnered a total of 827 citations, underscoring its considerable influence in the field. Important and sober journals in this field were highlighted to know how to publish high-quality research in strategic information systems. Based on the results of this study, the 10 most important areas were identified. The **Journal of Strategic Information Systems** is particularly notable, as it has published 20 articles that have collectively received an impressive total of 1514 citations, Which indicates the extent of the contribution of this journal in this field. The results highlighted that the most important institution contributing to the dissemination of research in the field of strategic information systems is the University of **Pittsburgh**, which issued 14 publications and a large number of citations amounting to 1628, indicating an impressive average of about 116.29 citations per research paper, which reflects its significant contributions to Scientific discourse Through our analysis of the countries that contribute most to enriching the topic of strategic information systems, we notice a clear dominance of the United States in this field, with a total of 156 publications and 6,409 citations, which indicates its pioneering role. On the other hand, we noticed a clear rise in Asian countries in this field, led by China and Malaysia, with 20 and 14 publications, respectively. One of the main points in bibliometric analysis studies is identifying the main important words in the target field of study. Analysis of author keywords is vital to measure the development of research topics (Wen & Huang, 2012). Based on the bibliometric analysis tools used in this research, such as VOSviewer and BiblioMagika OpenRefine, **55** keywords mentioned at least three times in strategic information systems research were identified. The most prominent keywords are "information systems," "strategic information systems," "ISSP," "strategic planning," "strategic management," "strategic alignment," "competitive advantage," and "strategic decision." To assess the degree of interconnectedness and the significance of various themes within the realm of strategic information systems, researchers employed a Thematic Map of the SIS Field. This map highlighted four core subjects: "information systems," "strategic planning," "management information systems," and "organizational culture." These subjects serve as the foundational pillars of the strategic information systems field, pivotal in advancing theoretical and practical knowledge in the discipline.

Based on the analyses discussed in this section, we note that the field of strategic information systems has been a vibrant field since 1973. Despite this, many opportunities exist to enrich this field by linking strategic information systems to other fields. By analyzing the most important keywords used in this field and reviewing previous studies, we noticed the possibility of linking the field of strategic information systems to other fields in which it had

not previously been involved. For example, it can be linked to the field of supply chain management, such as supply chain digitization, where strategies and challenges of digitally transforming entire supply chains can be studied. Research can focus on adopting emerging technologies (e.g., IoT, blockchain, artificial intelligence) to improve supply chain operations. Enhancing transparency and improving flexibility. Emphasis can also be placed on the importance of strategic information systems in increasing the efficiency of logistics operations to achieve competitive advantages for organizations, especially organizations in developing countries that still lack these capabilities. Therefore, having such systems will help them achieve competitive advantages and facilitate on-time product deliveries, inventory control, and timely strategic decision-making.

Conclusion

This study represents a comprehensive overview of strategic information systems subjects from its beginning, as we adopted the bibliometric analysis method to take full advantage of it in knowing the general and precise details of the subject of strategic information systems. The field of strategic information systems needed bibliometric studies, making it the first analytical study that explicitly address the topic of strategic information systems. Data were collected from the Scopus database after we audited, cleaned, and analyzed them using bibliometric analysis tools such as VOSviewer Biblioshiny and BiblioMagika OpenRefine. 408 research papers were included in this study. Based on the bibliometric analysis, it was found that the topic of strategic information systems is a vital topic, with 16 publications published in 2023. The most prominent keywords in this field are "information systems," "strategic information systems," and "strategic planning." We noticed some gaps that need to be focused on, as the topic of strategic information systems can be linked to supply chain management. Through examining keywords and previous research, we found that there is a gap in this aspect. Future researchers can benefit from this study in searching for other research gaps that enable them to delve into and research them comprehensively. There are still many opportunities in this field, especially since strategic information systems are a vital subject that can be used to achieve a competitive advantage for companies.

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