

The Role of Statistics in Economic and Management Analysis and Decision-Making

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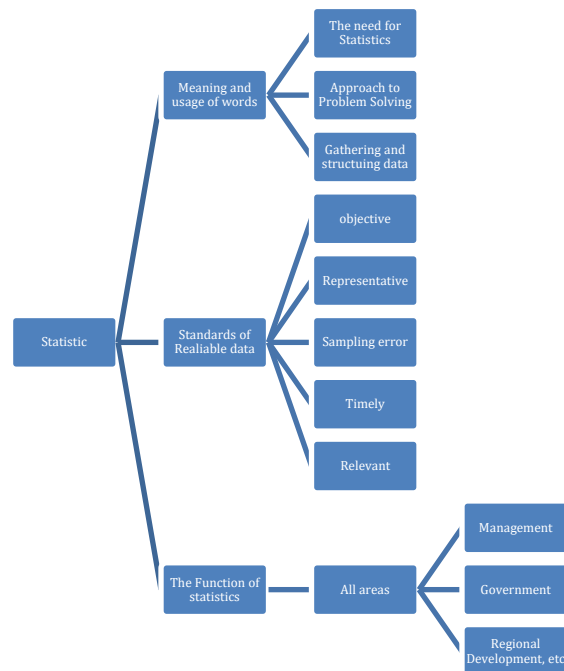
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ABSTRACT

This study examines the crucial role of statistics in analysis and decision-making in the fields of economics and management. In a data-dominated digital era, the ability to transform raw data into meaningful insights has become a critical competency. Statistics is not merely a collection of numbers, but a science that enables the collection, processing, analysis, and interpretation of data to identify patterns, measure uncertainty, and make accurate predictions. In economics, statistics serve as the backbone of macro and micro analysis, from tracking economic growth to predicting inflation and understanding consumer behavior. This literature study adopts a systematic literature review method, using the Publish or Perish application to search for scholarly publications from reputable databases such as Google Scholar. Five relevant articles were found and analyzed qualitatively, showing that statistics are crucial in various aspects of decision-making. For example, management accounting, which is influenced by statistics, is significant in corporate decision-making. Statistics also help in understanding consumer behavior and the impact of promotions and products on purchasing decisions. This study emphasizes that without statistics, decisions would be based solely on assumptions, whereas with statistics, decisions are based on facts. Therefore, statistics are an essential foundation for achieving competitive advantage in a data-driven world.

INTRODUCTION

At the core of every effective decision—whether in the realm of economics or management—is accurate and reliable information. In today's digital era, where data is being generated in unprecedented volumes, the ability to transform raw data into meaningful insights has become a critical competency. According to Anggraini & MA, (2025) statistical data helps to reveal patterns and trends that cannot be seen directly. This is where statistics plays a central and irreplaceable role. Statistics is not merely a collection of numbers or complex mathematical formulas; it is a science that enables us to collect, process, analyze, and interpret data, thereby allowing us to identify patterns, measure uncertainty, and make accurate predictions. The concept map of statistics as described by Jusdienar et al., (2024) is as follows: The function of statistics



In the context of economics, statistics serve as the backbone of both macro and microeconomic analysis. This was stated by the Direktorat Analisis dan Pengembangan Statistik (2017) , which explained that through statistics, it can be seen that micro and small enterprises dominate the number of businesses in Indonesia, absorb the largest portion of the workforce, and are generally managed in a simple manner. Moreover, micro and small business actors need to enhance their capabilities—this is the kind of insight made visible through the application of statistics in the economic context. Therefore, from tracking economic growth, predicting inflation, and measuring unemployment rates, to understanding consumer behavior and market dynamics, all require a strong statistical foundation. In fact, in regional economies, it is essential to understand statistical concepts in order to practically apply them in analyzing the economic potential of a region (Herwanti et al., 2024). Without statistics, economic policymakers would be sailing without a compass, risking unfounded decisions that could harm economic stability.

Similarly, in management, statistics are a vital tool for both strategic and operational decision-making. Companies use statistics for various purposes, such as forecasting sales, optimizing production processes, managing supply chains, assessing investment risks, and developing effective marketing strategies. Statistics enable companies to model and simulate risks, allowing them to visualize different outcome scenarios and measure the impact of risks (Wahyudi et al., 2024). Managers who are able to leverage statistical analysis will be better prepared to face market challenges, identify new opportunities, and enhance overall organizational efficiency. Thus, statistics are no longer merely a complement, but an essential foundation for every individual and organization aiming to achieve a competitive advantage in a data-driven world.

METHOD

This study adopts a systematic literature review method to comprehensively analyze the role of statistics in analysis and decision-making in the fields of economics and management. The process began with formulating research questions and identifying relevant keywords such as "statistics," "economics," "management," and "decision-making." To support the efficiency and scope of the search, the application Publish or Perish (PoP) was used. Jasmadi et al., (2024) explain that Publish or Perish 8 is a software tool that facilitates access to and analysis of data from various sources, helping researchers in Indonesia produce high-quality publications. In this study, PoP was utilized to search and download metadata of scientific publications from various reputable databases such as Google Scholar, with a maximum of 10

articles retrieved, excluding citations, patents, and selecting only review articles in the PoP filters. After identification, the selected sources were screened based on their direct relevance to the topic and their quality. Key information from each source was extracted, including concept definitions, theoretical frameworks, empirical research findings, case studies, and arguments explaining the role of statistics. The collected data were then qualitatively analyzed through synthesis to identify patterns, trends, consistency of arguments, and research gaps. The results of this synthesis and analysis were then compiled into a structured narrative that systematically explains the significance of statistics as a fundamental foundation for effective and data-based decision-making in the context of economics and management.

RESULT

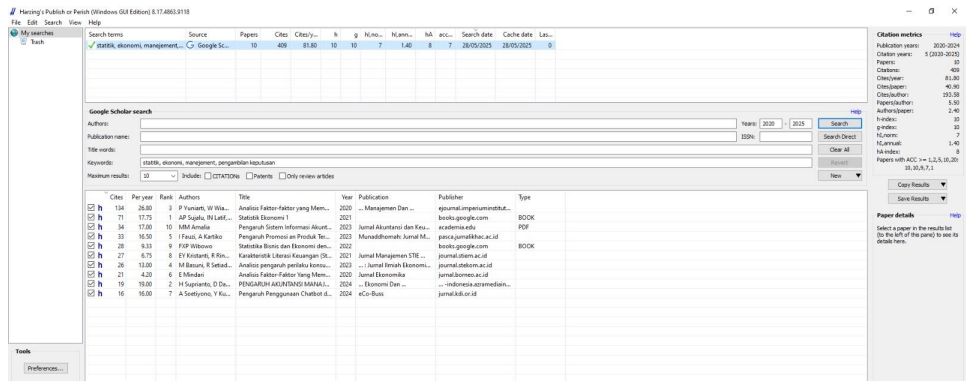


Figure 1. Data Publish or Perish

Based on Figure 1 and the identification of relevant keywords such as "statistics," "economics," "management," and "decision-making," a maximum of 10 data entries from the years 2020–2025 were used. Five (5) articles were found that met the criteria of being accessible, relevant, and based on primary data. Additionally, five (5) documents were not accessible, including two (2) books, two (2) articles that could not be accessed due to academic platform restrictions or incompatibility with this study, and one (1) article based on secondary data.

The following section presents five tables summarizing the works of the following authors:: Suprianto et al., (2024), Mohamad Basuni et al., (2023), Fauzi & Kartiko (2023), Kristanti & Rinofah (2021), Mindari, (2020).

Table 1. Article Analysis by Author Suprianto et al (2024)

Author 1:	Suprianto et al., (2024)
Title	"The Influence of Management Accounting on Decision Making at PT Sultra Kendari"
Method	The research uses a quantitative descriptive method. Data collection is done using a questionnaire technique. Respondent characteristics are analyzed using the classical assumption regression model. The research description employs simple linear analysis, t-test (partial), and the coefficient of determination test (R ²)
Result	Management accounting has a 90.8% influence on decision making.
Case Study	The Influence of Management Accounting on Decision Making at PT. Sultra Kendari
Arguments Regarding the Role of Statistics	The results of the management accounting analysis method show that there is a significant influence on decision making at Bank Sultra Kendari.
Effective decision making	Bank Sultra Kendari needs to pay attention to management accounting as a determining factor in making decisions.

Link	https://azramedia-indonesia.azramediaindonesia.com/index.php/attariiz/article/view/972
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Table 2. Article Analysis by Author Mohamad Basuni et al., (2023)

Author 2:	Mohamad Basuni et al., (2023)
Title	Analysis of the Influence of Consumer Behavior on Online Purchase Decision Making by the Community of Brebes Regency on the E-Commerce Platform Shopee
Method	Data collection in this study was conducted by distributing questionnaires to consumers of the e-commerce platform Shopee. The data analysis techniques used in the research include validity tests, reliability tests, classical assumption tests, hypothesis tests, and R-square tests using the Statistical Package for the Social Sciences (SPSS) version 22 to determine the extent of the influence of consumer behavior variables on online purchase decision variables
Result	Consumers can make purchases anytime through online shopping.
Case Study	To determine the extent of the influence of consumer behavior variables on online purchase decision variables
Arguments Regarding the Role of Statistics	The level of online purchases will continue to increase by providing services that make it easier for consumers.
Effective decision making	The easier the access to online purchasing, the higher the online purchase rate
Link	https://journal.stekom.ac.id/index.php/Bisnis/article/view/873/689

Table 3. Article Analysis by Author Fauzi & Kartiko (2023)

Author 3:	Fauzi & Kartiko (2023)
Title	The Influence of Product Promotion on the Decision-Making in Choosing a Madrasah
Method	The research method used in this study is a quantitative method with a survey approach, involving a total of 119 respondents.
Result	Promotion and product have a positive and significant effect on the decision to choose a madrasah, with promotion being the most dominant variable influencing the decision.
Case Study	How do promotion and product influence decision-making in choosing a madrasah?
Arguments Regarding the Role of Statistics	Promotion and product have a strong relationship in influencing the community's decision to choose a madrasah. Among these, promotion—which includes indicators such as advertising, sales promotion, personal selling, public relations, and direct sales—remains the dominant factor that positively and significantly affects the decision to choose a madrasah compared to the product offered.
Effective decision making	In the future, the madrasah administration will maintain its promotional efforts but will also improve the quality of the educational products offered, considering that relying solely on promotion to influence madrasah decision-making in the future will require significant costs.
Link	https://pasca.jurnalikhac.ac.id/index.php/munaddhomah/article/view/435/224

Table 4. Article Analysis by Author Kristanti & Rinofah (2021)

Author 4:	Kristanti & Rinofah (2021)
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Title	Characteristics of Financial Literacy (A Case Study of Students of the Faculty of Economics, Sarjanawiyata Tamansiswa University)
Method	This study involved 150 respondents who are students from the Management and Accounting departments of the Faculty of Economics at Sarjanawiyata Tamansiswa University. The research used a questionnaire with financial literacy indicators including: general personal finance knowledge, money management knowledge, insurance, and investment. The analysis methods used in this study are descriptive statistics, classical assumption tests, and multiple linear regression analysis..
Result	The results of the multiple linear regression analysis show that gender, age, year of enrollment, place of residence, and financial behavior have a positive and significant effect on financial literacy, while income has a negative and significant effect on students' financial literacy.
Case Study	To examine the level of students' financial literacy and the factors that influence it, such as demographic characteristics and financial behavior.
Arguments Regarding the Role of Statistics	It can be seen that the level of students' financial literacy is classified as high (69.73%) based on descriptive statistics. Furthermore, gender, age, year of enrollment, place of residence, and financial behavior have a positive and significant influence. Statistics in this study are not merely a calculation tool but a crucial scientific analysis tool to: Accurately evaluate the financial literacy condition of students, Determine intervention priorities based on empirical evidence, and Assist universities and policymakers in designing effective financial training programs
Effective decision making	Cultural factors, social factors, personal factors, and psychological factors influence the purchase of durian cream-filled bread products.
Link	http://jurnal.borneo.ac.id:443/index.php/ekonomika/article/view/1437/966

Table 5. Article Analysis by Author Mindari (2020)

Author 5:	Mindari (2020)
Title	Analysis of Factors Influencing Consumer Behavior in the Purchase Decision of Durian Cream-Filled Bread Products (Jordan Bakery) in Rantau Sialang Village, Sungai Keruh District.
Method	This study uses a quantitative approach. The sampling was conducted using Slovin's formula. The sample in this study consists of residents of Rantau Sialang Village, with a total of 97 respondents.
Result	The results of this study show that cultural, social, personal, and psychological factors together have a positive and significant influence on purchase decisions.
Case Study	How do promotion and product influence decision-making in choosing a madrasah school?
Arguments Regarding the Role of Statistics	The purchase decision of durian cream-filled bread products (Jordan Bakery) in Rantau Sialang Village, Sungai Keruh District, is collectively influenced by cultural factors, social factors, personal factors, and psychological factors. However, individually, only social, personal, and psychological factors have a significant influence. Without statistics, decisions are based solely on assumptions. With statistics, decisions are based on facts.

Effective decision making	Cultural factors, social factors, personal factors, and psychological factors influence the purchase of durian cream-filled bread products.
Link	http://jurnal.borneo.ac.id:443/index.php/ekonomika/article/view/1437/966

CONCLUSION

Based on a comprehensive analysis of the literature, it can be concluded that statistics plays a central and indispensable role in analysis and decision-making within the fields of economics and management. Statistics is not merely a collection of numbers, but a science that enables us to systematically collect, process, analyze, and interpret data, which ultimately leads to identifying patterns, measuring uncertainty, and formulating accurate predictions. In the context of economics, statistics is the backbone of both macro and micro analysis. This is evident from its ability to track economic growth, predict inflation, measure unemployment rates, and understand consumer behavior and market dynamics—all of which require a strong statistical foundation. Without statistics, economic policymakers risk making unfounded decisions that could potentially harm economic stability.

Similarly, in management, statistics functions as a vital tool for strategic and operational decision-making. Companies utilize statistics to forecast sales, optimize production processes, manage supply chains, assess investment risks, and develop effective marketing strategies. Managers who can leverage statistical analysis are better prepared to face market challenges, identify new opportunities, and improve overall organizational efficiency. Critically, the results from five analyzed research articles further affirm the role of statistics in data-driven decision-making. For example, the study by Suprianto et al. (2024) shows that management accounting using statistical analysis has a significant influence on decision-making. Mohamad Basuni et al., (2023) and Fauzi & Kartiko (2023) emphasize how statistics are used to understand consumer behavior and the impact of promotion on purchasing decisions. Kristanti & Rinofah (2021) and Mindari (2020) explicitly state that without statistics, decisions are based only on assumptions, whereas with statistics, decisions are based on facts. Therefore, statistics is an essential foundation for every individual and organization aiming to achieve competitive advantage in a data-driven world.

REKOMENDATION

For future research, it is recommended to expand the database scope in literature studies to obtain a more diverse and comprehensive perspective on the role of statistics across various economic and management sectors. Additionally, considering mixed research methods that not only rely on literature reviews but also involve empirical case studies or interviews with practitioners can provide deeper insights into the practical application of statistics in decision-making. Future studies can also focus on developing models or frameworks that integrate the latest statistical tools and techniques to address complex decision-making challenges in the digital era.

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