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Avnner Chardles Wellfren, Nelson Lajuni

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Mapping Investment Decision Studies: A Bibliometric Review

Avnner Chardles Wellfren

Centre for Postgraduate Studies, University of Malaysia Sabah, Jalan UMS, 88400 Kota
Kinabalu, Sabah

Nelson Lajuni

Faculty of Business, Economics and Accountancy, University of Malaysia Sabah, Jalan UMS,
88400 Kota Kinabalu, Sabah

Corresponding Author's Email: nelsonl@ums.edu.my

Abstract

The significance of investment decisions has increased the field's value among, particularly for investors and researchers. In this study, our review attempts to map trends and development of investment decision studies in the past, present and potential new knowledge or significant gaps in the literature for future references by utilizing bibliometric analysis. This study investigated a total of 3,894 papers retrieved from the Scopus database between 1990 and August 2021. The mapping revealed an upward trend of publications and is expected to continue in the next few years. Simultaneously, analysis based on Harzing's Publish and Perish and VOSviewer has demonstrated the significant increase of investment decisions studies as a result of emerging themes, mostly driven by technology advancement and social movement. Financial reporting and environmental, social, and governance (ESG) issues have been increasingly popular among researchers in recent years. Our mapping exposes the popularity of this topic among past, current and future researchers. As a result, this study's main value is the expansion of knowledge in investment decisions and as foundation for future academic reference. Stakeholders such as policymakers, industry players including scholars should explore potential areas in investment decision studies that will benefit the public as a whole.

Keywords: Investment Decisions, Review, Investment, Bibliometric Analysis, Vosviewer

Introduction

Two concepts contribute to the decision to invest: investment and decision. If these two concepts are understood, it is easier to form a reliable general concept around the terms. The OECD (1998) defines investment as any asset that an investor owns or controls, directly or indirectly. Examples include an enterprise, bonds, equity participation, interest, claims to money or performance, intellectual property rights, and any other tangible, intangible, or immovable property. In other words, investment can be broadly defined as a sum of money, particularly cash, injected into a business with an expectation of a dividend or simply capital

gain. An investment decision can also be defined as an objective, timely examination of the investment and its potential outcomes, as well as its calculated payoff, as well as the investor's subjective perspective (Virlics, 2013). As a result, an investment decision can be defined as the process of generating and selecting investment alternatives while taking into account the individual/organization objective and subjective and risk preference with the intention for profit.

The primary objective is to profit from investment decisions. Numerous individuals, particularly the general public, view investment as a means of generating additional passive income for future needs or retirement (Andreasson et al., 2017; Owadally et al., 2021). For the government, investment clearly serves as a catalyst for economic growth, particularly in emerging sectors such as renewable energy (Fan & Hao, 2020) or green technology (Hu et al., 2018). In a similar vein, businesses view the investment as a means of increasing equity through an initial public offering and covering research and development costs (Alam et al., 2019; Fedyk & Khimich, 2018). Naturally, the list of investment utilization is much longer. However, as Virclis (2013) noted, the risk is an inherent part of investing. According to academic research, undermining this principle may result in poor investment decisions (Aren & Hamamci, 2020; Ewe et al., 2020). In the long run, the investment may become the primary source of financial loss, rather than a source of income. Following that, an individual or organisation should be adequately informed in order to make an informed decision in the first place (Jaiyeoba et al., 2018). This is why it is critical to make sound investment decisions.

Yet again, recently the complexity in making decisions has substantially increased with the emergence of other determinants due to recent changes in technology. Most researchers focus on determinants such as social media (Shiva & Singh, 2019) and fintech (Junianto et al., 2021) in investment decisions. Still, researchers have also been studying much earlier established determinants such as financial literacy (Sabri, 2016), financial behaviour (Jaiyeoba & Haron, 2016) and financial planning (Sin et al., 2019). Therefore, the capability of an individual/organization is always in question to handle such a level of complexity. Plus, (Jaiyeoba et al., 2018) concluded regular investors are incapable of making reliable and credible investment decisions compared to professionals. This urges more attention to identify and understand the investment decision's determinant in the first place.

Prior research has also shown how far the investment decision domain has progressed, as well as its knowledge wealth. With such a large number of complex determinants, there is clearly a high potential for other undiscovered determinants to be discovered by researchers. Due to that, researchers have attempted to map the investment decision studies. For example, Losse and Geissdoerfer (2021) have conducted bibliometric analysis in terms of socially responsible investing, while Zahera and Bansal (2018) focus on a systematic review of behavioural biases in investment decisions. However, none of these studies is a direct focus on investment decisions, but rather the antecedent. As a result, the trend and development of investment decisions have not been adequately addressed. Subsequently, the purpose of this study is to examine recent changes and the direction of investment decisions, as well as to identify potentially new determinants or themes. This is important not only for simplifying the current wealth of knowledge but also for identifying potential research gaps.

As evidenced by the increasing number of publications each year, numerous studies have emphasised the importance of the subject of investment decisions. Given the continued relevance of investment decisions today, this analysis is cognizant of the enormous advances in investment decision research and practice that inspired us to do this bibliometric analysis. We are prompted to conduct a study of investment decisions that have been published on the Internet in the last 30 years and determine how this bibliometric analysis may be used to impact future research. This bibliometric review addresses the following research questions:

- The current trend in investment decisions.
- Most influential articles on investment decisions.
- Popular themes of investment decisions among scholars.
- Influential authors of investment decisions.
- The current state of collaboration involving investment decisions.
- Intellectual structure of current research on investment decisions.

This study is organised chronologically into five major sections: an introduction, critical literature review, data and methods, findings and discussion, and finally a conclusion and limitations. A detailed yet comprehensive study of the types of documents and sources, the year of publications, the language used in the publications, the sources of publications, the geographical and institutional distribution, the subject area, and the trend in the publication's fundamental intellectual structure serves as a complement in the result and discussion section. This study was concluded with a brief discussion of the study's limitations, conclusions, and future research directions.

Literature Review

The central concept of investment decisions revolves around the challenge of making one that is credible and reliable. Fundamentally, investment decisions are determined by one's cognitive abilities and behaviour in order to ensure that the end result is rationally acceptable. This is due to the fact that, prior to investing, as in any other decision-making situation, the main point is to process information and translate it into an idea (Kumar & Goyal, 2016). That is possible with financial literacy that influences investment decisions, particularly in terms of attitude and mitigating behavioural biases (Raut, 2020). Individuals with financial literacy can also understand the fundamental concepts of personal finance, such as interest rates, inflation, and risk diversification (Hasler et al., 2017; Kurach et al., 2020). Nonetheless, Kawamura et al (2021) believed that strong financial literacy could lead to excessive confidence, which is an unfavourable byproduct. This may cause an individual to overestimate their decision-making and, as a result, their investment decision.

Similarly, Pikulina, Rennebog and Tobler (2017) echo the presence of overconfidence influences in decision making, thus indirectly influencing financial behaviour in investment decisions. While financial behaviour is commonly associated with money management, it can also refer to an individual's behaviour (preference, biases and emotions). Many people avoid investing because they are worried or anxious (Lim & Kim, 2019). Aside from that, Hsieh, Chan and Wang (2020) investigated the impact of herding on investor decisions to enter or exit the stock market and concluded that herding is positively related to investor decisions. Of course, herding biases do not guarantee investment success; rather, context and circumstances do (Naveen & Richmond, 2011).

The aforementioned circumstances may refer to the amount of risk anticipated as well as an individual's risk tolerance. Yue et al (2020) highlighted this during the COVID-19 pandemic when many households were hesitant to invest because the rising number of cases reflected the level of risk involved; this resulted in a depletion of total investment. Individuals with higher risk perception and risk tolerance, on the other hand, are more likely to engage in risky investment allocation, both directly and indirectly (Nguyen et al., 2019). Financial literacy, financial behaviour, and risk, in general, reflect how individuals process and incorporate information into investment decisions.

Moving on, investment decisions are also influenced by the difficulty in obtaining information, which is usually referred to as external influences. In making any investment decision, Naveed et al (2020a) explain that information can be obtained in the form of non-financial and financial information. Many investors use social media as a platform for stock hunting. According to Shiva and Singh (2019), social media platforms such as Twitter have a plethora of features that make it easier for users to search for information, trends, issues, or other relevant information. According to Naveed et al (2020b), the use of social media in investment decisions is heavily influenced by perceived usefulness and perceived ease of use.

Fintech is another medium that many people use to improve their decision-making abilities. Fintech, or financial technology, refers to the ongoing transformation and digitalization of financial services through new business models (Puschmann, 2017). For example, algorithm innovation has facilitated financial transactions through the use of e-wallets (Andrew et al., 2019) and simplified decision making through the use of Robo-advisory (Uhl & Rohner, 2018). Simultaneously, fintech introduces new financial products and services as an alternative to a risky yet controversial investment, such as Bitcoin (Foley et al., 2019). Furthermore, Hong et al (2020) found evidence that fintech adoption increases an individual's proclivity to take more risks.

In conclusion, the review of prior research uncovered several internal and external determinants of investment decision-making. From information processing to information access, this section has clearly illustrated the domains of investment decision-making. Clearly, technology has been the primary driver of the domains and may result in exciting and novel discoveries. However, as a reiteration, there is a dearth of research attempting to refine the trend and development of investment decisions in our limited knowledge. Keeping this in mind, this study provides an opportunity to explore further previously stated research objectives.

Methodology

The current study makes extensive use of bibliometrics technique to identify and quantify the current trend and development of investment decision domains. Because bibliometric analysis is based on data and statistics, it is generally accepted to refer to it as a statistical approach. Additionally, bibliometric analysis can be defined as a technique for evaluating an infinite number of publications from institutions, countries, and publisher databases (Wallin, 2005). This includes quantifying the body of knowledge and connecting it to other literature in order to provide a complete picture of the domain, particularly those with a large number of publications (Donthu et al., 2021). Bibliometrics is popular among academics due to its simplicity of use and utility. For instance, in business management, retirement planning

(Gallego-Losada et al., 2021), financial literacy (Goyal & Kumar, 2021), sustainable supply chain management (Xu et al., 2020), brand relationship management (Fetscherin et al., 2019), and artificial intelligence in business (Dhamija & Bag, 2020).

Donthu et al (2021) justified the use of bibliometric analysis in a study by stating several primary objectives. The first objective is to obtain a comprehensive overview; the second objective is to identify knowledge gaps; the third objective is to conduct novel research; and finally, the fourth objective is to position their intended contribution to the field. Apart from bibliometric analysis, there are two other frequently used methods for determining similar usage: a meta-analysis and a systematic review of the literature. In comparison to the other two, bibliometrics emphasises the quantitative value and qualitative value solely through interpretation, rather than through critical and comprehensive analysis (Donthu et al., 2021). However, bibliometric analysis is fundamentally superior for studies that require a large number of publications. As with Gallego-Losada et al (2021), this study employs a simple systematic literature review to provide qualitative support for the subsequent results.

In general, the bibliometric analysis includes both primary and enrichment techniques, with primary techniques handling performance analysis and science mapping and enrichment techniques handling network analysis. Because of technological advancement, there is a wide range of software available for bibliometric analysis, such as for performance (CRExplorer, Publish or Perish, and ScientoPyUI) and science mapping analysis (Bibexcel, CiteSpace, Sci2Tool, and VOSviewer) (Moral-Munoz et al., 2020). This study makes extensive use of Publish or Perish for performance analysis and VOSviewer for science mapping analysis.

Among the other bibliometric analyses used in the study is the evolution of publication, document and source type, document language, subject area, the geographic distribution of publications and affiliations, authorship analysis, citation analysis, keyword analysis, and a visualisation map. Following each analysis, a thorough interpretation of both the final result and conclusion is provided.

This study's database is entirely composed of information extracted from Scopus. While there are numerous other databases popular among scholars, such as Web of Science, Scopus, and Dimension, Scopus is the only one that is accessible to the researcher and has a history of use in previous work. Scopus is also equipped with an intuitive user interface and detailed information about each publication, which helps to improve data collection efficiency indirectly. Nonetheless, this study acknowledges Scopus's shortcomings, including lower coverage than Web of Science and Dimension (Singh et al., 2021), as well as the presence of predatory publishing contamination (Machacek & Srholec, 2021). Scopus remains the preferred database for academics, particularly in recent years (Kipper et al., 2020)

This result extracts data from 1990 to 2021 (31 years) that is limited to article type data. The title of the article is used to filter out the articles that are relevant to investment decision-making. As a result, the following keyword was completed: TITLE-ABS-KEY ("decision on investment") AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI")). The data is then filtered again using the PRISMA Flow Diagram to ensure that only reliable and credible articles are included.

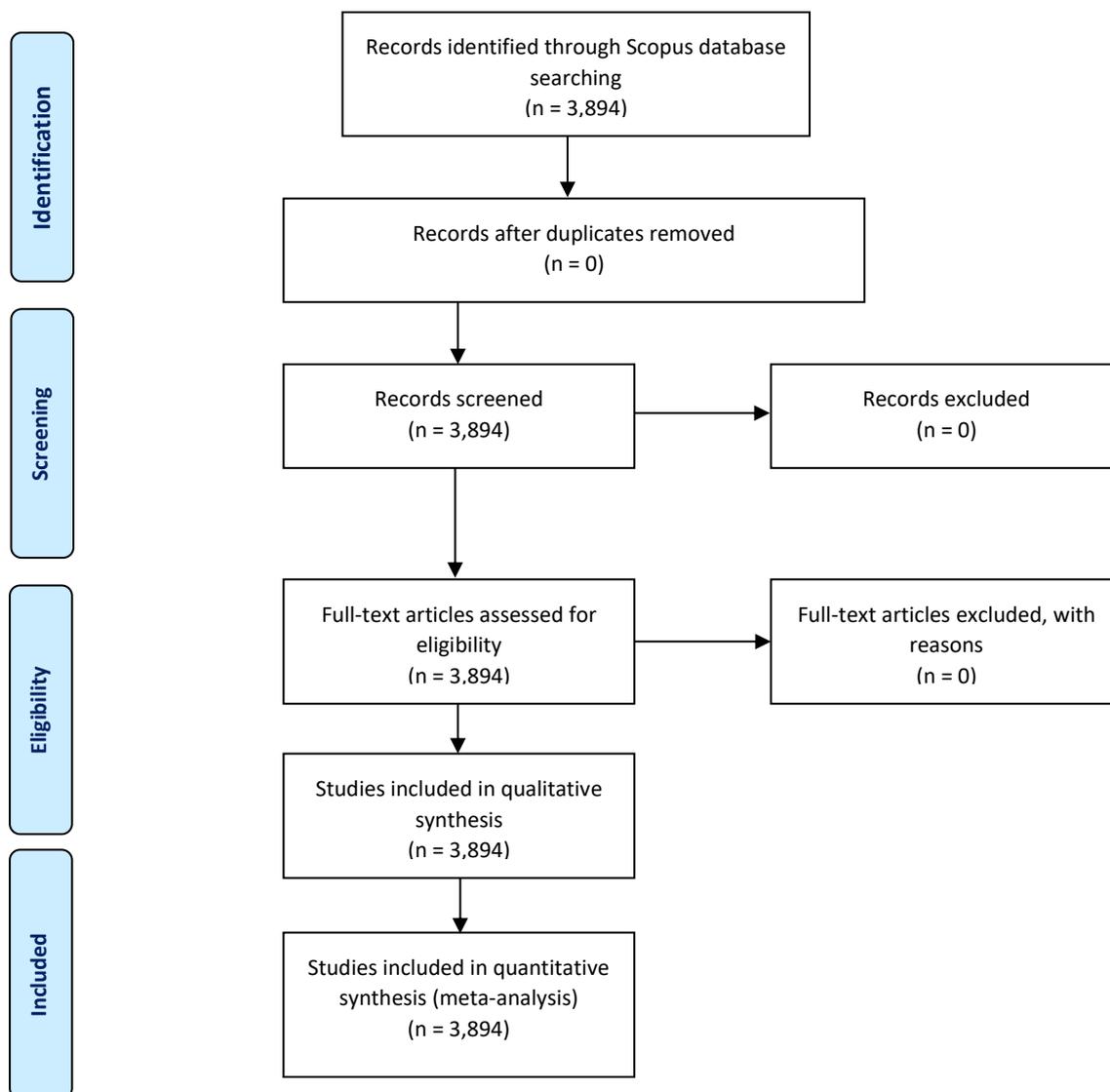


Figure 1. PRISMA Flow Diagram depicts the flow of raw data (n).

Source: Moher, Liberati, Tetzlaff, Altman, The PRISMA Group (2009)

Results and Discussion

After filtering out unrelated studies, the obtained raw data is then analysed appropriately. The analysis begins with a description of the document types and sources, 2) annual growth, 3) document language, 4) subject of area, 5) keyword analysis, 6) country productivity, 7) authorship analysis, and 8) citation analysis. Numerous types of figures are included to supplement the analysis findings, as the majority of data is in the form of statistics. Most of the statistical data in this study are also in the form of frequency, percentage, and cumulative percentage. All data is extracted from 1990 to August 20, 2021, encompassing a broad range of data over a 31-year period

Evolution of Publication

The trend and evolution of investment decisions over the last 31 years is depicted in Figure 2, which includes 3,894 publications, with the trend indicating a positive trend and recently accelerating in terms of publication volume. Even as early as 1990, investment decision

publications surpassed the two-digit mark and grew steadily until 2005. The number of publications fluctuated between 1990 and 2005, ranging from 18 in 1992 to 57 in 2001. While the number of publications exceeded 50 in 1998 and 2001, the number of publications in 2005 is far more significant because it not only exceeded 50 but has remained above that figure ever since. Three years later, with 101 publications, the total reached 100 and continued to grow until 2012, when the momentum began slowing down to 138 publications. The following year, the number significantly increased, especially between 2019 and 2020, when 303 and 388 publications were published, respectively.

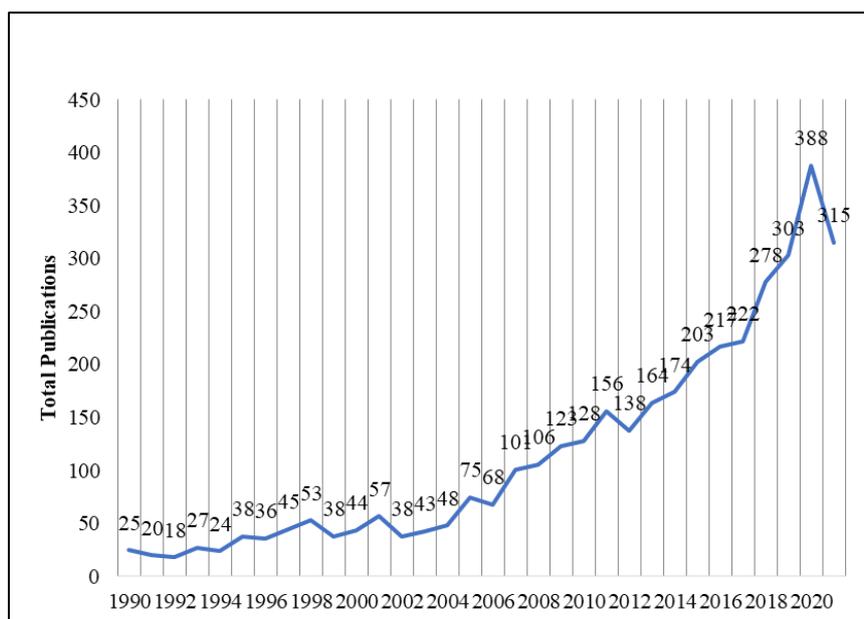


Figure 2: Investment Decision Publications, 1990-2021 (n=3,894).

Document and Source Types

In this study, investment decisions are published in the form of journal articles. This is deliberate in order to narrow the scope of the study, as the number of articles alone is considered substantial. The restriction of articles from sources other than journals is based on a similar ground. Access is classified into five distinct categories: Open Access, Gold, Hybrid Gold, Bronze, and Green. 45.4 per cent of the access type was open source, followed by Green Access (31.3 per cent) and Gold (11.6 per cent). Hybrid Gold and Bronze both achieve rates below 10 per cent, at 6.0 per cent and 5.8 per cent respectively.

Table 1

Document, Source and Access Types

Document Type	Document		Source Type	Source		Access Type	Access	
	NP	%		NP	%		NP	%
Article	3894	100.00	Journal	3818	100.0	All Open	866	45.4
						Access	221	11.6
						Gold	115	6.0
						Hybrid	110	5.8
						Bronze	597	31.3

Notes: NP = No. of Publications

Languages of Documents

There are seventeen recognised writing languages, from English to Polish. English is the most frequently used language for investment decision publications, accounting for 96.83 per cent (3,788 publications) of all publications. English's dominance demonstrates the language's unique status as the science language and the most widely spoken language in the world. Other languages did not even reach 1 per cent, demonstrating English's enormous advantage over other languages. German and Spanish at 0.72 per cent respectively are the second and third most frequently used languages in investment decision documentation. Portuguese comes in fourth place with 0.43 per cent, followed by French (0.26 per cent) and Lithuanian (0.2 per cent). Other than that, the percentage has remained below 0.1 per cent, with the lowest percentage were the Malay and Polish languages at 0.03 per cent.

Table 2

Languages

Language	NP	%
English	3788	96.83
German	28	0.72
Spanish	28	0.72
Portuguese	17	0.43
French	10	0.26
Lithuanian	8	0.20
Chinese	4	0.10
Czech	4	0.10
Japanese	4	0.10
Ukrainian	4	0.10
Korean	3	0.08
Arabic	2	0.05
Italian	2	0.05
Russian	2	0.05
Malay	1	0.03
Polish	1	0.03
Undefined	6	0.15

Notes: NP = No. of Publications

Subject Area

As illustrated in Table 3, the top ten subject areas within investment decision domains are business, management, and accounting (48.6 per cent), economics, econometrics, and finance (23.12 per cent), decision sciences (8.47 per cent), social sciences (6.34 per cent), engineering (5.3 per cent), computer science (2.6 per cent), environmental science (1.59 per cent), arts and humanities (1.46 per cent), and energy (1.17 per cent). The top three subjects are justified as they are fundamentally derived from finance and decision philosophy as the investment decision studies adhere to the subject matter. The other subject area demonstrates the potential for investment decision making as well, albeit at a lower rate of less than 5 per cent. This was especially true for the subject of Computer Science and psychology. Figure 3 illustrates the distinction between the subjects of the area.

Table 3

Subject Area

	Subject Area	NP	%
1	Business, Management and Accounting	3894	48.60
2	Economics, Econometrics and Finance	1852	23.12
3	Decision Sciences	679	8.47
4	Social Sciences	508	6.34
5	Engineering	417	5.20
6	Computer Science	208	2.60
7	Environmental Science	127	1.59
8	Arts and Humanities	117	1.46
9	Energy	116	1.45
10	Psychology	94	1.17

Notes: NP = No. of Publications

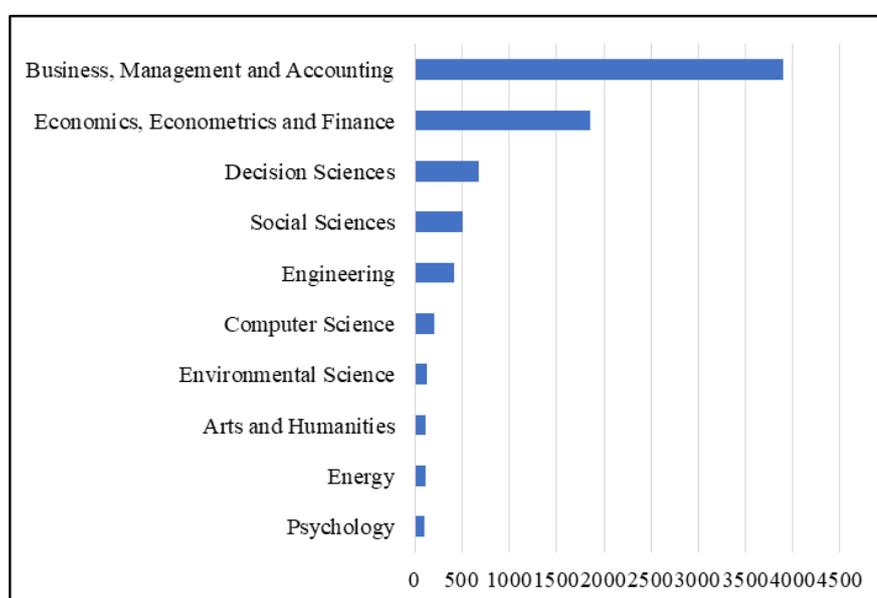


Figure 3: Top 10 Subject of Area by Total Publications

Geographic Distribution of Publication and Affiliation

Meanwhile, Table 4 depicts the trend and evolution of investment decisions studies according to a country's publication contribution. Malaysia ranked first with 1,348 total publications, a significant 730 total publications lead over second place. With 618 total publications, China is ranked second, followed by Indonesia at third place with 504 total publications. The United States finished fourth with 474 total publications, Spain ranked fifth with 339 points, Pakistan ranked sixth with 334 points, Australia ranked seventh with 325 points, and India ranked ninth with 313 points. Malaysia, Indonesia, and China all rank among the top three, indicating that Asian researchers place a premium on the domain of investment decision studies. Malaysia continues to lead in terms of number of cited publications with 844, followed by China (438) and the United States (383). On the other hand, total citations indicate different results, with the United States, Germany, and Australia recorded 28,426, 24,546, and 21,365 total citations respectively. The US also ranked first in the h-index and g-index, with 54 and 166 respectively. Despite the lower total publications, the United States appears to produce high-quality

publications that serve as the cornerstone of investment decisions by many researchers worldwide.

For additional critical analysis, a graph with quadrants is included to examine the relationship between the total publications and the h-index and g-index for each country. The quadrant is divided into four sections, each with a distinct interpretation. Malaysia is the only country positioned in the top right corner of Figure 4, indicating that there is a significant balance between the total publications (quantity) and h-index (quality). Germany, the United States, Australia, China, and the United Kingdom all demonstrate a higher level of quality despite a lower total number of publications. Both the top left and top right corners of figure 4 indicate a greater degree of credibility and reliability in comparison to those positioned in the bottom.

In contrast to Figure 4, Figure 5 compares countries using the total publications and g-index. While the h-index is concerned with the number of publications and the number of citations per publication, the g-index is concerned with boosting low-cited articles through the use of highly cited articles. Both, however, indicate the same function: quality assessment (Harzing, 2020). In comparison to figure 4, Malaysia has slipped to the bottom right quadrant in figure 5, indicating that it has the highest total publications but a slightly lower g-index. Germany, Australia, and the United States maintained their high standards despite having lower total publications than Malaysia. China and the United Kingdom join other countries with a lower g-index and a lower total publication: Spain, India, Pakistan, and Indonesia. By and large, the United States, Australia, Malaysia, the United Kingdom, and China appear to be the most frequently cited countries in investment decision studies. However, Malaysia, the United Kingdom, and China exhibit inconsistency in terms of publication quality.

Table 4

Top 10 Countries Contributed to the Publications

	Country	TP	NCP	TC	CP	C/CP	h-Index	g-Index
1	Malaysia	1348	844	11283	8.4	13.4	47	82
2	China	618	438	6131	9.9	14.0	37	60
3	Indonesia	504	239	1143	2.3	4.8	17	23
4	United States	474	383	28426	60.0	74.2	54	166
5	Spain	339	251	3892	11.5	15.5	27	51
6	Pakistan	334	229	1811	5.4	7.9	21	29
7	Australia	325	267	21365	65.7	80.0	48	144
8	India	313	201	1748	5.6	8.7	20	31
9	United Kingdom	278	215	4693	16.9	21.8	35	59
10	Germany	230	189	24546	106.7	129.9	53	156

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

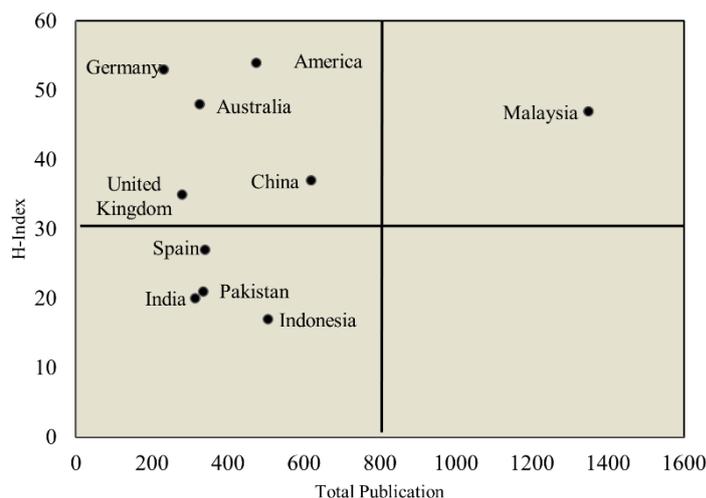


Figure 4: Comparison Between Top 10 Countries Based on Total Publications and H-index For 30 Years (1990-2021).

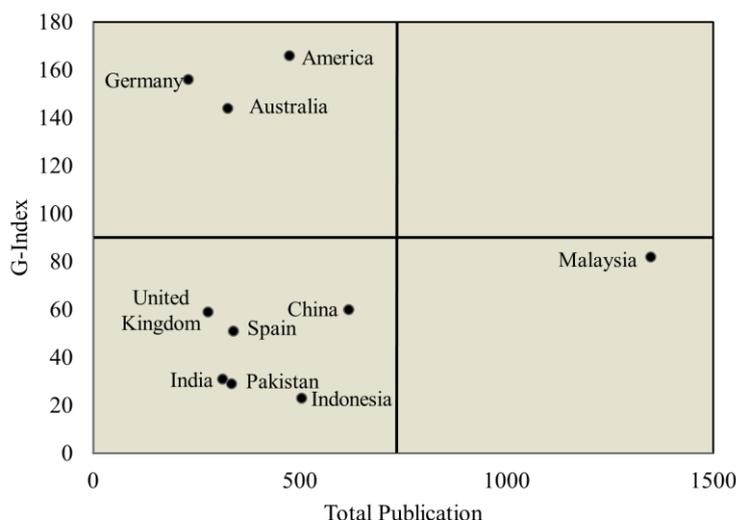


Figure 5: Comparison Between Top 10 Countries Based on Total Publications and G-index For 30 Years (1990-2021). Source: Prepared by the authors on the basis of Scopus data

Authorship Analysis

G. Newell (Australia), Carr (United Kingdom), Marzuki (Australia), and Singh (India) are four highly productive authors in the investment decision domain as in figure 6. Newell is the most prolific author with 360 total publications and 28 numbers of cited publications, followed by Carr with 255 total publications and 10 numbers of cited publications. Marzuki is third with 47 points and six numbers of cited publications, while Singh is fourth with 38 points and seven numbers of cited publications. With 260, Newell maintains the lead in terms of total citations. Second, Singh with 255 total citations earned significantly more than Carr, who earned only 47 total citations despite publishing significantly less. Due to the fact that both Newell and Marzuki represent Australia, their work may contribute to the country's overall high quality, as previously discussed. Additionally, Newell is the most influential and productive person in the investment decision-making process due to his most-cited article, "Factors Influencing Hotel Investment Decision Making."

Table 5

Top 4 Productive Authors

	Author	TP	NCP	TC	CP	C/CP	h-Index	g-Index
1	Newell, G.	360	28	360	1.0	12.9	11	18
2	Carr, C.	255	10	47	0.2	4.7	5	6
3	Marzuki, M.J.	47	6	38	0.8	6.3	3	6
4	Singh, B.	38	7	255	6.7	36.4	7	7

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

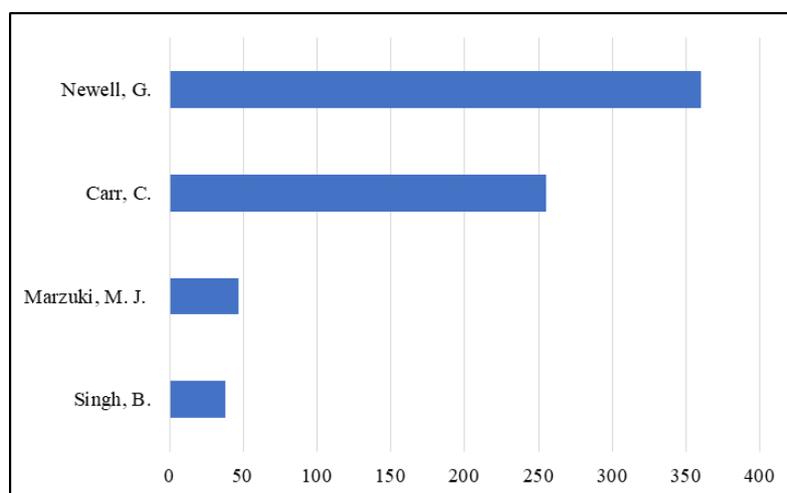


Figure 6: Top 4 Authors with Most Publications

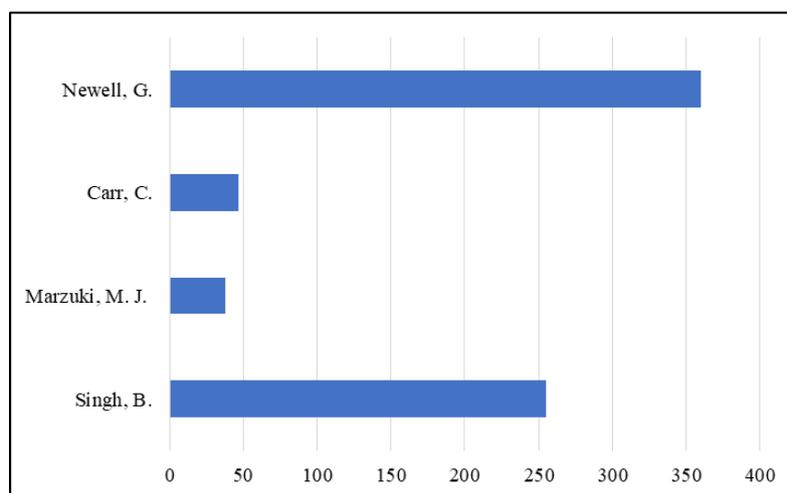


Figure 7: Top 7 Most Cited Authors

Citation Analysis

Only 2,000 papers are eligible for citation analysis as this limitation is imposed by Scopus. Nonetheless, the data is still useful for indicating the last seven years of publication (2014 to 2021). Statistically, the total number of citations for 2,000 papers by 583 authors reached 14,561. Each year, an average of 2,080.14 citations is recorded, with at least 7.28 citations

per paper. The h-index and g-index values are particularly noteworthy, with both registering a brilliant score of 46 and 75, respectively.

Table 6

Citations Metrics

Metrics	Data
Publication years	2014-2021
Citation years	7 (2020-2021)
Papers	2000
Authors	583
Citations	14561
Citations/year	2080.14
Citations/paper	7.28
Citations/author	24.98
Papers/author	3.43
Authors/paper	0.29
h-index	46
g-index	75

Keywords Analysis

For keyword analysis, visualisation maps created with VOSviewer software along with table 7 significantly supplement the interpretations. Figure 8 illustrates the graphic representation of frequently used keywords in investment decision domains. The font size corresponds to the frequency of the keywords, as does the size of the bubble, while the colour indicates the likelihood of the linked keywords being used in conjunction in a study, as indicated by the connected line. The thickness of the line indicates the frequency with which the two linked keywords are used together. According to the network visualisation map, seven colours (green, yellow, light blue, dark blue, red, purple, brown, and orange) correspond to seven distinct keyword groups. For instance, investment decision-making, leverage, underpricing, India, behavioural finance, corporate governance, overinvestment, and investment efficiency are all included in the same category (red in colour)

Apart from the core keywords TITLE-ABS-KEY ("investment decision") AND (LIMIT-TO (DOCTYPE, "ar") AND (LIMIT-TO (SUBJAREA, "BUSI")), there are ten additional top keywords, as shown in table 7. The top four keywords accounted for more than 10 per cent of searches led by investments (25.8 per cent), investment decision (17.4 per cent), decision making (14.1 per cent), and investment (13.4 per cent). Regardless of the spelling, both investments and investment are interchangeable terms that refer to the same fundamental concept. This means that the actual frequency of investment may be greater than the data conveyed. Meanwhile, economics (5.5 per cent) is ranked fifth, followed by investment decision-making (5.4 per cent), cost (5.2 per cent), real options (4.7 per cent), corporate governance (4.7 per cent), and commerce (3.7 per cent).

Sussman, 2019; Lai et al., 2019), and deep learning (Feng et al., 2019), among other themes. Financial reporting (Roychowdhury et al., 2019) and environmental, social and governance (ESG) (Albitar et al., 2020; Maiti, 2021; Yu et al., 2020) are not indicated on the visualisations map but are in table 8. This could be one of the new subjects for which researchers have begun to recognise the worth as a source of knowledge enrichment.

Table 8
Research Trend for 2019, 2020 and 2021

Reference	Objective
1. Hartzmark and Sussman (2019)	The article examines the value of sustainability to a business via the lens of an investor's investment choice.
2. Feng et al (2019)	The purpose of this paper is to present a novel deep learning solution (RSR) for developing a revised stock prediction model that incorporates time.
3. Jain et al (2019)	The article attempts to rank the behavioural biases that influence the investor from Punjab, India in making investment decisions.
4. Roychowdhury et al (2019)	The article conducts a review of the literature regarding the financial reporting and disclosure impact on business investment.
5. Li et al (2019)	The paper examines optimal price, replenishment, and preservation investment policies, as well as whether investing in preservation technology is likewise optimal.
6. Bapna (2019)	The article aims to find the type signal and complement signal combinations that motivate investors to become equity holders in technology firms.
7. Liang et al (2019)	The research examines the effect of project type and financing level on the link between critical antecedents and investment decisions.
8. Yung & Root (2019)	The paper examines the gaps between policy uncertainty and earnings management, as well as the resulting shift in firm value.
9. He et al (2019)	The purpose of this paper is to present a model framework for energy efficiency retrofit investment in a variety of building types with budget constraints.
10. Lai et al (2019)	The researcher's objective in this study is to explore the incentives associated with port forecast information sharing and the effect of carrier risk behaviour on such sustainability investment decisions in a maritime supply chain.
11. Hastings & Mitchell (2020)	The article examines the impact of impatience on individual retirement wealth and investment behaviour through experimental methods.

12. Goldbeck et al (2020) The article proposes a multi-stage stochastic programming model to optimize pre-disruption for investment decisions and dynamic adjustment of supply.
 13. Yu et al (2020) The article studies the practice of “greenwashing” in environmental, social and governance disclosures that influence how investors see the firm.
 14. Koirala et al (2020) The article observed the investment decision on Corporate Governance Reform in the context of emerging markets.
 15. Albitar et al (2020) This paper aims to investigate the effect of ESG disclosure on firm performance and a potential moderation effect.
 16. Moon et al (2020) This paper investigates investment decisions in a supply chain of fresh agricultural products.
 17. Martina (2020) This article explores the theory of affordable loss in investment decisions, complemented by the concept of prospect theory.
 18. Nguyen et al (2020) The article examines the impact of emotional word of mouth on an institutional investor's decision and firm value via social media.
 19. Liu et al (2021) The article clarifies regulation as motivation for investment toward green energy
 20. Luwihono et al (2021) The article explores the relationship of macroeconomic factors towards investment decisions in the Indonesian context.
 21. Maiti (2021) The paper aims to determine the role of ESG and the relevance of each component in investment decisions.
 22. Goethner et al (2021) The paper aims to identify the type of crowd investor and their difference in terms of investment strategies and motivations.
 23. Dunham and Garcia (2021) The purpose of this paper is to examine the effect of firm-level investor sentiment on a firm’s share liquidity.
 24. Sualihu et al (2021) The article examines the influence of equity compensation as incentives and the labour efficiency of executives in investment decisions.
 25. Zeng et al (2021) The paper investigates the spillover effect on European Union allowance and certified emission reduction in the third and second phases of the European Union Emission Trading System.
 26. Kong et al (2021) The article fundamentally analyses the impact of miss allocation resources on outwards foreign direct investment of China enterprise.
 27. Benz et al (2021) This article examines the exposure to and management of carbon risks of different investor types
 28. Liu et al (2021) The article investigated the impact of entrepreneur’s financial literacy upon innovation and risk-taking within small-and-medium-sized enterprises (SMEs)
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Discussion

The findings demonstrate that investment decisions are not only timely but also increasingly valuable for real-world application. This sustained level of interest by the researcher over a 31-year period, from 1990 to 2021, displays a scholarly commitment to expanding the investment decision notion beyond its existing core concept. The last three years of 2019 (303 TP), 2020 (388 TP), and 2021 (315 TP) have all demonstrated a positive outlook for the next few years, with a forecast of increased total publications. Perhaps current economic events have increased the worth of investment decision studies in the real world, encouraging researchers to conduct a thorough dive. At this rate, the total publication will almost certainly exceed 400 total publications within the next two or three years.

Surprisingly, the publication's top three contributors are from the Asia region, bucking the trend of Western countries dominating research by topping the United States, Spain, the United Kingdom, and Germany. However, both China and Indonesia are lagging behind Western countries in terms of quality, as measured by the h-index and g-index. Only Malaysia appears to have struck a balance between increased publication volumes and increased, albeit inconsistent, publishing quality. On the other hand, countries such as India and Indonesia had lower total publications, h-index, and g-index values when compared to the top ten countries that contributed to the publication.

The current trend and growth are also achievable as a result of researchers who are committed to and passionate about investment decision topics. Among these, Newell (360 TP), Carr (255 TP), Marzuki (46 TP), and Singh (38 TP) have contributed significantly more than other scholars with a greater total publication count. Credit should be given to Newell in particular since his article "Factors Affecting Hotel Investment Decision Making" has served as the foundation for numerous subsequent and new studies.

Additionally, the current investment decision's visualisation map demonstrates a complex network of keyword relationships. Investment decision has revealed numerous frequently occurring keywords (indicated by font size) and their frequency. Apart from the primary core keyword "investment decision," other keywords such as "corporate social responsibility," "sustainable development," "forecasting," "venture capital," "crowdfunding," and "behavioural finance" have a higher usage in the visualisation map but are not included in the top ten keywords. These keywords not only demonstrate a high level of significance in investment decision areas but also provide an opportunity to investigate these possibly hidden diamonds.

Another point to emphasise is that investment decision-making has not only enhanced its fundamental notion of decision-making and investment but has also progressed in lockstep with macroeconomic changes. This is especially true for newly coined terms such as "big data," "deep learning," "stochastic models," and "dynamic programming," all of which indicate a considerable influence of technological advancement on investment decisions. Other terms such as "emission control," "energy efficiency," "energy utilisation," and "gas emission" denote the market is influenced by social (climate change) developments. These findings reinforce the centrality of investment decision-making and its adaptability to other uncommon bodies of knowledge.

Recent research trends indicate that established behavioural finance and sustainability are still the most popular topics, as evidenced by their inclusion in both table 8 and the visualisation map. On the other hand, as evidenced by recent study trends, ESG is currently popular. This means that, while there is a significant accumulation of established themes in investment decision-making, there is also a significant amount of initiative on the part of researchers to introduce new themes and keywords.

Conclusion

Due to the breadth of investment decision impact on individuals, businesses, governments, and global industry, investment decision has been hailed as not only an academic topic but also a valuable solution. This is evident from the upward trend in publication during the last 31 years. Thanks to researchers, particularly the most productive; further expansion of investment decisions is possible. It is also worth noting that investment decisions are adaptable to changing social, political, and economic conditions. According to a prior review of recent research trends and keyword analysis, both technology and social movements (climate change) have served as the new impetus for increasing investment beyond its current level.

Stakeholders such as policymakers and international organisations will find this article helpful in guiding them in improving their current investment decision-making policies. Naturally, the results served as a benchmark for evaluating the success of earlier policies (e.g., gas emission and regulation) and taking into account some of the researchers' emphasised recommendations. In a similar vein, businesses may utilise the outcome to influence their engagement with shareholders and stakeholders, particularly those who place a premium on sustainable development and social movement. On the other hand, future researchers may use this research to demonstrate the relevance and worth of their own study. Simultaneously, this study provided a method for identifying gaps in the literature and, as a result, increased interest from scholars worldwide.

Limitation and Study Forward

While the outcome is great, there are significant shortcomings in terms of technical details and possibly overlooked analysis. One disadvantage is the reliance on a single database, Scopus, which may jeopardise some of the more credible articles in other databases, such as Web of Science or Google Scholar. Perhaps in the future, combining databases will result in a more accurate representation of the current trend and development of examined issues. Additionally, this study incorporates only Business, Management, and Accounting, as well as article type, in order to minimise discrepancies. As a result, this simply failed to detect, leaving open the potential that there are other influential articles, the most frequently used keywords and recent study trends that contradict the provided conclusion. However, this analysis still provides a broad overview of the domain's current trend and development. Additionally, a greater number of articles devoted to a recent research trend may bolster the credibility of the result interpretation.

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