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Management Information Systems: Bibliometric Analysis and Its Effect on Decision Making

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ABSTRACT

Decision-making in the organization always relates to the description of the results of the decisions taken. Therefore, every organization needs a management information system to assist in making various kinds of decisions needed. The purpose of this study was to determine the influence and effectiveness of management information systems on decision-making in the field of archives. The method used in this study is the explanatory survey method. Data collection techniques were carried out using questionnaires and product correlation moments. Data analysis was performed using simple regression analysis and hypothesis testing. The subjects of this study were 120 administrative employees in the city of Bandung. To support the analysis, this study also carried out a bibliometric analysis to determine trends in research development from information management systems to decision-making. Based on the findings, the quality of the management information system used is in the high category, as well as the effectiveness of decision-making is in the high category. Based on the results of hypothesis testing and significance, it can be interpreted that the management information system has a positive and significant effect on decision-making in the field of administration.

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1. INTRODUCTION

An organizational management system, always contains what is known as decision-making. Decision-making is a reasoning process by processing input in the form of relevant information into certain decisions or actions to achieve the expected goals (Gerasimov & Gerasimov, 2015). Therefore, decision-making is considered to play a vital role in the process of determining and solving every need and problem within the organization. It is no exaggeration to say that the role of decision-making determines the success and progress of an organization (Duan *et al*., 2019).

Several aspects must be considered in making a decision, namely:

(i) recognizing or determining a problem or issue;
(ii) analyzing difficulties: problem classification, collecting data, and problem specifications;
(iii) determining problem-solving criteria;
(iv) developing an action plan or strategy; formulate alternatives, formulate the consequences of each alternative, choose an action plan;
(v) develop an action plan, program communication and monitor as well as evaluation (Shrestha *et al*., 2019; Stichter *et al*., 2019).

Decision-making is a combination of analysis and judgment, intuition, and the ability to utilize business by taking feelings (Nemtinov *et al*., 2019). Meanwhile, in a world characterized by rapid changes in science and technology, decision-making must also consider the development of science and technology, especially in utilizing information systems in decision-making (Berdik *et al*., 2021). A management information system is a well-structured set of procedures when executing and producing data from information to support decision-making and control within an organization (Ali, 2019).

The role of the management information system is a tool to facilitate management in determining decision-making. Management information systems are widely used in various areas of organizations or institutions such as education, business, service, industry, and health (Berdik *et al*., 2021).

Several studies have reported success in making decisions through the use of information management systems. Wijaya *et al*. (2022) reported the use of information management systems to make it easier to record employee data and basic salaries. Badrudin *et al*. (2022) have successfully researched the use of information management systems in determining satisfaction and service quality from educational applications.

Veza & Maghfiroh, (2020) conducted research related to decision-making through the use of information management systems when ordering food. Lestiowati *et al*., (2021) have successfully conducted research on the use of management information systems in the health sector which shows that there is a positive influence from the use of management information systems.

In addition, research conducted by Christian *et al*., (2022) has succeeded in conducting research on information management systems in designing architectures, which is seen from the significant value and positive value hypotheses, indicating that the management information system is in making decisions.

Based on the explanation above, the purpose of this study was to investigate the influence and effectiveness of management information systems on decision-making.

In this study, bibliometric analysis is also presented related to information management systems and decision makers aiming to see trends in the development of information management systems. It is hoped that this research can provide knowledge and explain the development of research on the use of information management systems in decision-making.

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2. METHODS

2.1. Data Collected Management Information Systems and Decision Making

This research was conducted using an explanatory survey method. The data collection technique used is means of literature studies and questionnaires. Respondents in this study were 120 administration employees who worked at a company in Bandung. The data analysis technique used is simple regression analysis and product-moment correlation.

The research instrument is a questionnaire consisting of two parts, namely a questionnaire to measure the management information system which consists of 4 dimensions including (1) collect; (2) analyze; (3) save; (4) present.

Meanwhile, measuring decision-making consists of four dimensions, namely (1) Identification of problems; (2) making policy alternatives; (3) alternative selection; (5) implementation of decisions. Based on the introduction and review of the literature, this study aims to describe management information systems and decision-making using descriptive statistics. Furthermore, based on the introduction and review of the literature, a research hypothesis can be developed, namely that there is an influence of management information systems on decision making which will then be tested using inferential statistics with a simple regression statistical formula.

2.2. Bibliometric Management Information Systems and Decision Making

Figure 1 depicts the methodological design stages associated with bibliometric analysis in information systems management research. The following is detailed information for the experiment:

(i) Harvesting Data.

The Google Scholar database is used to collect article data related to this research using the Publish or Perish software.

Article collection is organized in the 2018-2023 range using the following keywords: "management information system" or "decision making". In article document collection, document searches are filtered based on document type in the form of journals, conference proceedings, and books, but we exclude patents. More than 997 research articles for management information systems were selected as a result of data harvesting.

The articles were then converted into Microsoft Excel and saved in comma-separated values format (*.csv). Google Scholar was chosen as the database for the bibliometric analysis in this study because it is one of the largest free scientific bibliography databases. Google Scholar also makes use of a large number of classified databases, the contents of which are not available on the public internet. Thus, Google Scholar can be contrasted with two other large databases, both of which are costly sources of scientific bibliography: Web of Knowledge (edited by ISI/Thomson) and Scopus (Developed by Elsevier).

(ii) Screening Data.

The data obtained and collected during the data harvesting process cannot be analyzed directly. As a result, data screening is required. At this point, data screening was done by looking at the title of the article and the year it was published. Articles with irrelevant titles and a year of publication that was not complete were discarded. The cleaned data were then entered into a Microsoft Excel spreadsheet for further analysis with bibliometric software. Following data screening, 989 articles met the criteria for further analysis.

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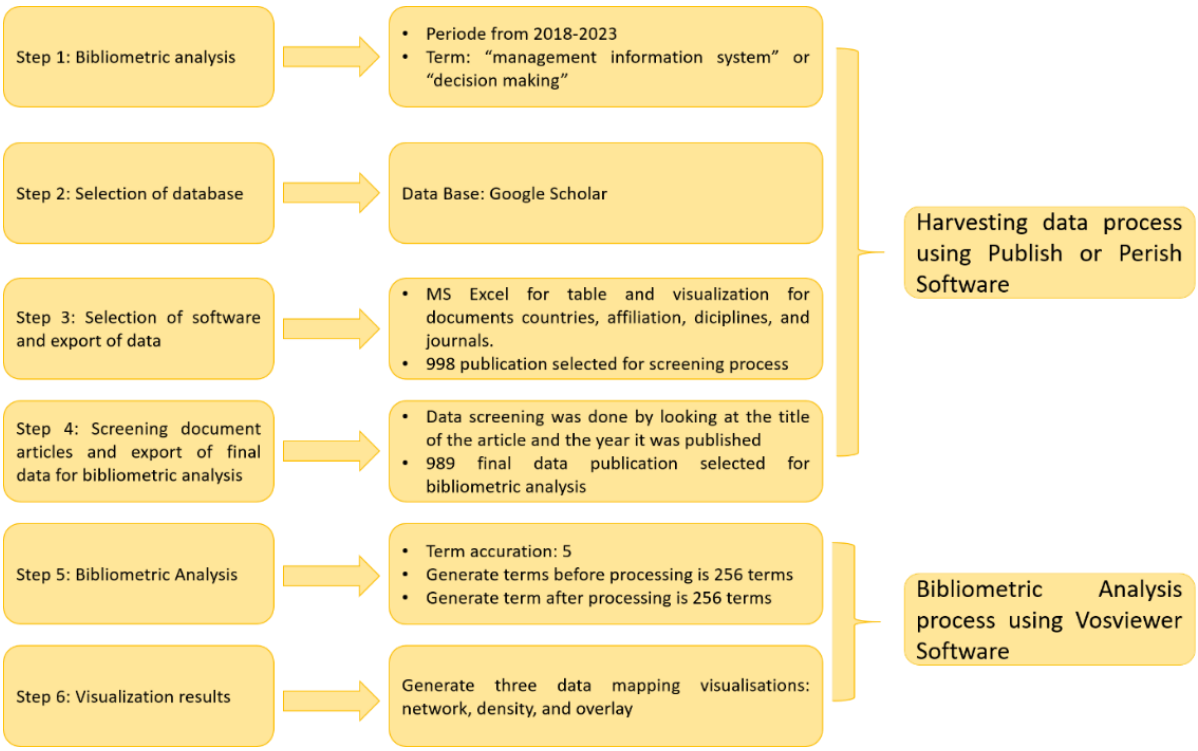

Figure 1. Methodology design of bibliometric analysis.

(iii) Data Analysis and Visualization.
Article documents in Microsoft Excel files (.csv format) that have been selected and free from irrelevant information are then converted into.ris format to be visualized using VOSviewer software to get bibliometric analysis data. In this stage, we filtered the terms included in the VOSviewer network mapping visualization. The source database was used to map the article data. We used three types of data mapping visualizations: network, density, and overlay. Bibliometric visualization is carried out with a minimum accuracy value of 5 for each term. From the preset accuracy value, the number of terms generated before processing is 282 terms. The number of terms after processing is 256 terms. More information on data analysis and visualization with VOSviewer and Publish or Perish software can be found elsewhere (Al Husaeni and Nandiyanto, 2022).

3. RESULTS AND DISCUSSION

3.1. Management Information System

The need for information in various human activities, both those that have been organized and those that have not (not)been organized, shows an increase. Good information is information that is complete, fast, and precise so this information is expected to help users in carrying out their duties. Management Information Systems are a combination of human resources and computer-based resources that produce a collection of data storage, communication, and usage for efficient management operations and business planning.

The definition of a management information system is a series of information sub-systems that are comprehensive and coordinated and rationally integrated that are capable of transforming data so that it becomes information in many ways to increase productivity following the style and nature of managers based on quality criteria set has been established (Dwivedi *et al.*, 2020).

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Management information systems are: the process of collecting, analyzing, storing, and presenting data for management decision-makers at all levels for management of the flow of resources in the form of materials, workers, money, and machine facilities. The definition of a management information system is a collection of sub-systems that are interconnected with each other and work together harmoniously to achieve one goal, namely processing data into information needed by management in the decision-making process when carrying out its functions (see **Figure 2**).

The application of management information systems in an organization or company because it has goals to be achieved (Paré *et al.*, 2015). The purpose of the management information system is a data processing procedure that is developed within an organization and put together when deemed necessary, to provide data to management whenever needed, both internal and external data, for decision-making to achieve organizational goals. The management information system as a management tool especially assists in making decisions for planning or taking corrective actions that are deemed necessary if there is storage in a job so that in the end the predetermined targets or plans are achieved.

The overall effectiveness of information systems can be evaluated by testing five criteria:

(i) Relevance. The system and information provided must be relevant to the company's business needs.
(ii) Economy. The system must be economical and the costs incurred must be following the benefits sought from the results achieved.
(iii) Accuracy. The information system must adequately provide controls to measure accuracy.
(iv) flexibility. The system must provide a high degree of flexibility to handle future normal growth. And deal with changes that are inevitable in the planning process or the company's operations.
(v) Punctuality. The system must provide timeliness through time responses.

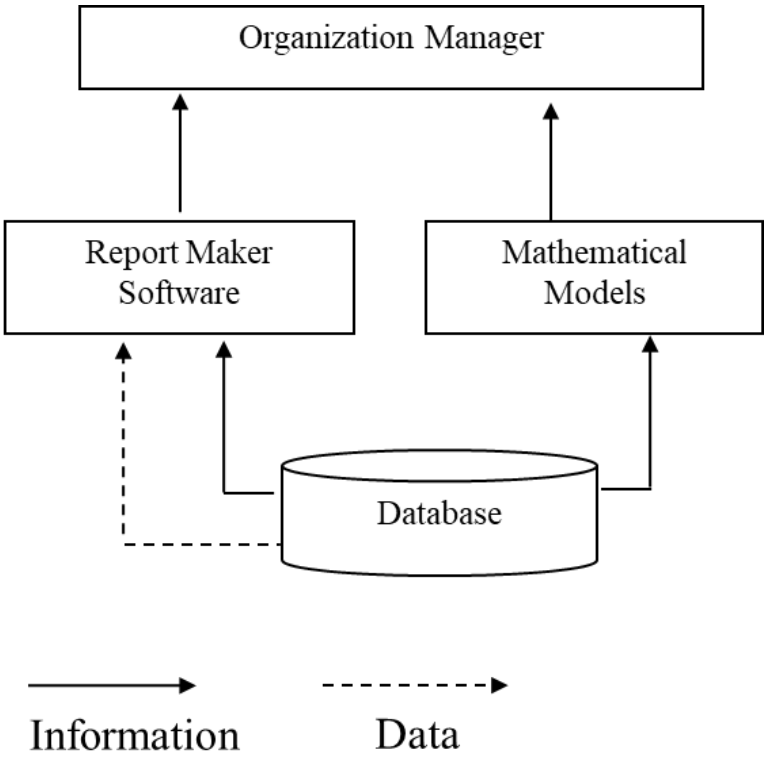

Figure 2. Management information system.

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3.2. Decision-Making Concepts

Management needs information as a basis for decision-making. These decisions are made to solve problems. The act of making a decision result in a solution to a problem or a conflict. Problems of decisions and conflicts are very complex and uncertain and can have very important influences (Sari, 2018).

Decision-making is an intellectual process that is basic to human behavior, and it can be said that everyone in an organization is a decision-maker, which of course has different degrees and meanings (Wahono & Ali, 2021). However, it needs to be said that it is managers who play an important role, especially in organizationally oriented-decision-making.

The effectiveness of a person's leadership is measured by dexterity, skill, and ability to make rational, logical decisions, based on creative and innovative thinking, combined with an intuitive approach by utilizing various lessons learned from experience. Decision-making is the selection of alternative behaviors from two or more alternatives. The basics of decision-making are:

(i) Intuition. It is usually used when someone makes a decision marked by feelings. Intuitive decisions are unconsciously influenced by knowledge, experience, and other practices.
(ii) Experience. Experience-based decision-making has the benefit of practical knowledge because one's experience can predict the state of things.
(iii) Fact. Usually, facts are considered an excellent basis for making decisions. Because of this fact, we can analyze, describe, and draw conclusions to be able to make decisions on the matter.
(iv) Authority. It is usually carried out by leaders to their subordinates or people with a higher position to people with a lower position.
(v) Rational. The resulting decisions are objective, logical, more transparent, and consistent to maximize results.

Decision-making in an organization/company is a process that involves all levels of management following authority and responsibility (Arjanggi, 2017; Hayati *et al*., 2021). Especially in terms of the implementation of decisions made between superiors and subordinates must be a harmonious fabric. This means that decisions made by top-level managers must be implemented as well as possible by employees. Conversely, decisions taken by lower-level managers must be able to fully support the decision-making objectives set by top-level managers. In making decisions, several factors can influence a person, namely:

(i) The internal state of the organization
(ii) Availability of necessary information
(iii) The external state of the organization
(iv) Personality and decision-making skills

From the factors above, it is clear that information is needed by companies in the decision-making process. Where the effectiveness of one's leadership is measured by dexterity, skill, and ability to make rational, logical decisions, based on creative and innovative thinking, combined with an intuitive approach by utilizing various lessons learned from experience.

Besides that, the process of a leader should choose some of the best alternatives and know what problems are being faced by the company a leader must be able to communicate and follow up on decisions taken, as said Gok & Atsan (2016) that the decision-making process includes:

(i) Identification of problems
(ii) Collection and analysis
(iii) Making policy alternatives that will later be used as decision alternatives, taking into account the environmental situation
(iv) Choose the best alternative to make a decision
(v) Carry out decisions
(vi) Monitor and evaluate the results of implementing decisions.

The decision-making process implies that a leader must choose the best alternatives

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and know what problems are being faced by the company and a leader must be able to communicate and follow up on the decisions taken. The usefulness of verbal and informal information help to explain the difficulties in implementing computer-based designs, particularly at the executive (decision-making) level. The manager's position provides formal power that can be exercised by organizational units (Larrick & Feiler, 2015). This power results in a status that enables managers to play ten roles that fall into three categories: interpersonal, informational, and decisional.

To be able to solve the problems faced by the organization, it must first be known what are the cause and the consequences if the problem is not solved immediately. To be able to meet the causes and effects of the problem, it is necessary to collect data that is directly or indirectly related to the problem. The data is then processed so that in the end it is information. The information required must be complete as needed, reliable, correct, and up to date. Based on the literature that has been discussed, the framework in this study is in **Figure 3**.

3.3. Bibliometric Management Information System

We add to our research a bibliometric analysis of information systems management topics. Bibliometrics has been widely applied in many areas (Al Husaeni & Nandiyanto, 2022a; Al Husaeni & Nandiyanto, 2022b; Al Husaeni & Nandiyanto, 2023a; Al Husaeni & Nandiyanto, 2023b; Al Husaeni *et al*., 2023a; Al Husaeni *et al*., 2023b; Bilad, 2022; Fauziah & Nandiyanto, 2022; Hamidah *et al*., 2020; Hirawan *et al*., 2022; Hizqiyah *et al*., 2022; Husain *et al*., 2022; Kurniati *et al*., 2022; Luckyardi *et al*., 2022; Maryanti *et al*., 2022; Misbah *et al*., 2022a; Misbah *et al*., 2022b; Mudzakir *et al*., 2022; Mulyawati & Ramadhan, 2021; Nandiyanto *et al*., 2023a; Nandiyanto *et al*., 2021; Nandiyanto & Al Husaeni, 2022; Nandiyanto & Al Husaeni 2021; Nandiyanto *et al*., 2020; Nandiyanto *et al*., 2023b; Nandiyanto *et al*., 2022; Nasrudin *et al*., 2022; Nordin, 2022a; Nordin, 2022b; Nugraha & Nandiyanto, 2022; Ragdhita & Nandiyanto, 2022; Riandi *et al*., 2022; Sahidin *et al*., 2023; Saputra *et al*., 2022; Satiyo *et al*., 2021; Shidiq, 2023; Shidiq *et al*., 2021; Soegoto *et al*., 2022; Solehuddin *et al*., 2023; Sudarjat, 2023; Sukyadi *et al*., 2023; Utama *et al*., 2023; Wiendartun *et al*., 2022; Wirzal & Putra, 2022).

Various studies on management information systems have been available. This can be confirmed from the publication trend data on management information systems from 2018-2023 which is shown in **Figure 3**. The data after the screening process through the Publish or Perish software with the keywords "management information system", or "decision making" resulted in 989 articles from various institutions in the world.

Based on **Figure 4**, the number of publications related to management information system research has decreased. In 2018, the number of publications reached 26.7% (the number of documents is 265 documents) of the total number of documents in 2018-2023. In 2019, publications on related topics decreased by 3.4% where the number of related publications at that time was 231 documents (23.5%). In 2020, related documents experienced a non-significant increase of 0.8% (articles became 239 documents). After that, related publications will experience a significant decline until 2023 when the number of documents in 2021, 2022, and 2023 respectively is 169 (17.08%), 76 (7.68%), and 9 (0.9%).

Figure 3. Theoretical framework.

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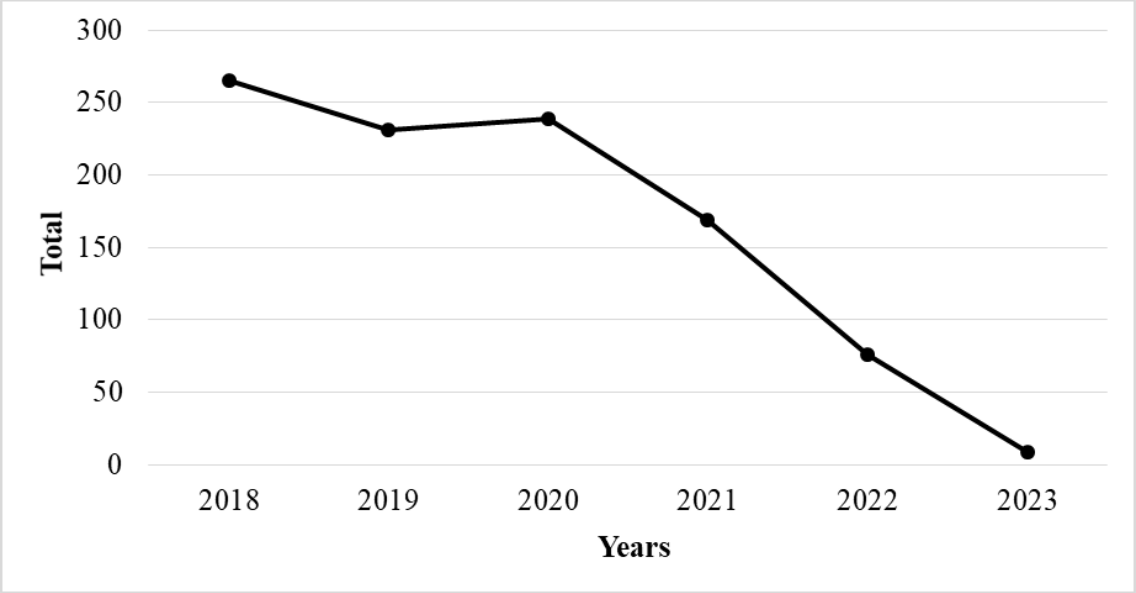

Figure 4. Annual publication trends for management information system research (2018-2023).

One of the most important factors for analyzing research and research developments in various fields is the analysis of authors and publications with the most top citations (Cisneros *et al*., 2018). **Table 1** shows the top ten citations for articles about management information systems in the Google Scholar database from 2018 to 2023. The top 10 citations are from publications in journal articles. The most cited publication is an article entitled "Creating strategic business value from big data analytics: A research framework" written by Grover *et al.* (2018) and published in the Journal of management information systems. The second and third top citation rankings are articles entitled "Knowledge management, decision-making style, and organizational performance" and "Toward a unified model of information security policy compliance" published in the Journal of Innovation & Knowledge and MIS quarterly respectively.

3.4. Visualization of Publication Development Based on Keywords

Each node in each network represents several entities, such as articles, authors, countries, institutions, keywords, and journal names (Al Husaeni & Al Husaeni, 2022). In the case shown in **Figure 5,** several descriptions or descriptions can be concluded, namely, the size of the cover color of each term indicates the number of times the indicated keyword appears, the relationship between nodes represents the joint occurrence between keywords, the thickness of the link indicates the co-occurrence between words key, the larger the node, the greater the occurrence of keywords, and the thicker the association (link) between nodes, the greater the co-occurrence between keywords.

Each cluster is distinguished and indicated by the cover color. In addition, nodes and links within clusters can be used to explain the scope of topics from themes (clusters)and relationships (links)between topics (Al Husaeni & Al Husaeni, 2022). Based on **Figure 5**, the number of clusters found is based on 8 clusters. A more detailed explanation of the distribution of clusters based on the mapping results is shown in **Table 2**.

Based on **Table 2**, the terms used as keywords namely "management information systems" or "decision making" are in cluster 3 and cluster 6 which are marked in blue and light blue respectively. In addition, based on **Table 2** we can also see that mapping data using VOSviewer produces 256 terms which are divided into 8 clusters.

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Table 1. 10 Top-cited articles management information systems and decision making on in research.

Author	Title	Journal	Citation
Grover *et al*. (2018)	Creating strategic business value from big data analytics: A research framework.	Journal of management information systems	751
Abubakar *et al*. (2019)	Knowledge management, decision-making style, and organizational performance	Journal of Innovation & Knowledge	728
Moody *et al*. (2018)	Toward a unified model of information security policy compliance	MIS Quarterly	437
Müller *et al*. (2018)	The effect of big data and analytics on firm performance: An econometric analysis considering industry characteristics	Journal of Management Information Systems	354
Lehrer *et al*. (2018)	How big data analytics enables service innovation: materiality, affordance, and the individualization of service.	Journal of Management Information Systems	314
Popovič *et al*. (2018)	The impact of big data analytics on firms' high-value business performance.	Information Systems Frontiers	289
Roetzel (2019)	Information overload in the information age: a review of the literature from business administration, business psychology, and related disciplines with a bibliometric approach and framework development.	Business research	288
Burton *et al*. (2020)	A systematic review of algorithm aversion in augmented decision making	Journal of Behavioral Decision Making	274
Gil-Garcia *et al*. (2018)	Digital government and public management research: finding the crossroads.	Public Management Review	260
Liang *et al*. (2018)	Research landscape of business intelligence and big data analytics: A bibliometrics study	Expert Systems with Applications	234

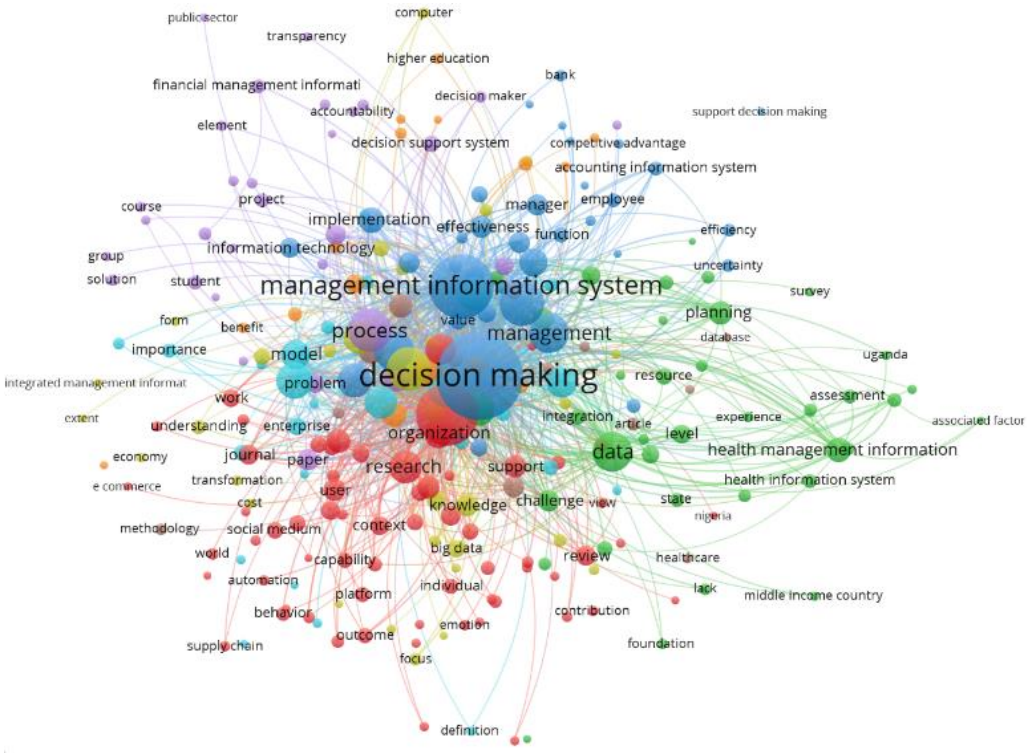

Figure 5. Network visualization based on co-word.

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Table 2. Cluster distribution based on VOSviewer mapping results.

Cluster	Items	Total of Terms	Color
1	Action, advance, algorithmic decision-making, approach, artificial intelligence, aspect, attention, automation, behavior, big data analytic, business intelligence, capability, community, concern, consumer, content, context, contribution, decision, domain, e-commerce, effect, effective decision making, emotion, fake news, firm, framework, future research, goal, human decision making, implication, individual, information systems research, innovation, insight, internet, interpretation, issue, journal, life, Nigeria, online review, opportunity, organization, outcome, perception, platform, point, practice, recommendation, research, review, risk, service, social medium, supply chain, support, technique, term, theory, trust, user, view, work, world.	65	Red
2	Accuracy, assessment, associated factor, better decision making, case study, challenge, country, data, data quality, Ethiopia, evidence, experience, foundation, governance, health information, health information system, health management information system, health management information systems, hospital, integration, lack, level, management decision, middle-income country, pandemic, planning, qualitative study, resource, self, survey, systematic review, time, Uganda, use, utilization.	37	Green
3	accounting information system, area, availability, bank, company, competitive advantage, control, decision making, determinant, effective decision, effectiveness, efficiency, employee, firm performance, function, impact, implementation, influence, information, information system, information systems, information technology, investment, leadership, management, management accounting information system, management information system, manager, mechanism, moderating effect, moderating role, need, performance, strategy, support decision making, uncertainty, value.	37	Blue
4	Accounting, adoption, algorithm, analytic, big data, business, business analytics, computer, concept, cost, data analytic, decision-making process, decision-making, economy, example, extent, farm management information system, focus, form, information management, integrated management information system, integrated management information system, literature review, machine learning, management accounting, organization, processing, sustainability, system, transformation, understanding.	31	Yellow
5	Accountability, author, case, comparison, component, course, decision maker, decision support, decision support system, education, element, empirical evidence, evolution, factor, financial management information system, government, group, paper, problem, process, project, project management, project management information system, public sector, solution, student, tool, training transparency, web.	30	Violet

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Table 2 (Continue). Cluster distribution based on VOSviewer mapping results.

Cluster	Items	Total of Terms	Color
6	Analysis, characteristic, competitiveness, definition, dimension, enterprise, environment, evaluation, importance, important role, information quality, management information systems, managerial decision, managerial decision making, model, operation, order, organizational performance, quality, relationship, role, SMEs, strategic decision, study, success, usage.	26	Blue Light
7	Activity, addition, basis, benefit, change, development, education management information system, feature, higher education, higher education institution, improvement, industry, knowledge management, perspective, real-time, systematic literature review, type.	17	Orange
8	Application, article, communication, database, discipline, field, healthcare, information overload, literature, methodology, requirement, strategic decision making, technology.	13	Brown

In addition to network visualization, the visualization forms obtained from the VOSviewer mapping results are overlay visualization (see **Figure 6**) and density visualization (see **Figure 6**). The visualization overlay shows the year and date a term was used. The use of overlay visualization in this study aims to identify the words that are closest to the keywords of interest (Brown, 2020). In this visualization overlay, we can see the year range, month range, and frequency of keywords that are often used for research. Based on **Figure 6**, the terms used as keywords namely "management information systems" or "decision making" are widely used in the 2018 - 2019 research year range from June to August.

Overlay visualization is used to show the range of years and months terms that are often used in research. Density visualization is used to see terms that are often and rarely used in research. In addition, density visualization can also describe the density in each research group. The faded color indicates that the term is rarely used in research, conversely, the brighter yellow color indicates that the term has been used often/very frequently (Herdianto et al., 2021). Based on **Figure 7**, the term "management information systems" or "decision-making" is often used in research. This is indicated by the resulting color being bright yellow.

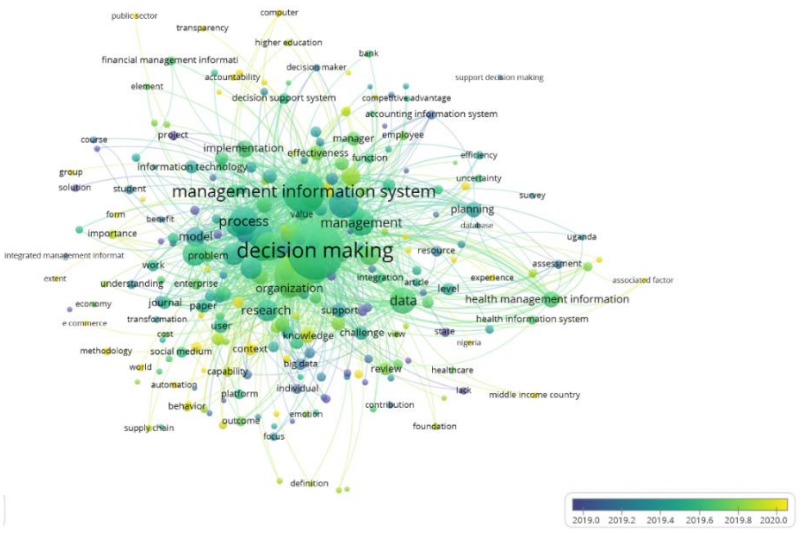

Figure 6. Overlay visualization based on co-word.

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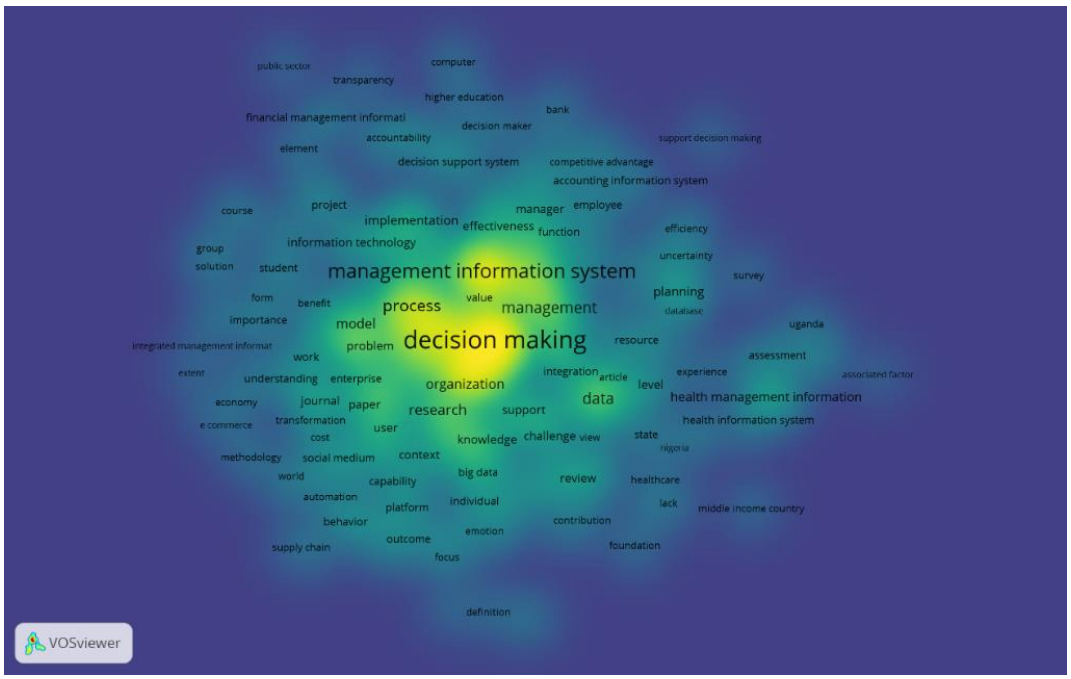

Figure 7. Density visualization based on co-word.

3.4. Discussion

Management Information Systems are measured through four dimensions, namely Collecting, Analyzing, Storing, and Presenting. The four dimensions are broken down into 15 questions which are used as indicators of management information system variables. The description of the management information system variable is obtained by calculating the percentage of the average score of the respondents' answers as listed in the appendix. Based on the calculations, the results are obtained as shown in the following **Table 3**. The recapitulation of the scoring results above is more clearly illustrated in the following:

(i) Collect. The management information system is with a value of 3.67.
(ii) Analysis. The management information system is with a value of 3.86.
(iii) Save. The management information system is with a value of 3.69.
(iv) Serve. The management information system is with a value of 3.85.

Based on the score results above, the respondent's perception of the management information system shows that the average score is 3.77 which in the description interpretation criteria table the figure is in the range of 3.40 – 4.19 or is included in the high category. Thus, it can be seen that the leadership's perception of the quality of the management information system can be said to be good. Decision-making is measured through four dimensions, namely Problem Identification, Alternative Policy Making, Alternative Selection, and Decision Making. The four dimensions are broken down into 11 questions that are used as a measure of the decision-making variables.

The description of the decision-making variable is obtained by calculating the percentage of the average score of the respondents' answers as listed in the appendix. Based on the calculations, the results are obtained as shown in the following **Table 4**. The recapitulation of the scoring results above is more clearly illustrated in the following:

(i) Identification of problems. The decision-making is a value of 3.45.
(ii) Alternative policymakers. The decision-making is a value of 3.45.
(iii) Alternative Choice. The decision-making is a value of 3.34.
(iv) The decision of the executor. The decision-making is a value of 3.45.

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Table 3. Respondents' responses to management information system variables.

Management Information System Variable (X)			
Dimensions	**Items**	**Average**	**Interpretation**
1. Collecting	1-4	3.67	Tall
2. Analyze	5-6	3.86	Tall
3. Saving	7-11	3.69	Tall
4. Serve	12-15	3.85	Tall
Average		**3.77**	**Tall**

Table 4. Respondents' responses to decision-making variables.

Decision-Making Variable (Y)			
Indicator	**Items**	**Average**	**Interpretation**
1. Problem Identification	1-3	3.45	Effective
2. Making Policy Alternatives	4-7	3.45	Effective
3. Selection of Alternatives	8-0	3.34	Effective enough
4. Implementation of Decisions	11	3.45	Effective
Average		**3.42**	**Effective**

Based on the score results above, the respondent's perception of decision-making shows that the average score is 3.42 which in the table of interpretation criteria descriptions this figure is in the range of 3.40 – 4.19 or is included in the high category. Thus, it can be seen that the leadership's perception of the effectiveness of decision-making can be said to be effective.

Based on the results of data analysis by distributing questionnaires to 31 respondents, it can be seen that the quality level of the management information system is felt by respondents to be in the high category. The findings of this study indicate that according to the leadership's perception, the quality of management information systems in terms of collecting, analyzing, storing, and presenting can be said to be good. The analyzing dimension has the first highest average score, this finding reflects that the high quality of management information systems makes it easier to analyze and present information. This can be seen from the high ease in analyzing data and accuracy in analyzing data. This facilitates the leadership in the process of analyzing and presenting the information needed in decision-making. Even so, accuracy in collecting data will affect the process of ease of analyzing and presenting the information. This is because if the data collected is inaccurate then the information that is analyzed and presented becomes less accurate. While they collect dimensions and have the last highest average score of the others. This shows that the quality of the management information system in the process of collecting is not so dominant compared to the process of analyzing. This can be seen from the fact that data collection has not been fully carried out promptly, and the level of availability and completeness of data is still lacking. Leaders should improve the quality of the management information system in terms of the collection process so that it can better support subsequent processes in analysis, storage, and retrieval to support decision-making.

A leader/manager needs information that supports all levels of management. Where in this case the whole process from gathering information to presenting data can support decision-making activities. For this reason, a management information system (MIS)is needed by companies to produce appropriate, complete, accurate, and relevant information. In other words, the existence of a good management information system (MIS)can effectively

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support decision-making activities in a company.

The findings of this study indicate that the leadership's perception of the effectiveness of decision-making in terms of identifying problems, making policy alternatives, selecting alternatives, and implementing decisions can be said to be effective. The dimension of making alternative policies and implementing decisions has the first highest average score, this finding reflects that the effectiveness of decision-making tends to be dominant in making alternative policies and implementing decisions made by company leaders. This can be seen from the efficiency of the alternative policies taken by a leader before making a decision, the effectiveness of the alternative policies taken, as well as the suitability between the alternative policies that have been chosen and their implementation. In this case, it means that decisions taken by a company leader must be considered as well as possible because each alternative policy chosen will have an impact on the implementation process. A leader should choose the best alternatives and know what problems are being faced by the company and a leader must be able to communicate and follow up on the decisions taken. While the dimension of alternative selection has the last highest score of the others. This shows that the effectiveness of decision-making in the alternative selection process is not so dominant compared to the process of making alternative policies and implementing decisions. This can be seen from the lack of suitability of the selected policy alternatives with the problems faced and the lack of firmness in selecting alternatives. For this reason, a leader should choose the best alternatives and know what problems are being faced by the company and a leader must be able to communicate and follow up on the decisions taken.

Based on these problems, the analysis of the effect of the level of implementation of management information systems (MIS) on the level of decision-making within the scope of management, based on the calculation results of a simple regression analysis. The simple regression calculation is used to determine the effect of management information system (MIS) variables on decision-making. Based on the results of previous data processing, the authors have conducted statistical tests and the result is that the data in this study are normally and linearly distributed so that the research can be continued.

A simple regression calculation between management information system variables and decision-making produces a regression equation $\hat{Y}$ = 11.123 +0.535X. This equation states that the intercept value (a) means that when the management information system variable (X)is zero or the decision-making variable (Y) is not influenced by the management information system, the average decision-making value is 11.123. While the coefficient (b)means that if the variable (X) of the management information system increases by one unit, decision-making will be increased by 0.535.

While the results of hypothesis calculations using the F test obtained the results of the F test value on the Ftable value = F (1- α)(db reg (b/α)(dkres), with the test criteria if the F test value ≥ Ftable value then reject H0. Based on the calculation above turns out that the test value F or Fcount ≥ Ftable value or 18.323 ≥ 4.183 then H0 is rejected and H1 is accepted in this case it is declared significant This shows that the hypothesis "There is an influence of management information systems on decision making was accepted. Based on these results, this study has answered the questions contained in the formulation of the problem, namely "Is there any influence of the level of implementation of management information systems (MIS)on the level of decision-making within the scope of management?" This research has proven that the management information system (MIS)has proven to have a significant influence on decision making within the

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scope of management. Thus, the higher the quality of the management information system, the higher the effectiveness of decision making and vice versa.

4. CONCLUSION

This research has succeeded in evaluating the influence and effectiveness of management information systems in making decisions. Based on the findings, the quality of the management information system used is in the high category, as well as the effectiveness of decision making is in the high category. Based on the results of hypothesis testing and significance, it can be interpreted that the management information system has a positive and significant effect on decision making in the field of administration. Based on the results of the bibliometric trend, the topic has fluctuated. However, in 2020 publications related to this topic increased but not significantly by 0.8% (239 documents). After that, publications in the following years, namely 2021, 2022, and 2023, experienced a significant decrease of 17.08% (169 documents), 7.68% (76 documents), and 0.9 (9 documents) respectively.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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