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SYSTEMATIC LITERATURE REVIEW ON THE HIERARCHICAL LINEAR MODEL METHOD IN ANALYZING CAPITAL STRUCTURE POLICIES ACROSS VARIOUS INDUSTRIAL SECTORS

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ABSTRACT

This study aims to understand the contributions, findings, and recent developments in the application of the HLM method in this context, as well as to identify existing knowledge gaps. This systematic literature review investigates the application of the Hierarchical Linear Model (HLM) method in the analysis of capital structure policies across various industrial sectors, focusing on studies conducted between 2017 and 2022. The review encompasses four primary research contributions, each providing unique insights into the intricate determinants of capital structure decisions. In conclusion, the HLM method emerges as a robust tool for understanding the contextual and dynamic factors shaping capital structure decisions, and the review underscores the importance of industry-specific nuances and regional disparities in this realm.

Keywords: *hierarchical linear model, systematic literature, capital structure.*

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INTRODUCTION

The capital structure is one of the crucial aspects in corporate financial management that has long been the focus of researchers and business practitioners. Decisions regarding how a company finances its operations have a significant impact on financial performance, risk, and the company's value. Capital structure is a critical aspect of corporate financial decisions. The right capital structure policy can have a significant impact on the company's performance and shareholder value. Therefore, a profound understanding of the factors influencing the company's capital structure policy becomes highly important. In this context, sophisticated statistical analysis methods are becoming increasingly important for understanding the complex relationships among economic, industry, and policy factors that affect capital structure decisions. One statistical tool that has garnered particular attention in analyzing capital structure is the Hierarchical Linear Model (HLM), also commonly referred to as the multilevel model. HLM is a statistical method capable of addressing data dependencies and has emerged as a powerful statistical tool for analyzing data related to capital structure policies across various industrial sectors.

This Systematic Literature Review aims to collect, organize, and analyze literature related to the use of the Hierarchical Linear Model (HLM) in analyzing capital structure policy across various industrial sectors. The main objectives of this research are to understand the contributions, findings, and recent developments in the application of the HLM method in this context, as well as to identify existing knowledge gaps. HLM is a statistical method that enables researchers to address multiple levels within hierarchical data, often encountered in the context of analyzing capital structure policy. It allows researchers to model variability originating from different levels, such as individual companies, industry sectors, and even countries. Therefore, HLM can be used to identify factors influencing capital structure policies at various levels and to evaluate the impact of interventions or policy changes.

The significance of research on the HLM method in the context of capital structure policy analysis is g owing, given the evolving complexity of the global business environment. Companies operate in various industrial sectors with unique characteristics, and differences in financial regulations and economic conditions in the countries where companies operate can also influence their capital structure policies. The research is conducted to identify, evaluate, and interpret all relevant research findings related to the Hierarchical Linear Model method in analyzing capital structure policies across various industrial sectors. The data sample collected consists of journals discussing the impact using the Hierarchical Linear Model method in analyzing capital structure policies across various industrial sectors over a span of 10 (ten) years. This data is identified using the Systematic Literature Review (SLR) method. Through this method, a systematic review and identification can be conducted, following predefined steps in each process (Kitchenham et al., 2009), avoiding subjective identification, and contributing to the literature on the use of the Systematic Literature Review (SLR) method (Razavian et al., 2018).

Purpose of this research is to identifying trends and recent developments in the use of HLM in analyzing capital structure policies. Evaluating the effectiveness of the HLM method in addressing the complexity of data originating from different levels, such as individual companies, industry sectors, and countries. Identifying challenges faced by studies utilizing HLM in analyzing capital structure policies and highlighting opportunities for further research in this field.

LITERATUR REVIEW

Agency Theory

In agency relationships, corporate managers act as agents responsible for the operational and financial decisions of the company, while company owners act as principals with financial interests in the company's performance. Due to information asymmetry between principals and agents, managers may take incentives for their personal interests, such as increasing their salaries or taking greater risks to maximize their personal gains. This can lead to conflicts of interest

between principals and agents, ultimately resulting in costs associated with agency relationships (Eisenhardt, 1989; Fama, 1980; Jensen and Meckling, 1976; Ross, 1973; Shleifer and Vishny, 1997).

Agency cost theory has significant implications for the capital structure decisions of a company. The concept of agency costs states that the relationship between principals (company owners) and agents (company managers) has the potential for conflicts of interest. These conflicts of interest can result in significant agency costs for the company, such as monitoring costs, contract selection costs, and opportunity costs. In the context of capital structure decisions, increasing debt can reduce agency costs. By using debt as a source of funding, companies can strengthen the owner's control over company management. This is because managers must pay interest and repay debt within a specified period, making them more inclined to make careful and conservative decisions to avoid default and bankruptcy (Frank and Goyal, 2003; Jensen and Meckling, 1976; Myers, 1984a; Stulz, 1990; Titman, S., and Wessels, 1988).

Trade Off Theory

According to the trade-off theory, financial distress prompts companies to use a moderate amount of debt, while the tax benefits of interest encourage companies to use more debt (Myers, 1984b; Titman et al., 1988). This results in an optimal balance or ratio of debt in a company's capital structure. This differs from the Modigliani and Miller theorem (1963) because the trade-off theory takes into account the costs of excessive borrowing (financial distress costs). Therefore, the trade-off theory can explain why companies do not exclusively use debt to finance their investments, a limitation of the Modigliani-Miller theorem (Myers, 1984b; Titman et al., 1988).

Numerous empirical studies have reported findings supporting the static trade-off theory. For example, Rajan and Zingales (1995) conducted an empirical study on American companies and found that companies with higher investment opportunities and easily tradable assets (liquid assets) tend to use more debt. The results of this study support the trade-off theory, which states that companies seek a balance between the tax benefits of debt and the costs associated with using debt, as well as the advantages of internal funding and equity (Rajan and Zingales, 1995).

Pecking Order Theory

Pecking order theory is based on the assumption of asymmetric information, where corporate management is presumed to know more about the value of the company than investors. Both investors and management are aware of this when making investment decisions. For instance, management uses information to issue securities when the price is too high. Investors recognize this asymmetric information issue and apply a higher discount to evaluate securities, thus requiring a lower price. Management anticipates increased equity financing costs. They prefer using other sources of funding, such as internal financing and debt, which have little or no asymmetric information issues, before resorting to equity issuance (Cassar et al., 2015; Frank and Goyal, 2009; Myers, S. C., and Majluf, 1984; Rajan and Zingales, 1995; Welch, 2004).

METHODOLOGY

According to Dumay et al. (2016), a literature review is a method used to examine a container of various scholarly literature to expand insights, engage in critical reflection, identify future research directions, and formulate research questions. Based on Fink (2014), the literature review involves several steps, including: (1) selecting research questions, (2) determining bibliographic databases, articles, websites, and other sources, (3) defining keywords for searches, (4) establishing criteria and methodology, and (5) conducting the review.

This systematic literature review is conducted through various stages, beginning with determining the research object related to the topic under investigation. Then, various sites

providing scholarly journals are utilized. In this study, the research focus is on the use of "Publish or Perish" based on Google Scholar to gather the necessary data. Subsequently, the obtained data will be processed and filtered to ensure that it meets the criteria and research needs. The data will then be collected and analyzed. In the final stage, the research results will be documented in the form of a journal with the appropriate format.

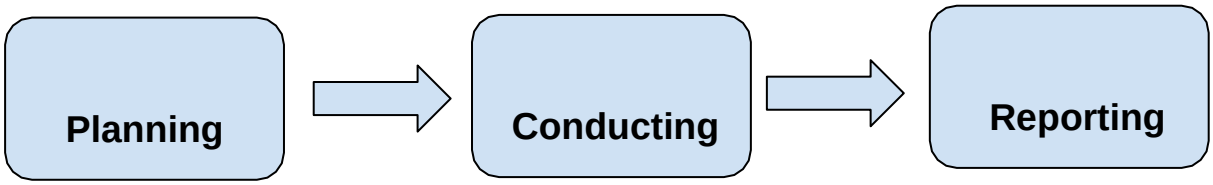


Figure 1. Research Phases

The object of this study is the identification of cash flow statements using the Systematic Literature Review (SLR) method. Making the right capital structure policy decisions can have a significant impact on the company's performance and shareholder value.

Systematic Literature Review (SLR)

The literature review process is defined as a written summary derived from journal articles, books, and other documents that provide an overview of current and past information on a research study (Creswell, 2015). The literature review process can utilize the systematic literature review method, also known as SLR. The systematic literature review (SLR) method is employed to identify and evaluate research. In this process, the systematic literature review (SLR) method is divided into several stages.

In the first stage, researchers record every piece of data obtained from various journals containing comprehensive data. After identifying a sample of around 30 journals using keywords such as "statement of cash flow, accounting theory, and cash flow," the data is then identified. The next step involves checking whether the journals fall within the last 13 years, from 2010 to 2022. Subsequently, a filtering process is carried out to determine whether the journal topics align with the research topic, which is the cash flow statement. If there are topics that do not match, those journal articles will be excluded.

1) Search Process

The process of searching for data sources is conducted using 'Publish or Perish'based on Google Scholar at https://scholar.google.co.id/

2) Inclusion and Exclusion Criteria

Here are the criteria for data considered suitable as research references:

1) Data obtained should cover the period from 2017 to 2022, at least for 5 years.
2) Data is acquired from https://scholar.google.co.id/.

3) Quality Assessment

Here are the questions related to data evaluation:

1) QA1: Was the journal using HLM as method?
2) QA2: Was the journal published within the timeframe of 2017-2022?

Explanation:

1) Yes: The journal meets the criteria specified in the quality assessmentquestions.
2) No: The journal does not meet the criteria specified in the qualityassessment questions.

4) Data Collection

In the process of data collection, available information will be gathered,measured, and analyzed. Here are the steps to collect data:

a. Open the Publish or Perish application, then select Google Scholar.
b. Enter the keyword "Capital Structure HLM"
c. In the specific range, enter the year 2017 in the first box and 2022 in thesecond

box.

d. After finding relevant data, save the file in RIS format.

5) Data Analysis

After the data has been collected, the next step will involve analysis. The resultsof the analysis will provide answers to all the research questions posed in the earlier stages.

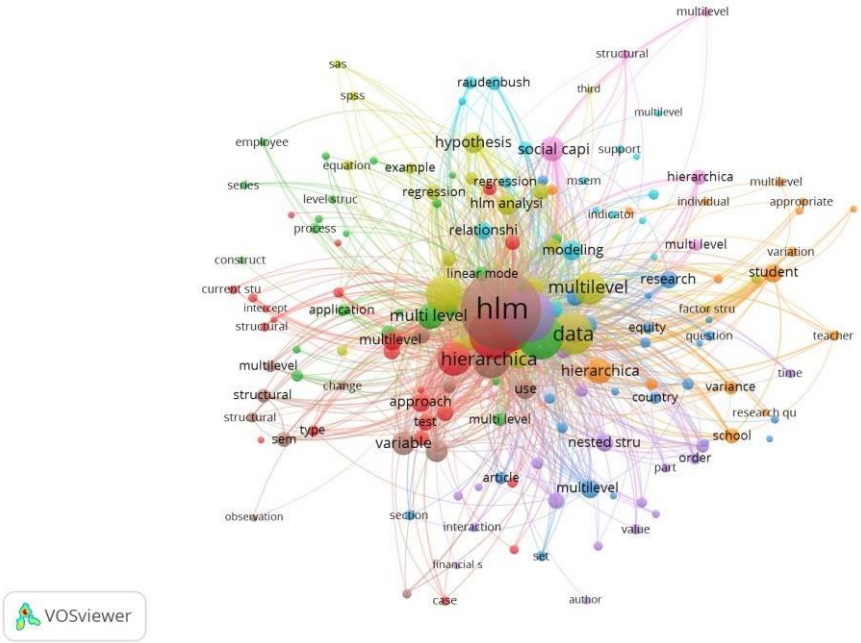
6) Documentation

In the documentation phase, the research findings will be presented in the form of a journal with a proper and correct format.

RESULT AND DISCUSSION

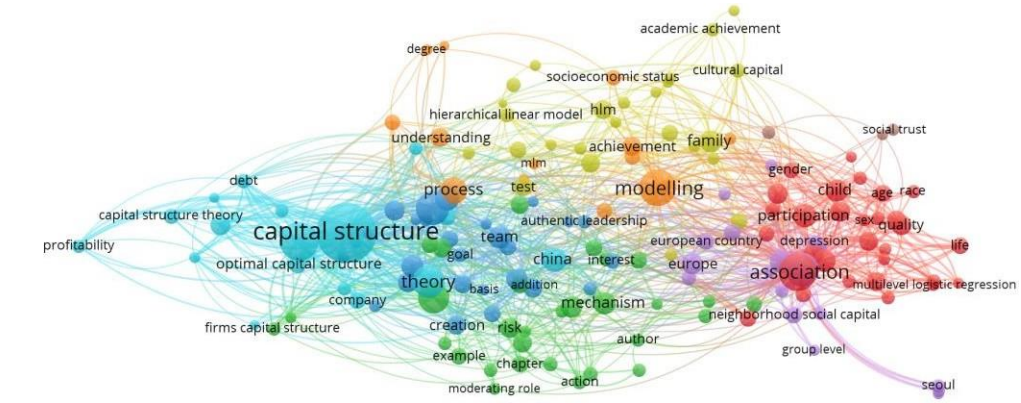
An analysis of bibliometrics using VOSviewer through Publish or Perish revealed 1000 papers over 37 years (1986-2023), with a total of 271012 citations and an average of 7324.65 citations per year. These papers focused on the general exploration of the Hierarchical Linear Model (HLM). HLM is represented as a red circle, indicating its widespread application in various studies, including education, marketing, public administration, health, human resource management, social sciences, psychology, geography, engineering, entrepreneurship, poverty alleviation, public health, ecology, gender equality, politics, chemical experiments, and more.

From this review, it can be concluded that HLM is a method widely employed in research across different countries since 1986. Through a Publish or Perish search, 90 studies from various countries were found, investigating determinants of capital structure from 1988 to 2023. However, only 8 studies specifically examined determinants of capital structure using HLM. Figures 1 and 2 depict bibliometric analyses using VOSviewer through Publish or Perish regarding HLM. These figures reveal that studies on determinants of capital structure using HLM are still relatively scarce, as indicated by the blue circle surrounding determinants of capital structure using HLM.



Source: Processed by the Researcher

Figure 1. VOSviewer Analysis of HLM Research Across All Disciplines



Source: Processed by the Researcher

Figure 2. VOSviewer Analysis of HLM Research on Determinants of Capital Structure

Based on 2596 samples of research journals collected using the Publish or Perish (PoP) application without considering a specific time range, the extensive research on the sought-after articles requires time to manage and filter articles that meet the specified criteria and are closely related to the fields of accounting, economics, and business.

After conducting the search process and applying inclusion and exclusion criteria, the following are the types of journals successfully collected that discuss the hierarchical linear model method in analyzing capital structure policies across various industrial sectors.

Table 1. List of Studies in Various Countries Investigating Determinants of Capital Structure and Results of Quality Assessment

No	Author	Title	Year	Publication	QA1	QA2	Result
1	Rik van Oldeniel	The impact of industri-specific determinants on the capital structure of Dutch SMEs	2020	MS thesis. University of Twente	Yes	Yes	Accepted
2	Jacek Jaworski	Determinants of Capital Structure: Evidence from Polish Food Manufacturing Industri	2019	GJAE	No	No	Not Accepted
3	Hirdinis	Capital Structure and Firm Size on Firm Value Moderated by Profitability	2019	International Journal of Economics and Business Administration	No	No	Not Accepted
4	Francesco Cappaa	The impact of corporate strategy on capital	2019	The Quarterly Review of Economics and	No	No	Not Accepted

		structure: evidence from Italian listed firms		Finance			
5	Tulcanaza Prieto, Ana Belen; Lee, Young Hwan	Internal and external determinants of capital structure in large Korean firms	2019	Global Business & Finance Review	No	No	Not Accepted
6	Rumeysa Bilgin, Yusuf Dinc	Factoring as a determinant of capital structure for large firms Theoretical and empirical analysis	2019	Borsa _ Istanbul Review	No	No	Not Accepted
7	Igor Kirshin Gleb Volkov	The determinants of corporate capital structure: Evidence from Russian panel data	2018	Espacios	No	No	Not Accepted
8	C.J. Bernardo	Macroeconomic and institutional factors, debt composition and capital structure of Latin American companies	2018	Brazilian Business Review	No	No	Not Accepted
9	Razali Haro	Firm Level, Ownership Concentration And Industri Level Determinants Of Capital Structure In An Emerging Market: Indonesia Evidence	2018	Asian Academy of Management Journal of Accounting and Finance	No	No	Not Accepted
10	Sandip Sinha & Pradip Kumar Samanta	Determinants of Capital Structure of Indian Manufacturing Firms : A Hierarchical Linear Modelling Approach	2018	India Finance Conference (IFC)	Yes	Yes	Accepted
11	Cláudio Júnior Bernardo, Tatiana Albanez , José Roberto Securato	Macroeconomic and Institutional Factors, Debt Composition and Capital Structure of Latin American Companies	2018	BBR. Brazilian business review	Yes	Yes	Accepted
12	X. Vo	Determinants of capital structure in emerging markets: Evidence from Vietnam	2017	Research in International Business and Finance	No	Yes	Not Accepted

13	Thi Phuong Vy Le , Thi Bich Nguyet Phan	Capital structure and firm performance Empirical evidence from a small transition country	2017	Research in International Business and Finance	No	Yes	Not Accepted
14	Denis Marinšek	Multilevel Regression and Cluster Confounding in Finance: Study of Corporate	2017	Faculty of Economics, University of Ljubljana	Yes	Yes	Accepted
15	Luís Pacheco	Capital structure and internationalizatio n: The case of Portuguese industrial SMEs	2016	Research in International Business and Finance	No	No	Not Accepted
16	Dinesh Jaisinghani, Kakali Kanjilal	Non-linear dynamics of size, capital structure and profitability Empirical evidence from Indian manufacturing sektor	2016	Asia Pacific Management Review	No	No	Not Accepted
17	Niloufar Rezaie Nejad & Shaista Wasiuzzam an	Multilevel Determinants of Capital Structure: Evidence from Malaysia	2015	Global Business Review	No	No	Not Accepted
18	Ö. Öztekin	Capital Structure Decisions around the World: Which Factors Are Reliably Important?	2015	Journal of Financial and Quantitative Analysis	No	No	Not Accepted
19	Intan Rahmatillah	Determinants of capital structure analysis: empirical study of telecommunicatio n industri in Indonesia 2008-2015	2016	Journal Of Business And Management	No	No	Not Accepted
20	Razali Haro	Capital structure inconclusiveness evidence from Malaysia, Thailand and Singapore	2014	International Journal of Managerial Finance	No	No	Not Accepted

Source: Processed by the Researcher

Based on the above data, it can be observed that each journal contains only one related study. This indicates that the availability of data or relevant scientific literature on a specific topic is very limited. Additionally, the research is highly specific, resulting in a scarcity of relevant studies to include in each journal. The grouped journals will undergo further evaluation through a quality assessment process. During the quality assessment, if the evaluated journal meets the criteria, it will be labeled as "yes," and if it does not meet the criteria, it will be labeled as "no." In this stage, the journals will be recorded based on the author's name and the publication year.

In this study, the journal articles to be discussed are those that have met several criteria; hence, a quality assessment is conducted. Quality assessment is a method of evaluation used to assess the quality and suitability of the articles under investigation. Based on the results of the quality assessment in the table above, it is found that all journals meet the predetermined criteria, so the results are deemed acceptable.

Study by Sandip Sinha and Pradip Kumar Samanta (2018), titled "Determinants of Capital Structure of Indian Manufacturing Firms: A Hierarchical Linear Modeling Approach," investigates the determinants influencing the capital structure in 601 manufacturing companies across 11 industry divisions listed on the Bombay Stock Exchange during the period 1997–2005. The research uses a Hierarchical Linear Modeling (HLM) method on panel data with two hierarchical levels: the company level and the industry level. The results show that company size, profitability, and business risk significantly influence the capital structure of manufacturing companies in India. Specifically, the study finds that larger companies have higher leverage. On the other hand, higher profitability and lower business risk lead to lower leverage. The research also reveals regional influences on corporate capital structure, with companies located in the northern and southern regions of India tending to have lower leverage than those in the eastern and western regions.

Study by Oldeniel (2020), titled "The Impact of Industry-Specific Determinants on the Capital Structure of Dutch SMEs," aims to analyze the determinants influencing the capital structure policies of small and medium-sized enterprises (SMEs) in the Netherlands, with a focus on factors related to specific industries. The research sample includes 3980 SMEs across 22 industries during the period 2007-2012, using data from the REACH database, which provides information on SMEs in the Netherlands. The study's results indicate that industrial dynamism does not have a significant impact on total debt and long-term debt. Although dynamism shows a positive effect on short-term debt when measured as a specific variable for individual industries, this result is not significant in the robustness analysis. Therefore, industrial environmental volatility does not seem to affect the debt levels of SMEs in the Netherlands, and there is no evidence supporting the dynamism hypothesis. The research also suggests that munificence has no influence on the debt of Dutch SMEs, and the munificence hypothesis lacks support. Regarding industrial concentration, there is a contradictory relationship where industrial concentration has a positive impact on short-term debt but a negative impact on long-term debt. This negative impact is only significant in the random slope model, contrary to the positive impact of industrial concentration on short-term debt. Therefore, the industrial concentration hypothesis is rejected by the analysis. Interaction variables between munificence and profitability are not significant for total debt, long-term debt, and short-term debt, except in the robustness test for total debt. Interaction variables between munificence and growth are only significant for long-term debt. Thus, munificence positively moderates the effect of growth on long-term debt, remaining significant at the 10% significance level when tested with lagged variables.

Study by Shilpa N. C. and Amulya M. (2022), titled "Capital Structure Decisions of Listed Firms in the Transport Equipment Industry in India," provides results indicating that the mixed economy in India comprises policies implemented by the public and private sectors. This economic condition influences complex relationships between industries at various levels such as company, segment, and industry over the years. The dynamic structural forces determine the leverage, profitability, and ultimately competition in the less-explored context of the Indian industry. After the likelihood-ratio test, the industrial concentration has dramatically increased since then, providing equal opportunities for companies. Furthermore, phenomenal growth is acknowledged

in the participation of institutional foreign and domestic investors, along with retail investors. Integrated growth in the number of listed companies in the stock exchange, along with the validated composite market capitalization of stocks, is recognized

CONCLUSION

The systematic literature review, encompassing the period from 2017 to 2022 and focusing on the Hierarchical Linear Model (HLM) method for analyzing capital structure policies across various industrial sectors, draws insights from four distinct studies. Each study contributes unique perspectives to our understanding of the intricate dynamics influencing capital structure decisions. Noteworthy, the review reveals a limited number of studies employing the HLM method within the specified timeframe, emphasizing the need for more research in this area.

In summary, the studies underscore the importance of context-specific factors, industry dynamics, and regional nuances in shaping capital structure choices. The HLM method emerges as a robust tool for comprehensively examining multi-level influences on capital structure policies. The identified gaps in research suggest opportunities for further exploration and expansion of the HLM approach in understanding capital structure determinants across diverse industrial sectors.

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