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## Article

# Influencing factors that determine capital structure decisions: A review from the past to present

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## Influencing factors that determine capital structure decisions: A review from the past to present

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## ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | REVIEW ARTICLE

# Influencing factors that determine capital structure decisions: A review from the past to present

Prince Yeboah Boateng<sup>1\*</sup>, Baba Issah Ahamed<sup>1</sup>, Michael Gift Soku<sup>1</sup>, Salomey Osei Addo<sup>1</sup> and Lexis Alexander Tetteh<sup>1</sup>

**Abstract:** This review study seeks to assess the state of determinants of corporate capital structure over the last 7 years to aid discover gaps as opportunity for further research. The review used a sample of 68 published journal articles in divers high-ranked journals spanning the years 2014–2020. The review study considered criteria for inclusion and exclusion of the published journal articles. Findings from the review study reveal that study on capital structure determinants focuses largely on quantitative research than qualitative research and mixed research. Again, capital structure determinants research concentrates more on nonfinancial sector as against the financial sector. However, firm-level study has been realized to dominate the level of analysis space in comparison with industry-level, country-level and synthesis-level studies. Moreover, estimation technique centered greatly on regression analysis model in relation to others. Notwithstanding, the study observed that the pecking order theory is the most adopted in addressing issues of capital structure determinants. The authors provide analysis on research methodology approach and geographical region coverage as being part of addition made to reviews in this study area. Recommendations have been made for future review in the field of capital structure determinants.

**Subjects:** Corporate Finance; Business, Management and Accounting; Financial Management; Corporate Governance

**Keywords:** Capital structure determinants; literature review; pecking order theory; Modigliani and Miller theory; trade-off theory; information asymmetry theory

### 1. Introduction

Financing decisions of organizations are critical to the short-term and long-term sustainability of their operations including returns to owners and other relevant stakeholders. Business organizations mainly operate to seek the welfare of owners (shareholders) through revenue and profit maximization as well as cost minimization and also seek the interest of other key parties (Mrabure & Abhulimhen-Iyoha, 2020; Saleem et al., 2020). For managers or directors who have been entrusted with the responsibility to attain the objectives of a business organization, there is the need for them to carefully choose optimal capital or financing structure, which is the crucial financing decision to aid their tasks. Capital structure plays a central role in the management of every business organization in the realization of the key objective, which is profit and the end utmost focus, the maximization of the shareholders wealth. It is important for “business

organizations or firms to ensure a robust capital structure because of its implications on the future source of funds, cost of capital, risk character, liquidity position, investor return and firm valuation” (Bajaj et al., 2021, p. 173). So, business organizations strive for the best or optimal capital structure.

The optimal capital structure is the synthesis of debt and equity that ensure the maximization of the firm’s value through prudent investment undertakings and also the enhancement of the financial and operational performance of every business organization or firm (Kumar et al., 2017). This extant literature is an important area that is constantly being studied by scholars or researchers in the discipline of finance, accounting, economics, management, among others and considered relevant as a contemporary area of research no matter the era. For instance, capital structure decisions have been researched both in the financial and nonfinancial firms but more dominant in the nonfinancial spheres (Doku et al., 2019). In order to ascertain the capital structure of firms, there is the need to understand the determining factors. Several researches have been conducted on the determinants of capital structure decisions but the outcome depended on the objectives under consideration and so inconclusive nature of the area. The appropriate means to aid in ascertaining much insights in the area of capital structure determinants is through systematic review approach, and this research approach is mostly employed to explain major findings of the review, thereby highlighting the gaps in the literature (Kumar et al., 2017). In addition, previous review study done by Kumar et al. (2017) who specifically reviewed on the determinants of capital structure from 1972 to 2013 for future research direction serve as a contributing factor for this current review. The review study considers other relevant data source like Science Direct, JSTOR and Sage, which was not the case for the previous study (see Kumar et al., 2017). Moreover, as sustainability of corporate organizations is imperious and the appropriate financing decisions are undoubtedly efficacious to that direction. This will complement the varying or nonconsensus findings of capital structure choices in existing literature (Ngatno et al., 2021), and as a result, the call for this review study to discover the current state of the phenomenon capital structure determinants. Therefore, the key objective of this review study is to assess the determinants of capital structure of business organizations from the past to present. This will pave the opportunity for further research in the area of capital structure determinants to be undertaken in the future. The main question that needs to be answered is, what has been the determining factors of firms’ capital structure from the past to present (2014 to 2020)?

The remaining parts of this six-section review paper are arranged as follows: Section 2 presents the literature review in the area of capital structure comprising capital structure theories, capital structure common empirical determinants. Section 3 takes into account methodology of the literature review consisting of the period scope, literature collection, and literature criteria for inclusion and exclusion of articles. Section 4 considers presentation and discussion of findings from literature search. Section 5 reports on research gaps identified and opportunity for further research. Section 6 provides the conclusion.

## **2. Literature review**

This section briefly considers some theoretical underpinnings of capital structure that informs the choice of determinants to employ in capital structure decisions. The section further discusses the common empirical firm-level capital structure determinants used in most studies.

### **2.1. Capital structure theories**

#### **2.1.1. Modigliani and Miller (MM) theory**

This theory is seen as the forefront of influence for corporate capital structure decisions and was developed by Modigliani and Miller (1958). They were of the initial opinion that capital structure decision is irrelevant or unrelated and do not impact on the value of the business organization. Various assumptions informed their initial proposition including; no taxes, no transaction or flotation costs, perfect information implying the absence of asymmetric information, no retained earnings as a result of all earnings being paid out as dividends, no bankruptcy costs (any

company in financial distress can at all times seek to raise supporting funds in a perfect capital/ financial market), no government intervention and homogeneous expectations within an efficient capital market. When arguments were raised against their initial proposition, Modigliani and Miller (1963) modified their beginning allusion and included corporate tax as a key factor in determining the capital structure of business organizations. The subsequent proposition suggests that business organizations will benefit from tax deductibility as a result of debt financing through savings in interest payment, which will possibly lead to firm value maximization. Several scholars (like Alipour et al., 2015; Amraoui et al., 2018; Balios et al., 2016; Bukair, 2019; Chipeta & Deressa, 2016; Danso et al., 2014; Kahya et al., 2020; Nawi, 2017; Rodrigues et al., 2017; Ukaegbu & Oino, 2014) applied this theory as the foundation in determining firms' capital structure.

#### 2.1.2. *Trade-off theory*

This theory takes into account the balance between the benefits derived from debt financing (tax deductibility benefits) and the possibility of higher interest cost from debt financing above certain level, which result in bankruptcy costs. Trade-off theory is perceived to have been developed by Myers (1977) as a build-up of Modigliani and Miller (1963) proposition to ascertain the determinant of the best capital structure in order to maximize the value (the trade-off between benefits and costs of debt) of the business organization. This signifies how debt financing will be able to increase the value of businesses through tax shields making debt financing less costly compared to equity financing but the optimum level of debt should be the preferred. Researchers (including Burgstaller & Wagner, 2015; Gomez et al., 2014; Leary & Roberts, 2014; Li & Islam, 2019; Louziri, 2018; Matemilola et al., 2018, 2019; Morri & Parri, 2017; Nawi, 2017; Noulas & Gimimakis, 2014; Ohman & Yazdanfar, 2017; Oztekin, 2015; Rani et al., 2020; Saif-Alyousfi et al., 2020; Sarlija & Harc, 2016; Sohrabi & Moveghari, 2020) adopted this theory in determining corporate capital structure decisions.

#### 2.1.3. *Pecking order theory*

The pecking order theory is seen to have been proposed first by Donaldson (1961) and later advanced by Myers (1984) by postulating that the best capital structure is the one that will maximize the value of business organizations. Pecking order theory of capital structure goes contrary to the general ways of business organizations having explicit synthesis of debt and equity structure of capital, which decreases their cost of capital. Rather, this theory ranks the various sources of finance to decide on the best capital structure. The order to ensure the optimal capital structure is attained consist of firstly internal financing source, that is, retained earnings, followed by debt financing and finally issuance of new equity. The motive behind this is that internal funding (retained earnings) is cheaper as compared to external funding (debt and new equity issuance) to maximize the value of the business organization. Authors (see Alnori & Alqahtani, 2019; Dakalakis et al., 2017; Faccio & Xu, 2015; Gottardo & Moisello, 2014; Guner, 2016; Hang et al., 2018; Kaur et al., 2020; Kedzior et al., 2020; Leary & Roberts, 2014; Matias & Serrasqueiro, 2017; Moradi & Paulet, 2019; Proenca et al., 2014; Ramli et al., 2019; Yazdanfar et al., 2019; Rashid et al., 2020; Sikveland & Zhang, 2020; Soykan & Ulucak, 2016; Yildirim et al., 2018) used the pecking order to derive the determinants of capital structure.

#### 2.1.4. *Agency theory*

This theory was propounded by Jensen and Meckling (1976), which considers the relationship between the principals (business owners) and the agents (business managers) where the principals entrust the running of the business organizations in the care of the agents. The agents are mandated to act in the interests of the principals. Therefore, the agents are expected to employ the best capital structure that will maximize the benefits of the principals of businesses. Scholars (e.g., Amraoui et al., 2018; Bilgin & Dinc, 2019; Burgstaller & Wagner, 2015; Handoo & Sharma, 2014; Jedrzejczak-Gas, 2018; Moradi & Paulet, 2019; Yazdanfar et al., 2019; Rashid et al., 2020; Sakr & Bedeir, 2018; Shahzad et al., 2020; Vo, 2017) supported this theory when studying capital structure determinants. So, the best capital structure is achieved where there is minimal conflict between owners and the managers allowing managers in making prudent financing decisions for the business organizations.

### *2.1.5. Information asymmetry theory*

Information asymmetry theory looks at where there is nondisclosure of certain relevant information by those entrusted with the responsibility in running the affairs of the business organizations. This was developed by Ross (1977) by suggesting that managers hide influential information at the expense of investors. However, the situation signals a perception among investors but as business organizations increases their debt financing, positive signal on the firm value is sent across investors. This shows a positive association between debt financing and firm value. Researchers, including Balios et al. (2016), Rodrigues et al. (2017), Nawi (2017), and Zhong and Zhang (2018), and Rani et al. (2020), among others, adopted this theory as a means to determining the capital structure of businesses.

### *2.1.6. Market timing theory*

This theory, which was propounded by Baker and Wurgler (2002), considers equity market-timing using an external finance weighted average of market to book ratio. The market timing theory indicates that business organizations gradually adjust in line with a target debt ratio but equity financing is solely chosen when it appears more valued by financial markets. In addition, Welch (2004) alludes to the fact that businesses see fluctuations of share price before the choice of equity financing. So, scholars like Tin and Diaz (2017), Louziri (2018), Bank et al. (2019), Brown et al. (2019), and Shahzad et al. (2020), inter alia, employed the market timing theory in the area of the determinants of capital structure by business organizations.

## **2.2. Traditional empirical determinants of capital structure**

It is imperative to consider some key determinants of corporate capital structure documented in literature from existing studies conducted by various scholars. Most studies, especially, empirical ones, concentrate on eight essential determinants of capital structure and consider these determinants as being frequently adopted and serve as the basis to realizing additional ones (Bukair, 2019; Kumar et al., 2017; Neves et al., 2020). These determinants include profitability, size, asset tangibility, growth, liquidity, nondebt tax shield, age and earnings volatility, and are described as firm-level determinants. Below we briefly elucidate these determinants:

### *2.2.1. Profitability*

Profitability is considered as a surviving tool of business organizations. Extant literature on capital structure postulates the significance of profitability. Several scholars (including Saif-Alyousfi et al., 2020; Soykan & Ulucak, 2016) measure profitability as profit before interest and tax as a percentage of total assets. An association exists between profitability and capital structure (leverage). So, scholars (see Dasilas & Papasyriopoulos, 2015; Rani et al., 2020) suggest a positive association between leverage and profitability. On the other hand, studies (like Abdulla, 2017; Chipeta & Deressa, 2016; Matias & Serrasqueiro, 2017; Rashid et al., 2020; Sofat & Singh, 2017; Sohrabi & Moveghari, 2020; Zhong & Zhang, 2018) indicate a negative association.

### *2.2.2. Size*

Business organization's size is relevant in deciding on the best financial structure decision. Empirically, size is generally considered by researchers (like Bilgin & Dinc, 2019; Vo, 2017) as the natural logarithm of total assets. A relationship between size and capital structure (leverage) has been established in literature. For instance, researchers (including Bukair, 2019; Chipeta & Deressa, 2016; Matemilola et al., 2018; Sohrabi & Moveghari, 2020; Zhang & Liu, 2017; Zhong & Zhang, 2018) aver a positive relationship between size and leverage. On the contrary, studies by scholars (see Handoo & Sharma, 2014; Rani et al., 2020; Vo, 2017) suggest a negative relationship existing between size and leverage.

### *2.2.3. Asset tangibility*

Asset tangibility of business organization is crucial and attracts confidence because it can serve as collateral security (Kumar et al., 2017) for the organization. This incorporates fixed assets as a percentage of total assets in support of most researchers (see Bilgin & Dinc, 2019; Sikveland & Zhang, 2020). Asset tangibility as a determinant is seen to have a correlation with capital structure



(leverage) as confirmed in literature. For example, studies (including Alves et al., 2015; Faccio & Xu, 2015; Morri & Parri, 2017; Rashid et al., 2020; Rovolis & Feidakis, 2014; Sarlija & Hanc, 2016) postulate a direct relationship between asset tangibility and leverage. Also, an inverse relationship between asset tangibility and leverage is established by researchers (see Hang et al., 2018; Moradi & Paulet, 2019; Pacheco & Tavares, 2016).

#### 2.2.4. Growth

Growth potential of business organization serves as opportunity channel for future prospects. Scholars (see Ahsan et al., 2016; Sohrabi & Moveghari, 2020) empirically define growth as the variation in assets of business organizations but Saif-Alyousfi et al. (2020, p. 290) included two additional descriptions of growth consisting firstly of change in the tangible assets between time (current and previous) divided by the tangible assets at previous time and secondly, the ratio of market capitalization plus long-term debt to total assets. An association between growth and capital structure (leverage) has been revealed in literature by scholars. Researchers (including Ramli et al., 2019; Rashid et al., 2020; Vo, 2017) show a positive association between growth and leverage. Negative association is found by other authors (like Dasilas & Papasyriopoulos, 2015; Milos, 2015; Neves et al., 2020; Sanchez-Vidal, 2014; Sikveland & Zhang, 2020; Zhang & Liu, 2017).

#### 2.2.5. Liquidity

Liquidity considers how business organizations are able to address its immediate term responsibilities with ease. Researchers (including Bilgin & Dinc, 2019; Soykan & Ulucak, 2016; Vo, 2017) define liquidity as a ratio of current assets to current liabilities. Confirmation of relationship between liquidity and capital structure has been done by researchers with mix results. For example, authors (see Kaur et al., 2020; Rani et al., 2020; Sharma & Paul, 2015) reveal a direct relationship between liquidity and leverage whiles other authors (like Ahsan et al., 2016; Guner, 2016; Kahya et al., 2020; Milos, 2015) indicate an inverse relationship.

#### 2.2.6. Nondebt tax shield

This is where benefits from items (like depreciation) other than those from debt financing (interest benefits) play an important role in capital structure decisions of business organizations. Nondebt tax shield has the tendency to encourage business managers on the level of debt component to be included in the capital structure (Kumar et al., 2017). Authors have established an association between nondebt tax shield and capital structure (leverage). A positive association was alluded by authors (like Sanchez-Vidal, 2014). On the other hand, scholars (see Dakalakis et al., 2017; Matemilola et al., 2018; Ramli et al., 2019; Soykan & Ulucak, 2016; Zhang & Liu, 2017) reveal a negative association.

#### 2.2.7. Age

Age of business organization is relevant when deciding on capital structure. How long a business organization has been operating is key to capital structure choice. Notwithstanding, Kumar et al. (2017) postulate negative association between age and capital structure (leverage) in developed economies whiles in developing economies, the association is positive. Scholars like Bukair (2019) support the direct relationship existing between age of business organization and leverage in developing economies. On the other hand, researchers (including Matias & Serrasqueiro, 2017; Sanchez-Vidal, 2014; Zhang & Liu, 2017) aver an inverse relationship in developed economies.

#### 2.2.8. Earnings volatility

Earnings volatility looks at the fluctuations in earnings of business organization, which has an influence on the organization's capital structure decisions. According to Saif-Alyousfi et al. (2020), earnings volatility is empirically measured as the standard deviation of operating income to total asset. A relationship has been established in literature by researchers between earnings volatility and capital structure (leverage). Authors (including Hang et al., 2018; Sofat & Singh, 2017; Soykan & Ulucak, 2016; Zhang & Liu, 2017) confirm a positive relationship between earnings volatility and leverage but researchers (like Neves et al., 2020) suggest a negative relationship.

### **3. Methodology of the literature review**

Fink (2019) made an important suggestion that, the methodology applied in the area of the systematic literature review should openly and clearly follow certain defined procedure for undertaking the review, detailed in scope without any exemption to all useful information or documents necessary to a specific area of review study. This review study examines the determinants of capital structure by employing methodology of systematic literature review. According to Kumar et al. (2017, p. 109), “a systematic review is a tool used to summarize, appraise and communicate the results and implications of a large quantity of research and information which seek to provide an exhaustive summary of current literature relevant to the research question.”

#### **3.1. Period scope**

The journal articles chosen for this capital structure determinants literature review study cover a time span of 7 years that is, from 2014 to 2020. This time scope criterion was drawn from the review of literature on the determinants of capital structure conducted by Kumar et al. (2017) from the period 1972 to 2013.

#### **3.2. Literature collection**

The review commenced by probing into the literature and subject matter in the area of quantitative, qualitative and mixed research approaches. The concept capital structure as keyword or phrase was inputted and searched initially from the online or electronic literature search databases or engines. From the beginning, the search was conducted for all literature in the area of capital structure without any restriction but subsequently restricted to the determinants of capital structure and thereby aligning with the focus of this review study. The initial search engines or databases employed in this study include Emerald, Science Direct, Escohost, JSTOR, Sage, Google Scholar, Scopus and Wiley Online but Scopus and Wiley Online were later eliminated (see criteria for inclusion and exclusion of literature articles below). Also, the initial search was done for all forms of documents including research papers, review papers, books, book parts and chapters, research reports, expert briefings, conference papers, executive summary and other working paper documents following similar technique used by Kumar et al. (2017). By limiting the search to capital structure determinants from 2014 to 2020, Emerald initially produced 76 results, Science Direct (77 results), Escohost (45 results), JSTOR (1,330 results), Sage (12 results), Google Scholar (3,110 results), Scopus (58 results) and Wiley Online (25 results). But later concluded on an overall sample of 68 (see criteria for inclusion and exclusion of literature articles below).

#### **3.3. Criteria for inclusion and exclusion of articles**

Articles extracted from the various online or electronic databases were pruned based on certain inclusion and exclusion guidelines, and a final sample of 68 were concluded.

The following were the inclusion criteria adopted by this review study on determinants of capital structure:

- Journal articles published from the year 2014 to 2020;
- Journal articles published in English language similarly applied in Kumar et al. (2017) and Ofoeda et al. (2019);
- Published journal articles solely in high ranked journals supporting Kumar et al. (2017) who adopted similar strategy;
- Following, Kumar et al. (2017), published journal articles with opened access to full text; and
- Published journal articles that employed determinants of capital structure in their title or objective agreeing with similar postulation by Ofoeda et al. (2019).

On the side of the exclusion criteria, below were considered in this review study:

- In relation to the electronic search databases (Scopus and Wiley Online), full text articles were not opened to access;



- Documents including review papers, books, book parts and chapters, research reports, expert briefings, conference papers, executive summary and other working paper documents in line with synonymous approach employed by Senyo et al. (2018);
- Duplicate capital structure determinants journal articles that is, same article found in more than one electronic database;
- Following Kumar et al. (2017), irrelevant journal articles to this review study;
- Published journal articles that do not have capital structure determinants in their title or objective similar to the strategy used by Ofoeda et al. (2019); and
- Capital structure determinants journal articles published before the year 2014 as they were considered to be reviewed by previous studies including Kumar et al. (2017).

#### 4. Presentation and discussion of findings from literature search

The findings of the systematic literature review are presented in this section. It begins by expounding the publication activity by the researches on the determinants of capital structure per publication years (2014–2020). It also sheds light on the publication profile of the electronic databases or search engines employed for the literature review, and the methodology employed by the various studies on the phenomenon. It further elucidates the studies on the determinants of capital structure according to the industries within which the studies were conducted, the level of analysis, and the industries within which the studies were conducted. It finally elaborates on the geographical region within which the studies were conducted.

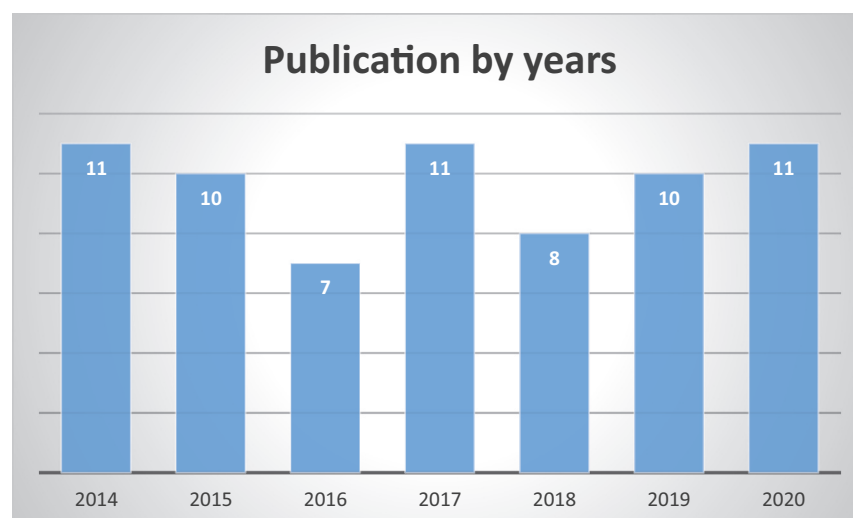
##### 4.1. Publication by years

The publication trend of determinants of capital structure is presented in Figure 1. The figure indicates that research on capital structure determinants over the past 7 years is generally on a fluctuating trend with a downward trend from the years 2014 to 2016. However, in 2017, 11 papers representing 16% of the entire published papers being reviewed were recorded. It could again be depicted that there was an upsurge in the number of papers published from 8 papers (12%) in 2018 to 10 papers (15%) in 2019, and finally to 11 papers (16%) in 2020. Generally, this shows the growing interest in studies on the determinants of capital structure over the years.

##### 4.2. Publication activity by electronic database

According to Ziman (1968), scientific papers are embedded in the literature of a subject. Getting access to scientific papers require the use of electronic databases for the collection of relevant literature for study. Scientific papers published on capital structure determinants were searched for in the following electronic databases or search engines: Emerald, Google Scholar, Escohost, JSTOR, and Science Direct. The identified search engines were used due to the fact that these

Figure 1. Publication by years.



search engines had gained dominance in the publication of research papers. The study considered determinants of capital structure as the dominant keywords in the search of journal articles from the various electronic database. Emerald and Science Direct recorded the highest number of published papers representing 34% respectively of the entire papers (68) sampled. On the other hand, Google Scholar and Escohost recorded 12% and 10% of the papers with JSTOR and Sage having the least of papers representing 6% and 4%, respectively. This could be seen from Figure 2.

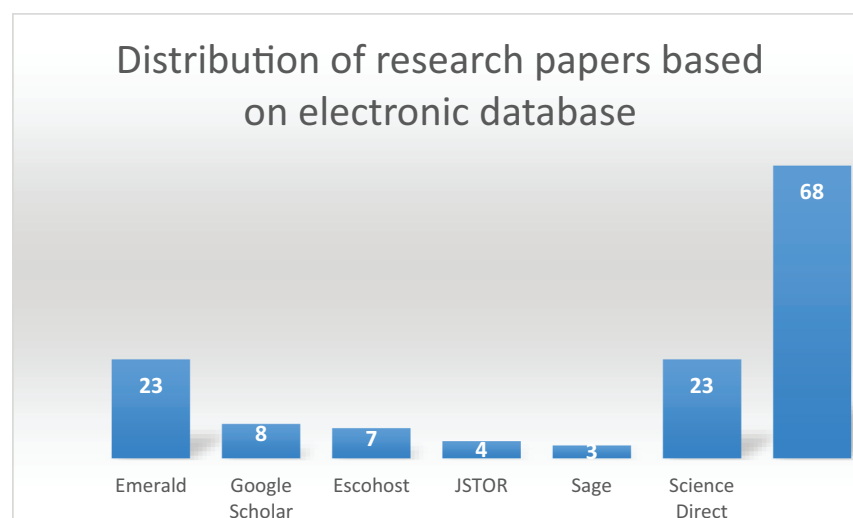
The Table 1 shows the distribution of the electronic database against the year of publication. It can be seen that Emerald had more journal article publication in 2014 compared to other electronic databases. In 2015, JSTOR had the majority of articles publication. Again, Emerald and Escohost had the largest share of published articles each in 2016. However, Emerald dominated the publication of articles in 2017. In 2018, Science Direct published more articles making it the largest for the year. Science Direct led in the year 2019 by producing the majority of published articles. The year 2020 saw Emerald dominating the publication of articles. In all, Emerald and Science Direct led the publication of articles for the years signifying that researchers can possibly relied on these two (2) main data sources when searching for capital structure determinants literature.

#### 4.3. Methodological approach of research papers on capital structure determinants

Through Figure 3, it is clear that most papers (97%) on capital structure determinants are quantitative. Few of the studies (see Nawi, 2017; Shibru et al., 2015) employed the mixed and qualitative methods representing 3% of the total sample. This implies that quantitative research technique could probably be the appropriate approach in addressing capital structure determinant issues. However, this creates the vacuum for other approaches (qualitative and mixed) to be explored.

From Table 2, the findings show that regression analysis is the most popular estimation technique used by researchers to carry out empirical studies on capital structure determinants. Apart from the use of regression-based models by many scholars, some have also applied techniques such as Least Absolute Shrinkage and Selection Operator Model (LASSO), Generalized method of moments (GMM) estimation model, nonparametric Kruskal–Wallis H test (ANOVA) to examine the determinants of capital structure. Empirically, the quantitative studies mainly focused on firm-specific variables such as asset tangibility, growth, profitability, size, age, nondebt tax shield, and liquidity, which have been primarily studied in literature on capital structure. The relationship between these variables have been tested through some forms of regression analytical techniques

**Figure 2. Distribution of research papers based on electronic database.**



Electronic database	Year						Total	
	2014	2015	2016	2017	2018	2019		2020
Emerald	6	2	2	5	1	2	5	23
Science Direct	4	1	1	4	3	7	3	23
Google Scholar	-	1	1	2	2	-	2	8
Escohost	-	2	2	-	2	1	-	7
JSTOR	1	3	-	-	-	-	-	4
Sage	-	1	1	-	-	-	1	3
Total	11	10	7	11	8	10	11	68

**Figure 3. Research methodology used.**



and their statistical significance discussed. For instance, in India, Sofat and Singh (2017) employed the multiple regression model to investigate the most significant determinants (profitability, firm size, asset composition or asset structure, business risk or volatility) of capital structure of manufacturing business organizations' model. From South Africa setting, Danso et al. (2014) examined the determinants of capital structure where the relationship between leverage (dependent variable) and profitability earnings volatility, asset tangibility, firm size, nondebt tax shield, and liquidity as independent variables were analyzed. In sum, regression models could possibly be the optimal or popular technique in estimating what determines capital structure.

#### 4.4. Sector analysis

##### 4.4.1. Industry sector classification

The financial structure of a business organization is dependent on the nature of industry within which the organization operates (Kumar et al., 2017). This is shown in Figure 4 where studies (like Shahzad et al., 2020; Sharma & Paul, 2015) on capital structure determinants focused on firms from multiple industries. This represents 71% of the entire papers sampled. SMEs (eg. Burgstaller & Wagner, 2015; Ohman & Yazdanfar, 2017) as single industry followed with approximately 10% of the total sample. Furthermore, other studies taking the remaining 19% that have been fixated on firms from single industries such as the banking (see Bukair, 2019; Tin & Diaz, 2017), manufacturing (see Alipour et al., 2015; Panda & Nanda, 2020; Sofat & Singh, 2017), real estates' investment trusts (see Morri & Parri, 2017), technology industry (see Kedzior et al., 2020), *inter alia*. So, multiple industry (combined industry) study on capital structure determinants dominates the industrial research space. This suggests the limited study on specific industry (like manufacturing, hospitality, among others).

##### 4.4.2. Financial, nonfinancial or both sector classification

Figure 5 displays result based on whether the sector is categorized into financial, nonfinancial or both. It can be observed that, existing studies on the determinants of capital structure centered around the nonfinancial sector than the financial sector or both (financial and nonfinancial). From Figure 5, the least researched sector is the financial.

#### 4.5. Level of analysis

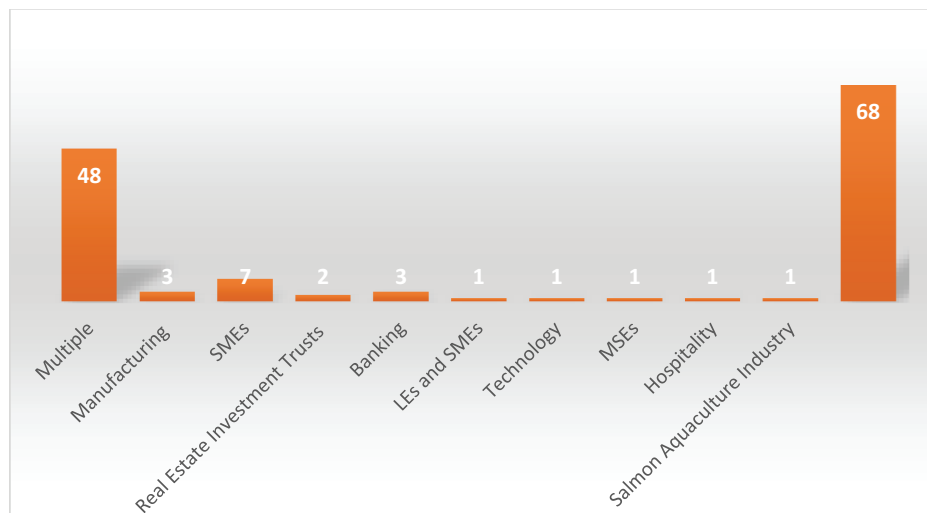
The majority of analysis conducted on capital structure determinants studies have been identified to be mostly firm level based (Kumar et al., 2017). The firm-level determinants include profitability, return on assets, return on investment, leverage, asset growth, and debt tax shield (see Ahsan

**Table 2. Estimation technique distribution**

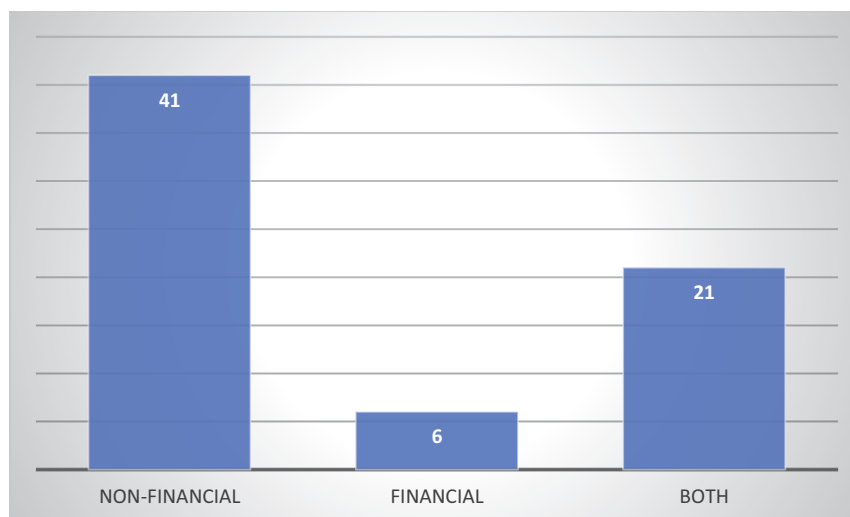
<b>Data analysis technique</b>	<b>Frequency</b>
Instrumental Regression (Instrumental variable)	1
Regression (Panel data analysis)	32
Multiple Regression (Panel data analysis)	1
Regression (Panel semi-parametric and nonparametric regression models)	1
Regression (Pooled ordinary least squares and panel econometric techniques)	1
Regression-panel (Pooled ordinary least squares (POLS), fixed effect (FE) and random effect (RE))	3
Regression-panel (Ordinary least squares, generalized method of moments GMM))	1
Regression (Cross section data and panel data)	1
Regression (Balanced panel data-GLS)	1
Regression (Unbalanced panel data setting)	1
Nonparametric Kruskal-Wallis H test (ANOVA)	1
Regression—panel data (Dynamic panel model-System GMM)	1
Regression (Panel data analysis-RE)	1
Regression (Static panel data analysis and dynamic System GMM)	1
Regression—panel—GMM model and two-stage least squares (TSLS)	1
Fixed Effect Panel Regression Model	2
Regression (Panel data analysis—OLS, FE)	1
Regression (Panel data—System GMM)	1
Inter-Rater Reliability	1
Linear Regression Model	4
Descriptive Statistics	2
Multi Criteria Decision Model	1
Generalized Method of Moments (GMM) estimation Model	1
Classical Regression Model	1
Least Absolute Shrinkage and Selection Operator Model (LASSO)	1
Partial Least Squares (PLS)—Structural Equation Modeling (SEM)	1
Regression Model—System GMM	1
Correlation and regression techniques	1
Partial Adjustment Model	1
Meta-Regression Analysis	1
	<b>68</b>

et al., 2016; Bukair, 2019). Others (e.g., Oztekin, 2015; Sakr & Bedeir, 2018; Tin & Diaz, 2017) examined capital structure determinants at all (firm, individual and country) three level of analysis, with few others highlighting country-related factors (see Mokhova & Zinecker, 2014) such as employment and GDP to examine the influence of macroeconomic factors on corporate capital structure in different European countries. Notwithstanding these, it could be eminent from Figure 6 that researches conducted on capital structure determinants are predominantly at the firm level, which represents 65% of the total sample as against 21% of the studies undertaken at the firm

**Figure 4. Industry sector classification.**



**Figure 5. Financial, nonfinancial or both sector classification.**



and country levels combined. On the other hand, the three levels of analysis combined recorded 7% of studies conducted in that regard, while the country-level analysis recorded the least (1%) of the studies conducted.

#### 4.6. Analysis of geographical region

Capital structure studies remain scarce in developing economies as compared to developed economies (Chen, 2004; Colombage, 2007; Kumar et al., 2017). Hence, financing decisions among firms in these economies differ due to regulatory, cultural, and institutional difference. From Figure 7, countries within Asia recorded 33% of the studies undertaken, followed by Europe (32%), and Africa (10%). Interesting findings were revealed from the study of Cook (2001) where America was identified as the major contributor of studies on financing decisions of firms. However, same cannot be said under the findings of the current study where America recorded the least (6%) of studies on capital structure determinants in the region. Across the globe, 9% of these researches were conducted using firms in these regions simultaneously. This therefore implies that research on capital structure determinants is still scarce in emerging economies such as Africa.



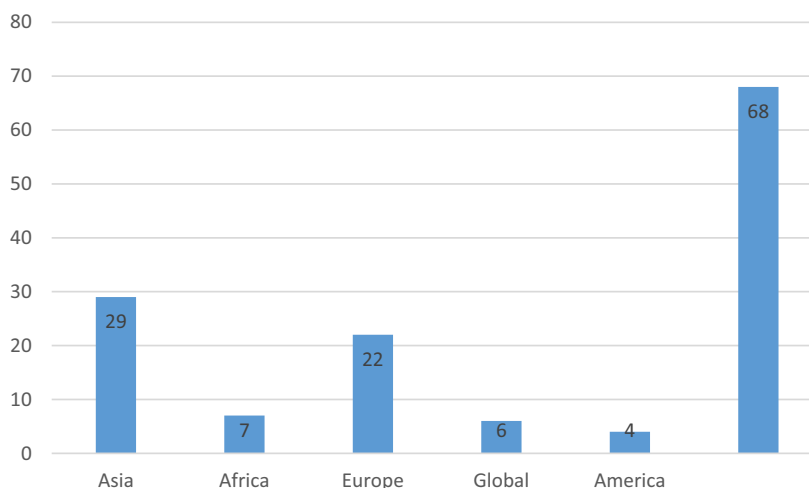
**Figure 6. Level of analysis.**



#### 4.7. Capital structure theories applied

The theories informing capital structure determinants are presented in Figure 8 from 2014 to 2020. The figure indicates that research on capital determinants has placed reliance on the pecking order theory, which explains that firms prefer a sequential choice over many funding sources. Hence, firms will prefer internal financing if available, and will avoid external financing. Some studies conducted, which employed the pecking order theory, include Dakalakis et al. (2017), who examined the relative importance of firm-specific and macroeconomic variable changes within SMEs. Using the same theory, Matias and Serrasqueiro (2017) analyzed the relationships between the determinants—profitability, size, age, asset structure and growth, identified as reliable determinants in the empirical literature, and debt for SMEs. Beside these, the Figure 8 also shows the prevalence of the trade-off theory. The trade-off theory best explains firms' decision to obtain optimum capital structure by weighing the benefits and associated costs to every monetary unit of debt obtained (Modigliani & Miller, 1963; Myers, 1977). Notable among the studies conducted that adopted the trade-off theory include studies by Ahsan et al. (2016) who examined firm, industry, and country level determinants of capital structure of Pakistani listed nonfinancial firms. Chipeta and Deressa (2016) investigated the effects of firm- and country-specific characteristics or factors on the dynamics of capital structure for a new data set of firms in Sub Saharan Africa while other studies (see Panda & Nanda, 2020; Sofat & Singh, 2017) have used the trade-off theory in studies in India. In addition, the agency theory has been used to explain the determinants of capital structure from

**Figure 7. Analysis of geographical region.**



**Figure 8. Capital structure theories applied.**

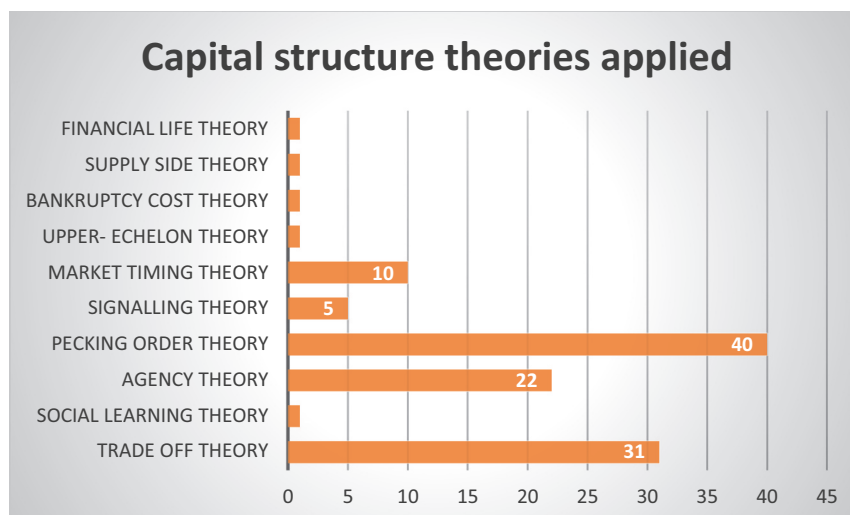


Figure 8. The agency theory views that managers may opt for issuing shares to pay out future cashflows because of its tendency to decrease agency costs associated with cashflows (Jensen & Meckling, 1976). For instance, studies by Shibru et al. (2015) adopted the theory to examine the relationship between leverage and firm-specific determinants of capital structure decisions of banks in Ethiopia. Similarly, other studies on capital structure determinants have employed other theories such as the social learning theory (see Zhong & Zhang, 2018), market timing theory (Rani et al., 2020), upper-echelon theory (see Matemilola et al., 2018), bankruptcy theory (Tin & Diaz, 2017), supply side theory (Matemilola et al., 2019), financial life theory, which have not been applied predominantly. Consequently, pecking order, trade-off theory and agency theory could probably be considered as supreme theories in solving most of the capital structure determinants across the divers' areas of study.

### 5. Research gaps and opportunity for further research

In this review study, determinants of capital determinants were assessed from 2014 to 2020 by dwelling on relevant aspects that will help in gaps identification and pave opportunity for further or future research. Below are some of the gaps discovered from the review findings that will inform further or future research:

- The literature review postulates very limited study using the qualitative and mixed approaches to research. This creates certain methodological gaps in terms of the application of qualitative and mixed approaches in the study of the determinants of capital structure. Therefore, there is an opportunity for further research to be conducted in the area of capital structure determinants using the qualitative approach or mixed approach for literature. Nawi (2017) for instance, employed the qualitative approach in this area of study and discovered two new constructs or variables (awareness and cultural orientation) that determine firms capital structure. On the other hand, qualitative approach can be applied in emerging economies like Africa to realize capital structure determinants in that context. In addition, other industrial category aside micro and small-sized enterprises (MSEs) used by Nawi (2017), can adopt the qualitative approach to explore the suitable capital structure determinants.
- Again, the review of literature realizes the dominance of regression analysis or model as the data estimation technique for existing research of capital structure determinants. The data analysis techniques like partial least squares-structural equation model or principal component analysis, partial adjustment model and nonparametric Kruskal-Wallis H Test (ANOVA) that are of minimal usage can be adopted in future determinants of capital structure research.
- Moreover, sector analysis review indicates inadequate exploration of certain industries like the banking, technology, micro and small-sized enterprises (MSEs), and real estate investment trusts (REITs). Therefore, specific industry study should be of priority compared to the combined ones because of possible better implications from such studies. In addition, financial sector study is very

minimal in relation to the nonfinancial sector looking at the review of sector analysis. So, the financial sector had not seen much research on the determinants of capital structure. This sector gap opens the opportunity for future research on the determinants of capital structure in the identified sector with limited study, which will contribute to existing literature and the sector.

- Furthermore, with the level of analysis, the review study discloses the large degree of research at the firm level in relation to the other analysis levels. This leaves a level of analysis gap in the synthesis level (like firm level and industry level, or firm level, industry level and country level) and other singular levels (industry level or country level). Contribution to literature will emanate when future research concentrates on levels like the industry, country, firm and industry, or firm, industry and country.
- Finally, with regard to research across the geographical region, current works on the determinants of capital structure focus around Europe and Asia leaving a geographical gap in other regions (e.g., Africa, America and Global). This allows for further or future study to direct effort across Africa, America and the Globe. Looking at the geographical region gap, more research on the determinants of capital structure can be conducted in Africa region like Ghana, West Africa, Sub-Saharan Africa and even Africa as a whole. On the other hand, North America and South America within the American region can benefit from further studies in this area.

## 6. Conclusion

Research in the area of capital structure determinants continues to be relevant and it is therefore, imperative for constant study to be done in the area. The systematic literature review on determinants of capital structure was conducted on studies performed from 2014 to 2020 in order to ascertain the state of study on the phenomenon and informed opportunities for further or future research in that area. A sample of 68 published journal articles were employed for this review study. Based on the above discussions, it has been discovered that, study on capital structure determinants focus largely on quantitative research than qualitative research or mixed research. Again, capital structure determinants research concentrates more on nonfinancial sector as against the financial sector. However, firm-level study was realized to dominate the level of analysis space in comparison with industry level, country level and synthesis levels. Notwithstanding, the study observed pecking order theory as the most adopted in addressing issues of capital structure determinants. Moreover, estimation technique was centered more on regression analysis model. Nonetheless, gaps from the findings were identified and informed further or future research opportunities appropriately on capital structure determinants.

The review study will contribute to literature by serving as reference point for further review and other studies on the determining factors of capital structure phenomenon. For instance, the review study encountered the limitation of depending on journal articles and excluding other published materials like conference papers, research reports, expert briefings, book chapters and review papers. So, future research on literature review could include journals excluded from this study. On the other hand, managers of business organizations can apply the optimal determinant to aid their choice of financing structure.

In all, the sequential literature review on capital structure determinants served as an essential mechanism in appreciating and understanding the reviewed phenomenon.

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