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MAPPING THE EVOLUTION OF CAPITAL STRUCTURE THEORIES-A BIBLIOMETRIC ANALYSIS USING SCOPUS DATABASE

Komal Bhojraj Tolani[1], Dr. Hemal B. Pandya[2]
Research Scholar[1] and Professor[2],
S.D. School of Commerce, Gujarat University, Ahmedabad, Gujarat, India

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ABSTRACT
This study is a comprehensive analysis that offers holistic review of academic literature in context of evolution of capital structure theories over the period of time using Scopus database. It aims to provide new perspectives in the scholarly landscape of capital structure by employing bibliometric analysis. It attempts to assess global research trends in the capital structure theories based on keywords, co-occurrences and co-authorships between the authors and the related countries. Further, this study uncovers emerging concepts and theories related to capital structure decisions. It also identifies the influential researchers of this arena and their contribution in the academic world that has also helped corporates in taking most appropriate decisions pertaining to their choice of finance mix. This study uses Scopus database and analyses 673 publications related to capital structure theories published from 1975 to 2024.

KEYWORDS: *Capital Structure Theories, Capital Structure Choice, Bibliometric Analysis*

I. INTRODUCTION
Capital Structure is simply the combination of debt and equity. Debt-equity ratio represents the capital structure of a firm. An ideal level of capital structure is considered to be the one at which the overall cost of employing capital is minimum and firm's value is maximum. There are benefits of having debt in the capital structure like interest tax-shield. But it should be noted that employing too much debt may lead to a bankruptcy situation. Hence, capital structure decisions are very crucial as they have a long lived impact on a firm's performance. Since the seminal work of Modigliani and Miller (1958), the concept of optimal capital structure has remained a puzzle. After their study, different theories were discovered stating different frictions to be focused related to capital structure decisions. Trade-off theory focuses on the benefit of tax shield that has a trade off with bankruptcy costs. Pecking Order theory states that firms should use internal finance first i.e. retained earnings and then employ debt and at last opt for equity. The most recent theory of capital structure states that firms should opt for equity issuance when their market values are high as compared to their book values.

However, with drastic changes in the capital markets over the period of time, it is almost impossible to rigidly follow any strict or particular debt level in the firm's capital structure since different industries have different requirement of funds and their working patterns are different from one another. Also the financial system of different countries also differs. Thereby, this study sets out on a bibliometric investigation of the extensive literature relevant to capital structure theories in order to provide a panoramic view of the conceptual landscape by highlighting the pioneer studies, emerging themes, influential authors and the international reach of these discourse.

II. LITERATURE REVIEW
Modigliani and Miller (1958) instigated the modern theory of capital structure, popularly known as MM model. This theory serves as the starting point of corporate finance. The classic MM theory states that the capital structure decisions do not affect firm value. While testing the capital structure of 157 US based industrial firms during 1979-1989, it was found that these firms opt for external finance only when internal funds are in deficit thereby proving that they followed pecking order theory (Shyam-Sunder & Myers, 1999). The US firms from the period 1981-1990 were found to be adjusting towards the target debt level (Jalilvand & Harris, 1984) which aligns with the trade-off theory (Myers, 1984). Capital structure is a cumulative outcome of historical market values (Baker & Wurgler, 2002). While investigating the relationship between firms' historical values and capital structure in US, it was observed that firm's history have a strong influence on its capital structure, partially supporting Baker and Wurgler's theory of market timing. However, this influence vanishes over the period of time and firms tend to move towards their target debt which is in line with trade-off theory (Kayhan & Titman, 2007).

III. METHODOLOGY
Bibliometric analysis is a method that involves statistical analysis to provide academic literature a quantitative

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understanding (Benckendorff & Zehrer, 2013). The Scopus database is utilized to evaluate data and obtain perspectives on the evolution of literature as well as knowledge transfer within a specific field over time. This data includes writers, quotes, number of articles read and the keywords. Bibliometrics consists of several distinct approaches, namely bibliographic linking quotation, co-citation analysis and co-word analysis of keywords. The selection criteria of the technique to be employed depends on the research data used.

3.1 Research Query

The articles were extracted from Scopus that were published during 1975-2024, the source retrieved 673 documents. The Scopus research string that was used is as follows:

TITLE-ABS-KEY (("Capital structure decisions") OR ("Capital Structure theories")) AND (LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (PUBSTAGE , "final"))

IV. ANALYSIS

This section outlines the methodology adopted, presents the key findings and prospects the implications of the bibliometric analysis within a broader landscape of the capital structure theories. Data analysis is performed using different tools and programs including MS Excel, VOSviewer as well as POP

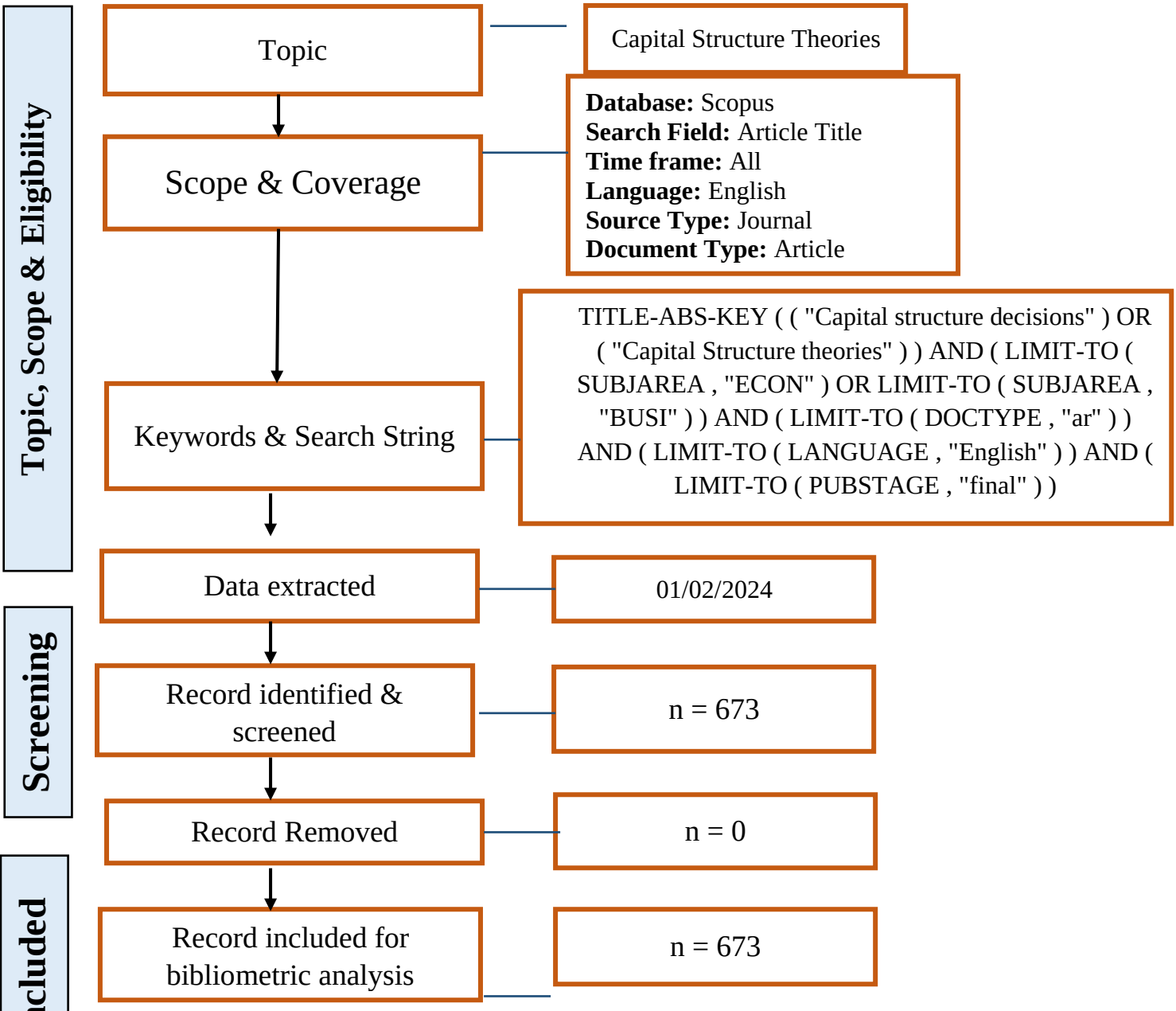

Figure 1: Structural Outline of data extraction and filtration process

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4.1 Co-authorship and Country Bibliometric Mapping

Co-authorship means the collaborative effort of the researchers who create a research publication. Country bibliometric analysis is the process of examining and exhibiting a specific region or country's research results. The increased interest in multidisciplinary research in recent years has made co-authorship more significant. The researchers from different areas are required to unitedly work together so as to conduct a multifaceted research, for this co-authorship is an effective approach. Additionally, it also facilitates the researchers to exchange their expertise and resources, thereby helping them to have more comprehensive results. Subsequently, co-authorship and country bibliometric connections are vital components of the scientific research area.

The strengths and weaknesses in a country's research groups can be identified by researchers by examining the results of bibliometric mapping of a particular country. Further, not only the cross-border collaborations can be easily identified, but also the impact of specific research areas can be tracked over time. Hence, country bibliometric mapping is a significant approach to analyse as well as visualize research themes and developments in the specific area.

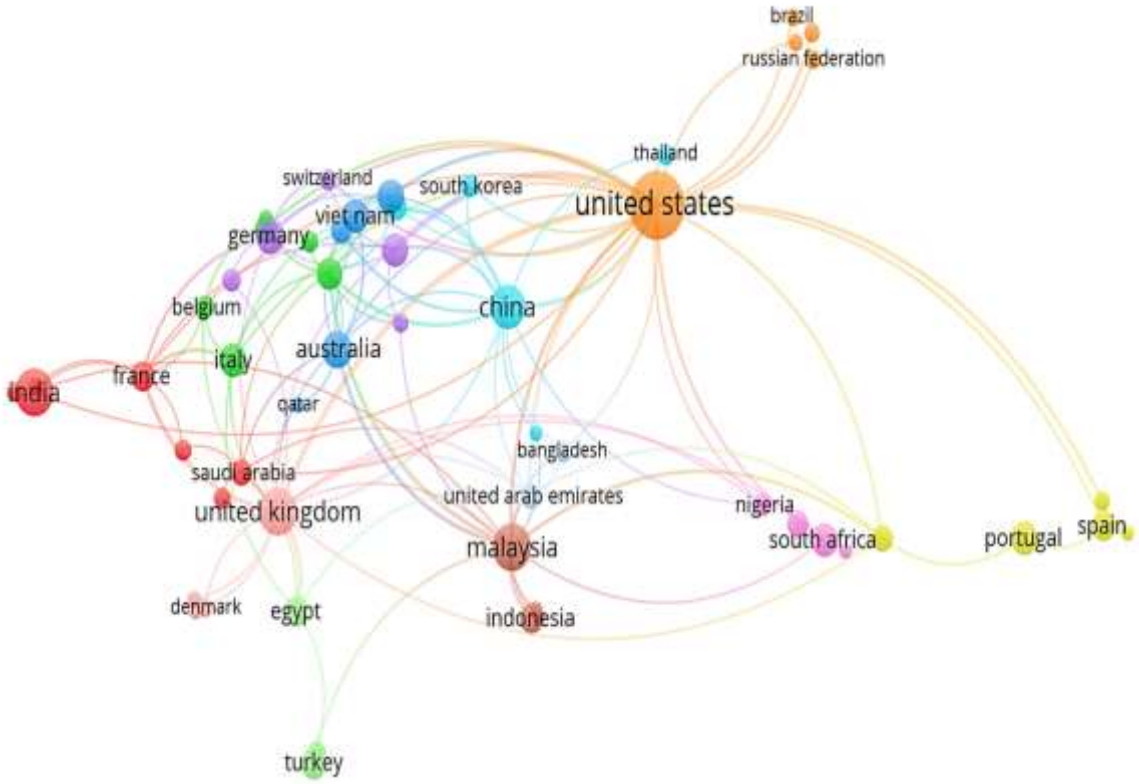

Figure 2: Co-authorship and Country Bibliometric Mapping

An extensive country bibliometric mapping and co-authorship analysis helps in gaining valuable insights into the research world, collaboration structures and authors and institutions. It also helps in observing the research trends in the area of capital structure decisions focusing on the selected countries. These insights also provide future research directions and scope of collaborations related to capital structure decisions

4.2 Co-Citation-Based Authors' Bibliometric Mapping

To examine the associations between authors and their publications, co-citation based bibliometric mapping of authors is used. This techniques quantifies how often two articles have been cited together in the literature. By looking at co-citation patterns, clusters of authors and their research areas can be identified using bibliometric mapping.

The co-citation based authors' bibliometric cartography is a multi-step approach. At first, scholarly article database is established and the papers that are relevant to the topic are selected depending upon specific criteria, like area of subject or publication date. After this, the next step is to extract the citation data for each article and then analyse it to observe co-citation patterns.

After retrieving the data and analysing it, bibliometric software VOSviewer maps the associations between authors and their publications geographically. These maps can create networks, groupings, or other visualizations that are helpful in identifying the groups of authors and their area of research. The trending research patterns can be identified using the resulting maps. These maps can also help in locating key researchers in a specific field and pinpointing the gaps in the literature. The collaborations between researchers can be identified as well as the evolution of a research topic over time can also be tracked using these maps.

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To put together, co-citation based author's bibliometric mapping is an effective tool for investigating the connections between authors and their scholarly literature that they have published. It offers insightful information about organisation of academic disciplines, how scholars collaborate within them and how the research subjects evolve over period.

In order to analyse co-citation based authors, various authors are taken into consideration, minimum number of occurrences in the citations of an author is considered to be 10. Out of 20,754 citations of an author, 955 citations of an author met the threshold.

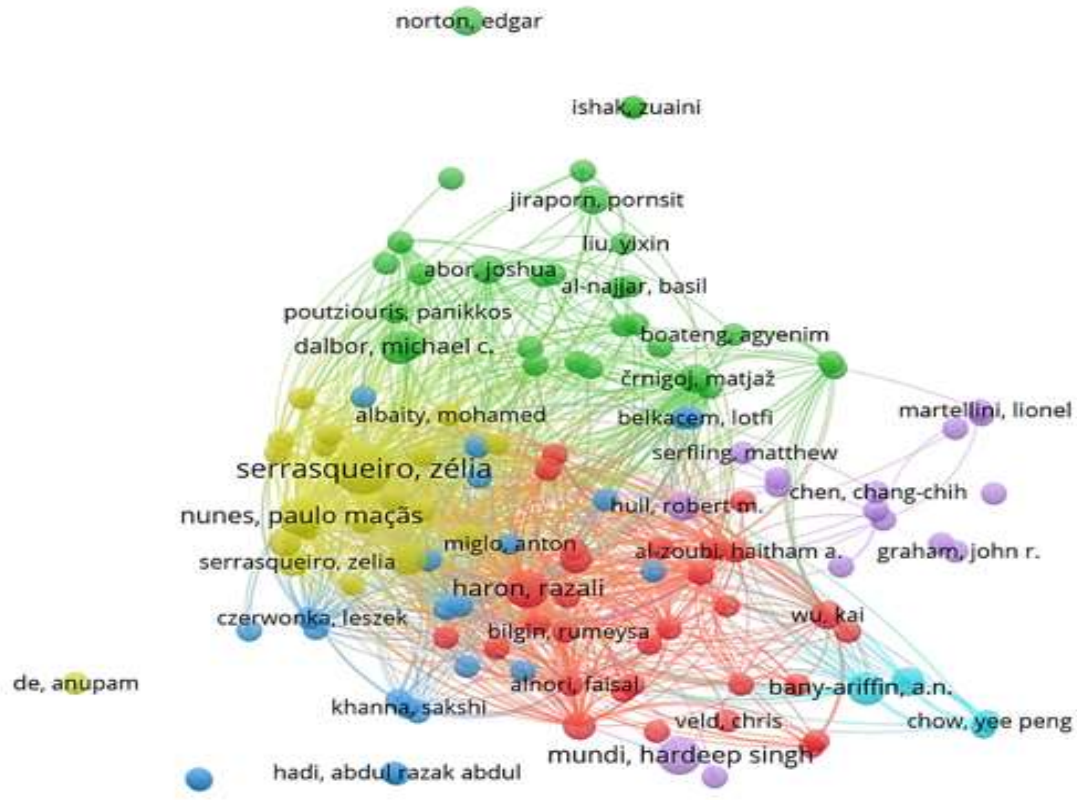

Figure 3: Co-Citation based Author's Bibliometric Mapping

4.3 Co-occurrence Analysis in terms of all keywords

Co-occurrence analysis is a category of bibliometric integration which aims to investigate the frequency as well as trends of co-occurring keywords or terms in academic literature. This approach is useful in highlighting the most crucial concepts or topics being discussed and exposing the thematic organisation of a research area. In this analysis, the frequency of every term or keyword in the dataset is compared to all other words and is displayed by a matrix. Then co-occurrence matrix is visualized by employing a network map or by doing cluster analysis so as to provide clusters of associated terms and the influence of their connections.

An advantage of co-occurrence analysis is that it maps the cognitive framework of a field in a very simple and objective manner. By examining the frequency of co-occurrences, the researchers in a particular area can identify the most relevant topics and which ones are less prominent in their respective area of research. Therefore, such information becomes useful to identify research gaps and scope for future research.

Besides, co-occurrence analysis has some drawbacks too. This analysis is sensitive to the choice of keywords, which may be a personal view or subjective in nature and may not cover whole complexity of a research field. Additionally, co-occurrence analysis lacks the accountability for the prominence or quality of individual publications or the writers and may fail to reflect the variation in viewpoints.

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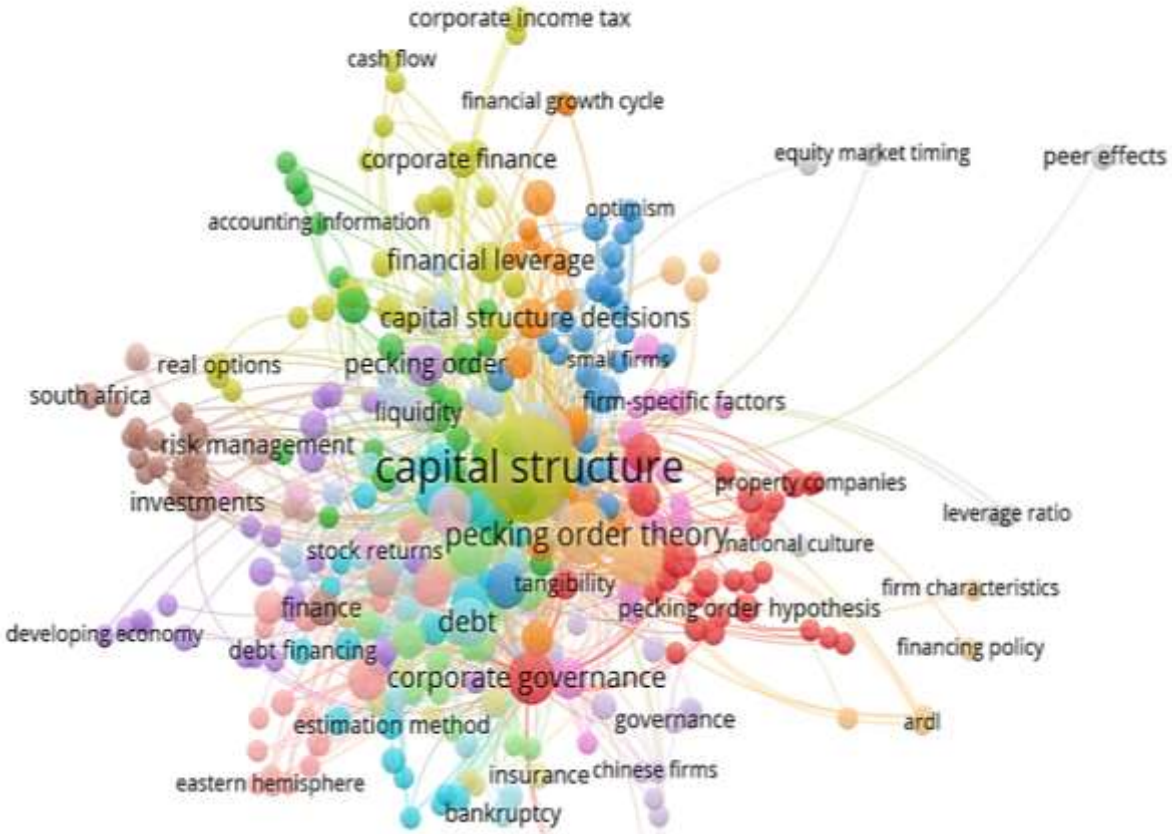

Figure 4: Co-occurrence analysis in terms of all keywords

V. CONCLUSION

The world's most widely used and largest database, Scopus, conducts a bibliometric analysis on evolution of capital structure theories. The database covers period from 1975-2024. 'AND' operator and 'OR' operator has been used along with keywords in the search engine of the Scopus database. A total of 637 documents are retrieved as the outcome of the search query. Various parameters are considered for analysing this database. All the articles are in English language. The results of the keywords search highlighted that the maximum number of research publications are with the keyword 'Capital Structure'.

This paper illustrates how bibliometric analysis is an exceptionally useful tool for the researchers for any chosen area of literature. A meticulous dataset of papers is obtained from Scopus database as it provides high quality data with a rationale. This facilitates data processing and reliable outcomes for which this database has gained recognition in the world of scholars. VOSviewer offers graphical representation of bibliometric information based on co-occurrence, co-citations, keywords, etc. The collected data was then analysed to have insights on the number of articles that were published per year, their h-index and the number of citations. To prepare the present article, bibliometric analysis – a study of author's scholarly activity has been employed.

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