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Research Article

A New Era of Capital Structure Choices in Technology Firms: Insights on Cultural Dimensions

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ABSTRACT

This study investigates the correlation between corporate financial ratios and cultural dimensions across countries in order to guide technology firms in adapting to the current financial landscape characterized by limited borrowing options and higher interest rates. Using Hofstede's subregional continental classification, it examines the relationship between capital structure and value among 4,237 publicly listed technology firms in 46 countries. The study analyzes financial ratios and connects them with Hofstede's subdimensions of individualism and uncertainty avoidance culture. The findings reveal a significant relationship between cultural dimensions and financial ratios, with individualism and uncertainty avoidance being influential factors. Countries emphasizing individuality tend to have higher borrowing rates, whereas those with a strong preference for uncertainty avoidance exhibit higher gross margins and total debt-to-equity ratios. The borrowing rate variable does not directly affect the dimensions of femininity versus masculinity and uncertainty avoidance; however, it impacts the dimension of individualism versus collectivism. Overall, this study provides valuable insights to enable technology firms to make informed decisions, manage financial structures, and effectively navigate the current financial landscape.

Keywords: *Cultural dimensions, Corporate finance, Capital structure, Structural equation model, Technology sector*

Jel Codes:*C3, M21, O16*

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Structured Abstract

The study explores the relationship between cultural dimensions and financial ratios in technology firms. Data from 4,237 publicly listed technology firms across 46 countries are analyzed based on Hofstede's cultural dimensions theory and the countries' structural activity index. The findings demonstrate a significant correlation between cultural dimensions and financial ratios in technology firms. Additionally, Hofstede's individualism and uncertainty avoidance dimensions are found to influence financial ratios, including interest rates, financial leverage, and gross margin (GM). The research reveals that technology firms maintain low inventory levels and rely on paid-up capital and capitalization increases instead of profit-distribution policies. They frequently invest in high-risk capital and utilize financial leverage, such as acquiring other technology firms and spending on research and development, even if these strategies are initially unprofitable. The study suggests that cultural dimensions, particularly individualism and uncertainty avoidance, are crucial in shaping technology firms' financial performance. In cultures characterized by risk aversion, high uncertainty avoidance, and a focus on individualism, establishing stable relationships between fund providers and seekers becomes essential. Such relationships can ensure accurate information availability for investors and lenders while facilitating firms' access to sufficient funds from money and capital markets. This study highlights the importance of profitability metrics, such as GM and net profit margin, as indicators of future profitability. It demonstrates that cash accumulation is a natural outcome in the technology industry, and investments for saving money and corporate acquisitions are prioritized over profit distribution. In rapidly evolving industries like technology, where competition and research and development (R&D)-based capital expenditures (CapEx) are prevalent, product innovation, patents, copyrights, and inventions become quickly outdated. The findings further support the pecking order hypothesis, which suggests that firms prefer funding capital projects using retained earnings, resort to borrowing when internal resources are insufficient, and issue shares as a last resort. This approach fosters trust in institutions rather than individuals, helping firms avoid adverse selection (lemon markets) and moral hazard. In cultures with high uncertainty avoidance and individualism, borrowing and lending for risky investments is more common. Access to low borrowing costs in markets with efficient information dissemination and optimal capital structures can help firms minimize an important capital cost component and ultimately increase firm value. To enhance finance accessibility and improve profitability in technology firms, the study recommends recognizing the significant impact of financial ratios. Technology firms should prioritize establishing stable relationships with fund providers, optimizing capital structures, and thereby minimizing capital costs. Additionally, they should focus on utilizing future investments for savings and corporate acquisitions rather than concentrating solely on profit distribution. In conclusion, cultural dimensions, particularly individualism and uncertainty avoidance, significantly influence the financial performance of technology firms; acknowledging these factors and their impact on financial ratios can allow technology firms to improve their access to finance and enhance profitability.

1. INTRODUCTION

Economic theories acknowledge the difficulty of satisfying infinite human needs with finite resources and are aimed at ensuring efficient resource allocation. In corporate finance theories, this focus on resources underscores the importance of effectively using production elements, particularly financial capital, for profitability and organizational growth. Microeconomic firm theory emphasizes the critical role of precisely identifying the capital component and structuring capital to maximize firm profits. Capital structure is the proportion of debt to equity employed in financing corporate activities (Myers, 1984; Ardalan, 2017). This concept is centered on the interplay between debt (loans, debt securities, and maturing coupons) and equity (issued share capital, reserves, reserved surplus, and preference share capital). It focuses on how funds are organized to guarantee their optimal use in short-, medium-, and long-term corporate operations. The three primary theories of capital structure are traditional, modern, and new capital structure theories (Harris & Raviv, 1991; Du et al., 2019).

This study analyzes the capital structures of firms during the period from 2014 to 2019 and investigates the influence of cultural elements on these structures in order to understand the risk-taking and investing behaviors of entrepreneurs and individuals from a socioeconomic perspective. To this end, the study utilizes the 2014–2019 financial data of technology firms in 46 countries where IBM operates and applies the cultural dimensions scales developed by Hofstede and Bond (1988). The profitability of firms is assessed using financial ratio analyses derived from the firms' capital structures to establish a consistent research model that encompasses the diverse set of countries. Statistical analysis techniques are employed to analyze the administrative and financial records of the 46 countries. The observations are normalized, and a structural equation model (SEM) path analysis is conducted to ascertain the relationships between the variables.

The following section examines various theories of capital structure and explores the potential influence of cultural factors on capital structure decisions. The third section includes a review of traditional theories, such as the trade-off and pecking order theories, and more recent ones, such as the agency, market timing, behavioral finance, and information asymmetry theories. Additionally, this section discusses the data and model used in the study and how cultural dimensions may play a role in shaping capital structure decisions. The fourth section presents the methodology and results of the SEM analysis. Finally, the last section discusses policy implications of the findings in the context of capital structure.

2. Theoretical Framework

2.1. *Traditional Capital Structure Theories*

The net income, net operating income, and compromise theories are the three main types of traditional capital structure theories (Figure 1). Durand's (1952; 1959) net income theory posits that increasing a firm's value corresponds to decreasing the weighted average cost of capital. However, this theory is based on several limiting assumptions: (1) no impact of firms' borrowing and lending policies on investors' trust; (2) the absence of financing resources such as preference share capital and retained earnings; (3) a uniform dividend distribution policy; (4) unlimited financial resources; and (5) fully efficient markets. Conversely, the net operating income theory posits that a firm's borrowing policy increases its financial risks, affecting stakeholders' perception of risk, such as bankruptcy risk. In this theory, an increase in debt in the capital structure does not alter a firm's value due to higher return expectations. Here, a fixed overall cost of capital and absence of corporate taxation is also assumed. Lastly, the compromise theory argues that the optimal capital structure is achieved when the weighted average cost of capital (WACC) is minimized and the market value of assets is maximized. It suggests that firms can reach this optimal capital structure when the marginal cost of borrowing is equivalent to the cost of equity. However, increasing financial leverage beyond a certain point diminishes a firm's value and raises borrowing costs. These theories offer different perspectives on capital structure decisions; nonetheless, it is important to recognize that they are based on various assumptions and may not fully reflect the complexities of real-world financial decision-making (Harris & Raviv, 1991; Banerjee et al., 1999; Korajczyk & Levy, 2003).

2.2. *Modern Capital Structure Theories*

Modigliani and Miller's (1958) hypothesis on the irrelevance of capital structure is a cornerstone in modern finance and capital structure theory. Their hypothesis posits that in a world without taxes and bankruptcy costs, the use of financial leverage does not affect a firm's value. Specifically, in the absence of corporate taxes, a firm's value is based solely on the risks outlined in traditional theories. However, when taxes are considered, the tax benefits associated with debt financing can enhance a firm's value. This hypothesis challenges the foundational principles of finance and real-world practices.

In 1958, Modigliani and Miller expanded their theory to include corporate taxes in the analysis of capital structure irrelevance. They explore the trade-offs that firms face when weighing the tax benefits of borrowing against the risk of bankruptcy. The consideration of such tax deductibility has influenced the understanding of debt risk in the static trade-off theory and has significantly impacted the findings of the Modigliani–Miller (M&M) irrelevance theory. This has led to the development of models that aim to determine the optimal debt-to-equity ratio by balancing the financial risk of borrowing with the WACC.

Incorporating taxes into the analysis offers a more realistic framework for understanding capital structure decisions. It considers the interplay between tax advantages, financial risk, and the overall cost of capital (Modigliani & Miller, 1958; Scott, 1976; Du et al., 2019; Agyei et al., 2020).

2.3. *New Capital Structure Theories*

The signal theory and the M-M capital structure irrelevance theory assume perfectly functioning capital markets. However, such ideal conditions seldom occur in reality due to various factors such as imperfect information, managerial expertise, market disruptions, intermediation costs, taxes, and business failures. To address these market imperfections, the new capital structure theory introduces several concepts that factor in real-world complexities.

One such theory is the pecking order theory (POT), which states that firms prefer internal financing and, when necessary, debt financing over equity financing due to the costs associated with asymmetric information. Thus, firms prioritize their financing sources based on the principle of least resistance or cost.

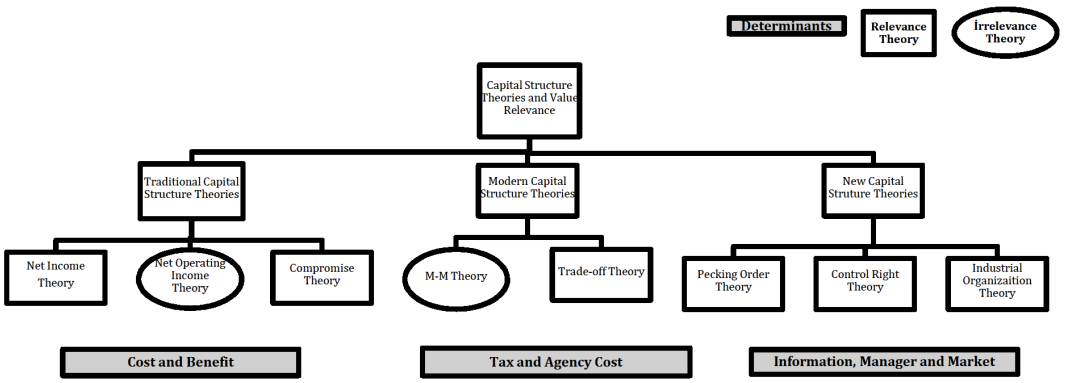

Figure 1. Capital Structure Theories and Relation With Firm's Value **Sources**; Xhaferi and Xhaferi 2015; Du et al., 2019

The control right theory (Roberts and Sufi, 2009) focuses on the diverse perspectives of shareholders regarding debt retention and sunk costs. It challenges the notion that financial decisions, such as those made by CFOs, are solely driven by factors such as taxes, sunk costs, and asymmetric information. Instead, it advocates for developing capital structure techniques from the viewpoint of lenders and creditors rather than just shareholders.

The industrial organization theory, introduced by Titman (1984), builds upon the models derived from the M-M irrelevance theory. It considers the dynamics between multiple firms in output and input markets and posits that a firm's capital structure decision is not made in isolation but is closely linked to its market strategy and its input and produce quality.

Harris and Raviv (1991) further developed a capital structure model within the industrial organization framework, incorporating the interaction between input and output markets. This theory emphasizes that a firm's capital structure is influenced by its competitive environment and market positioning.

Lastly, various market agents, including CFOs, shareholders, government, and stakeholders, are integral as cross-section units. The market timing theory proposed by Baker and Wurgler (2002) highlights the importance of market timing in determining the debt-equity ratio. This theory draws on the concept of business cycles from a macroeconomic perspective, suggesting that each era has its unique dynamics.

Al-Zoubi et al. (2018) conducted cyclical analyses, identifying the continuous and cyclical nature of firms' capital structures. Contrary to the tendency toward mean reversion of financial leverage, the trade-off theory, POT, and market timing theory emphasize nonlinear patterns in firms' use of debt and equity.

Baker and Wurgler (2002) introduced an innovative financing index that identifies periods characterized by high demand for debt and equity. This index can illustrate the periodicity in firms' financing choices, reflecting the cyclical nature of capital markets and corporate finance strategies.

These theories collectively build upon the foundational works of several key scholars in finance. Myers (1984) and Myers and Majluf (1984) contributed significantly to the understanding of capital structure, particularly for information asymmetry and financing hierarchy. Titman (1984) and Harris and Raviv (1991) expanded the discussion to include the interplay between a firm's capital structure and its market strategy.

Lyandres (2006), Roberts and Sufi (2009), and Luigi and Sorin (2009) explored various aspects of capital structure decisions, including the impact of market conditions and stakeholder perspectives.

Al-Zoubi et al. (2018) represent a more recent contribution, providing empirical evidence of the cyclical patterns in capital structure and reinforcing the relevance of market timing in corporate finance decisions.

In summary, the market timing theory offers a nuanced understanding of capital structure dynamics, underscoring the importance of market conditions, investor sentiment, and macroeconomic cycles in shaping corporate financing strategies.

At the core of this theory lies the distinction between systematic and nonsystematic information. Systematic information is accessible to both managers and investors, encompassing general knowledge about corporate expectations and market conditions. However, with nonsystematic information, managers often have access to more detailed, insider information about the firm's operations, prospects, and potential risks; this information is not readily available to investors. This information disparity creates a significant challenge for investors, particularly in distinguishing between low- and high-quality firms (Papaioannou & Karagözolu, 2017).

Information asymmetry introduces a complex optimization problem, similar to scenarios encountered in game theory. Firm managers with positive internal forecasts are generally less inclined to issue new stock when they believe that the

market has adequate information to fairly value their shares. Conversely, if they perceive that the market undervalues their firm due to information asymmetry, they might avoid issuing new shares to prevent further undervaluation.

This behavior may inadvertently send negative signals to the market and lead to declining stock prices and lower firm valuations. Investors interpreting these signals may become wary of investing in such firms, exacerbating the issue.

However, investors might view a firm's decision to raise capital through debt or finance bills more favorably than equity issuance. This is because a firm's willingness to commit to debt obligations reflects confidence in its future cash flows and profitability. This aspect of the signal theory highlights the strategic importance of financing decisions in managing investor perceptions and market signals (Heinkel, 1982; Yang, et al., 2014; Wardani & Subowo, 2020; Hasanuddin, 2021).

In summary, the signal theory underscores the critical role of information asymmetry in corporate finance, influencing both managerial decisions and investor behavior. It reveals the nuanced interplay between internal knowledge, market perceptions, and strategic financing choices in shaping corporate value and investor confidence.

POT offers a distinctive perspective on how firms approach their capital structure decisions. Introduced by Myers and Majluf (1984) and further developed by Lucas and McDonald (1990), this theory challenges the notion of an optimal capital structure, instead proposing a hierarchy in financial decision-making (Myers, 1984; Myers & Majluf, 1984; Lucas & McDonald, 1990).

According to the POT, firms prioritize their financial sources based on the principle of least resistance or cost. This hierarchy of prioritization typically begins with the use of internal funds, primarily retained earnings, as the most preferred source due to the lower costs and fewer complexities associated with internal financing compared with external sources.

If internal funds are insufficient, firms move to the next level in the hierarchy: issuing debt securities. Debt is often preferred over equity because it does not dilute existing shareholders' control and typically has tax advantages. Additionally, debt issuance is generally perceived as less risky compared with equity issuance, which can be interpreted as a signal of firm overvaluation.

The next steps in the hierarchy include selling assets, borrowing, issuing convertible bonds, and, as a last resort, issuing new stocks. POT posits that firms resort to equity issuance only when other sources of financing are exhausted or unfeasible as equity issuance can send negative signals of firm overvaluation.

POT also acknowledges the role of various market failures in influencing capital structure decisions, particularly factors such as asymmetric information, where managers have more information about firm prospects than outside investors. Cultural differences and managerial skills also significantly affect perceptions of risk and preferences for different financing options, thus impacting these decisions.

Studies by Frank and Goyal (2003), Chen and Chen (2011), Ahmad and Atniesha (2018), and Yıldırım and Çelik (2021) have contributed to the understanding of how these market failures and external factors impact firms' short-term capital structure decisions. Their research highlights the complexity and context-dependent nature of firms' financial decision-making, demonstrating that capital structure choices are influenced by several factors beyond financial metrics.

POT primarily assumes that managers of publicly traded firms possess more detailed and accurate inside information regarding the firm's financial position, prospects, and future endeavors compared with investors in the secondary market. This information asymmetry creates a disadvantage for firms when they seek external funding. The financial hierarchy theories mentioned above prioritize internal sources of financing, such as retained earnings, and assume that firms prefer internal financing over external financing and debt over equity, regardless of the external factors influencing capital structure. The financial hierarchy suggests that profitable firms with high or low marginal returns on capital can borrow at lower interest rates (Myers, 1984; Myers & Majluf, 1984; Shyam-Sunder & Myers, 1999; Bukalska, 2019).

The collateral value of a firm's assets, non-debt tax shields, growth expectations, agency problems, uniqueness, industry classification, firm size, earnings volatility, profitability, and other factors impact a firm's capital structure. The abovementioned theories aim to lower financing costs, improve the income-generating mechanism for owners and shareholders, provide operational flexibility, and minimize risks. However, cultural differences among firm owners and investors can influence their interpretations of capital structure risks. Using equity and debt as the sole measures in evaluating capital structure theories may limit our ability to understand the effects of cultural differences on these decisions (Shahar & Manja, 2018).

2.4. *Cultural Dimensions*

Culture can be defined in various ways; it encompasses processes such as shared values, emotions, thought patterns, shared meanings, identities, social context, historical events, language, and religious beliefs. Culture represents a shared

understanding of reality, including language, values, and norms, which influence behavior and differentiate people's experiences (House et al., 1997; Kluckhohn, 1962).

Hofstede et al. (1990) presented a comprehensive understanding of culture, encompassing both superficial and deeper aspects. They argued that within a culture, symbols, words, gestures, images, or objects possess specific meanings unique to that culture. Moreover, they asserted that the heroes who shape a culture, whether real or fictional and deceased or alive, possess distinctive attributes. Hofstede (1990) explained that symbols, heroes, and rituals are referred to as "practices" because their cultural meanings can differ significantly between insiders and outsiders of the culture; additionally, the essence of culture is not inherently specific, i.e., the distinction between good vs. bad, beautiful vs. ugly, usual vs. unusual , or rational vs. irrational can be ambiguous. However, culture manifests in behavioral alternatives. Furthermore, Hofstede et al. (1990) examined cultural variations at the national, professional, and organizational levels, emphasizing that just as every nation has its unique culture, so do organizations.

To compare the similarities and differences between cultures, Hofstede (1980:1983:1997:2001) identified four cultural value dimensions that he considered fundamental and significant aspects of culture.

Power distance (PD) is another cultural value dimension that reflects the extent of power inequality and dominance in a society. It measures individuals' perception and acceptance of hierarchical relationships and social inequalities. Research has shown that cultures with low PD tend to value egalitarianism, promote equality, and encourage participation in decision-making processes (Schwartz & Sagiv, 1995; Chui et al., 2002; Kearney et al., 2012; Rashid et al., 2020). Such cultures emphasize disseminating information, providing equal access to educational opportunities, and fostering open dialogue and critical thinking in organizational contexts (House et al., 1997).

Individualism versus collectivism (IC) is a cultural value dimension that indicates the level of individuals' integration into groups. In societies characterized by individualism, personal autonomy and self-interest are prioritized over the goals and values of the group. Conversely, societies with a collectivist orientation emphasize interdependence among individuals. In such cultures, people exhibit commitment to the group as loyalty to the collective is highly valued. Such societies reinforce the notion of individual responsibility toward other group members and foster strong interpersonal relationships (Hofstede & Bond, 1988). Studies indicate that in societies with high individualism, firms prefer low levels of debt utilization in financial matters (Gleason et al., 2000). Conversely, collectivist societies exhibit an inverse relationship between individualism and leverage, implying that higher levels of collectivism are associated with lower levels of financial leverage (Kearney et al., 2012; Rashid et al., 2020).

The masculinity versus femininity (MF) dimension indicates gender role distribution within a society. In feminine cultures, values such as modesty and nurturance are emphasized, whereas masculine cultures value assertiveness and competitiveness. Notably, this dimension does not imply that only males exhibit assertiveness and competitiveness; it also includes womn in the computation. Thus, the expression of masculine and feminine values varies across countries. Studies have identified associations between cultural characteristics of masculinity and stock market depth (De Jong & Semenov, 2002). Furthermore, societies with masculine cultural traits have been found to exhibit higher rates of short-term debt utilization and lower leverage levels (Zheng et al., 2012; Kearney et al., 2012; Wang & Esqueda, 2014).

Uncertainty avoidance (UA) is the degree to which a culture instills in its members a sense of comfort or discomfort in unfamiliar or unpredictable situations. Cultures with high levels of UA tend to establish strict laws, regulations, and security measures to minimize unexpected events. Societies with such cultures resist change and perceive uncertainty as a risk. They implement control mechanisms to eliminate or prevent sources of uncertainty. Individuals in cultures with high UA often display heightened emotions and internal drive.

Conversely, cultures that are tolerant of ambiguity show greater acceptance of diverse opinions and have fewer rules and regulations. Societies with such cultures tend to be open-minded toward and accepting of various philosophies and religions; they allow for the coexistence of multiple viewpoints and ideologies. Individuals in these cultures are often reserved, contemplative, and less emotionally expressive.

Research has indicated a negative relationship between UA dimensions and the utilization of short-term and long-term debt. Additionally, countries with high UA are more likely to possess a bank-based financial system (Hofstede & Bond, 1988; Esperanca et al., 2003; Kearney et al., 2012; Arosa, et al., 2014; Kwok & Tadesse, 2006).

3. Data and Model

Table 1 presents the countries and firms included in the analysis, along with the average values of the financial components examined.

Table 1. Countries Cultural Dimensions and Tech Firms Financial Variables (2014-2019)

			Scores for the Hofstede IBM study (Hofstede, 2001)				Macroeconomic Indicator and Financial Ratios							
	COUNTRY	**ITEMS**	**PD**	**UA**	**IC**	**MF**	**BR**	**EPSG**	**SG**	**CS**	**GM**	**NPM**	**LTDE**	**TDE**
1	**USA**	**400**	40	46	91	62	0,79	10,61	8,3	9,49	48,42	9,56	54,03	62,04
2	**ARGENTINA**	**2**	49	86	46	56	41,63	13,01	24,92	38	49,57	8,38	8,46	11,45
3	**AUSTRALIA**	**32**	36	51	90	61	0,84	12,6	12,32	29,23	62,31	5,54	29,76	36,66
4	**AUSTRIA**	**59**	11	70	55	79	-0,40	17,6	10,1	12,04	53,89	13,53	67,3	79,38
5	**BELGIUM**	**13**	65	94	75	54	-0,41	3,09	2,89	1,43	56,57	12,93	40,37	63,71
6	**BRAZIL**	**7**	69	76	38	49	8,08	29,66	7,04	13,29	46,66	10,28	19,17	33,67
7	**BULGARIA**	**2**	70	85	30	40	-0,02	-0,96	4,41	-13,63	48,74	5,43	8,79	17,74
8	**CANADA**	**43**	39	48	80	52	0,91	10,27	13,21	7,98	23,63	4,45	12,1	38,96
9	**CHILE**	**7**	63	86	23	28	2,4	3,64	4,67	-8,28	31,61	-10,26	3,03	32,15
10	**CHINA**	**782**	80	30	20	66	2,91	9,98	17,87	19,75	34,15	8	10,75	41,11
11	**CROATIA**	**4**	73	80	33	40	0,14	15,3	3,87	8,74	28,74	3,66	114,38	153,51
12	**CZECH REPUBLIC**	**1**	57	74	58	57	1,41	16,86	28,89	4,36	72,43	18,24	168,45	177,62
13	**FRANCE**	**74**	68	86	71	43	-0,63	6,54	5,33	7,73	58,66	5,41	53,52	70,92
14	**GERMANY**	**393**	35	65	67	66	-0,64	16,65	9,02	11,52	49,75	8,15	49,27	71,33
15	**GREECE**	**21**	60	112	35	57	-0,26	37,92	10,54	7,43	40,7	1,79	28,46	49,01
16	**HONG KONG**	**153**	68	29	25	57	0,04	11,07	5,93	13,74	30,72	3,43	20,81	45,98
17	**HUNGARY**	**2**	46	82	80	88	0,61	108,58	18,52	10,53	63,87	15,3	40,42	83,03
18	**INDIA**	**208**	77	40	48	56	3,81	13,4	11,78	12,64	54,77	7,8	16,43	45,01
19	**INDONESIA**	**10**	78	48	14	46	3,61	4,03	19,93	67,71	10,73	3,03	18,12	52,07
20	**IRELAND**	**2**	28	35	70	68	-0,56	24,59	14,35	-14,55	26,16	-4,27	12,58	13,95
21	**ISRAEL**	**30**	13	81	54	47	0,04	12,73	6,59	21,2	34,38	7,58	52,39	71,51
22	**ITALY**	**32**	50	75	76	70	-0,46	11,41	12,69	13,83	57,53	11,31	48,71	66,2
23	**JAPAN**	**589**	54	92	46	95	-0,13	10,68	6,34	9,55	35,65	6	16,83	32,98
24	**VIETNAM**	**36**	104	36	26	50	1,82	-6,51	4,02	10,07	35,53	8,38	8,9	20,46
25	**TURKEY**	**17**	56	96	59	47	-0,37	7,92	6,65	-27,63	37,04	-4,47	30,44	119,85
26	**THAILAND**	**40**	81	82	30	69	4,85	13,64	10,26	12,69	52,01	16,02	70,18	86,09
27	**TAIWAN**	**623**	70	68	46	53	1,37	9,32	5,05	14,49	44,78	7,88	7,08	12,79
28	**SWETZERLAND**	**21**	38	53	80	14	-0,64	15,65	15,04	13,28	53,51	9,92	33,03	41,3
29	**SPAIN**	**2**	31	50	69	8	0,24	5,74	7,54	4,14	67,05	2,32	26,62	43,61
30	**SOUTH KOREA**	**342**	55	70	14	50	8,15	-9,89	13,44	-10,83	30,14	8,37	36,89	105,56
31	**SOUTH AFRICA**	**19**	64	87	16	42	1,11	38,92	42,42	48,49	56,98	57,91	70,3	70,14
32	**SINGAPORE**	**43**	94	44	32	64	1,8	2,47	8,11	1,21	15,17	-7,31	5,65	33,98
33	**SERBIA**	**1**	68	93	60	64	-0,01	14,71	11,2	14,83	40,67	6,83	9,19	21,28
34	**RUSSIA**	**24**	63	104	27	31	-0,63	-21,72	-7,24	-14,8	79,09	-0,05	102,78	171,45
35	**ROMANIA**	**3**	90	90	30	42	1,85	-3,38	-1,29	-1,42	53,39	10,66	12,19	13,09
36	**PORTUGUAL**	**3**	93	95	39	36	5,55	25,77	10,92	9,92	51,8	18,61	81,42	90,66
37	**POLAND**	**57**	86	92	25	43	1,1	100,28	33,22	87,17	30,84	2,63	0,56	4,82
38	**PHILLIPHINES**	**4**	74	8	20	48	0,33	4,29	-0,26	0,16	27	6,01	10,94	30,17
39	**PERU**	**5**	49	49	65	63	5,4	-6,01	7,88	2,09	38,65	10,89	29,82	49,01
40	**PAKISTAN**	**4**	60	85	18	39	0,66	3,86	5,99	9,44	27,53	5,51	10,34	34,77
41	**NORWAY**	**10**	57	86	51	42	-0,53	-33,31	26,67	2,28	61,73	7,11	42,35	77,84
42	**NETHERLANDS**	**10**	34	58	68	70	-0,77	2,29	7,2	2,02	49,65	6,55	83,86	112,88
43	**MOROCCO**	**4**	58	69	17	45	0,13	7,49	3,94	10,28	25,78	8,18	16,86	41,07
44	**MEXICO**	**49**	64	64	20	34	1,37	-6,53	4,49	4,41	22,2	5,59	10,24	46,2
45	**MALTA**	**1**	66	85	37	45	18,2	16,57	16,36	18,67	31,95	23,58	12,37	61,15
46	**MALAYSIA**	**53**	70	30	20	40	0,29	10,89	6,2	6,97	8,53	4,32	6,16	9,55

BR: Borrowing Rate; EPSG: 5 Year Earning Per Share Growth; 5 Year Sales Growth; CS: 5 Year Capital Spending Growth; GM: 5 Year Gross Margin; NPM: 5 Year Net Profit Margin; LTDB: Long Term Debt To Equity; TDE: Total Debt To Equity.

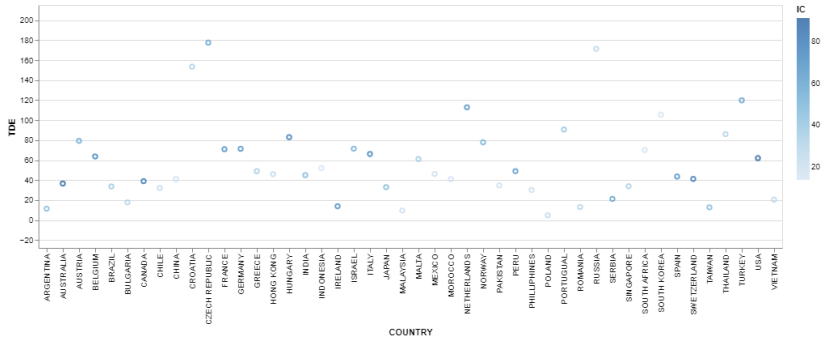

Figure 2. (a) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Individualism and Collectivism Values of Countries Total Debt To Equity Ratio

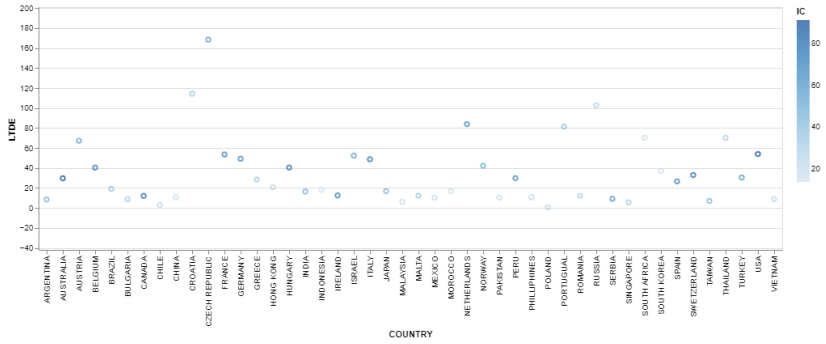

Figure 2. (b) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Individualism and Collectivism Values of Countries Long Term Debt To Equity Ratios (colored by IC)

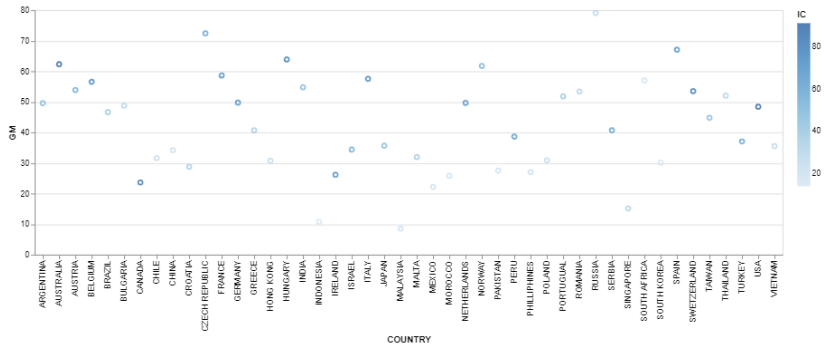

Figure 2. (c) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Individualism and Collectivism Values of Countries Long Term Debt To Equity Ratios (colored by IC) Gross Margin (colored by IC)

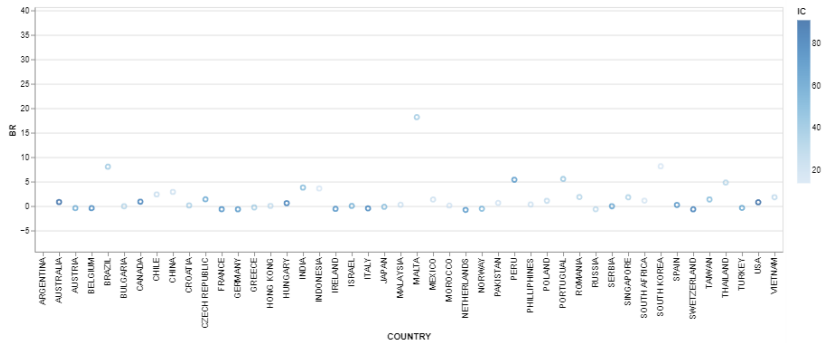

Figure 2. (d) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Individualism and Collectivism Values of Countries Borrowing Rate By Country (colored by IC)

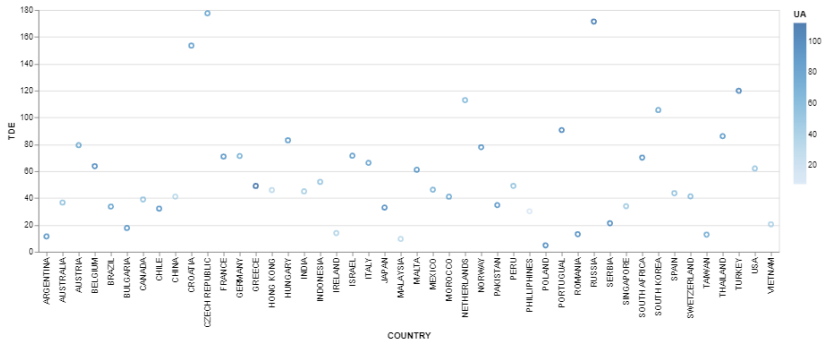

Figure 3. (a) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Uncertainty Avoidance Values of Countries Total Debt To Equity Ratio (colored by UA)

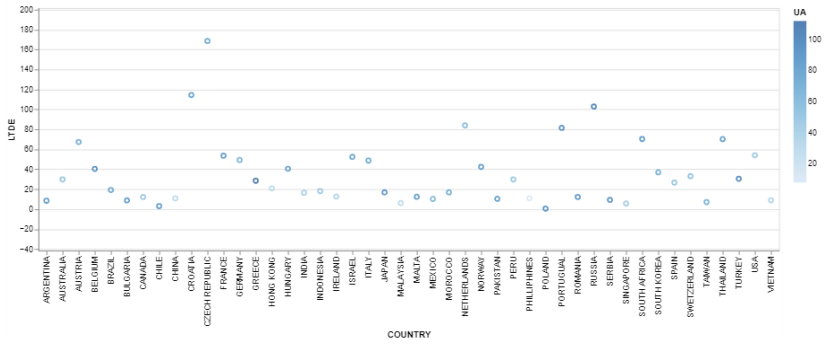

Figure 3. (b) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Uncertainty Avoidance Values of Countries Long Term Debt To Equity Ratios (colored by UA)

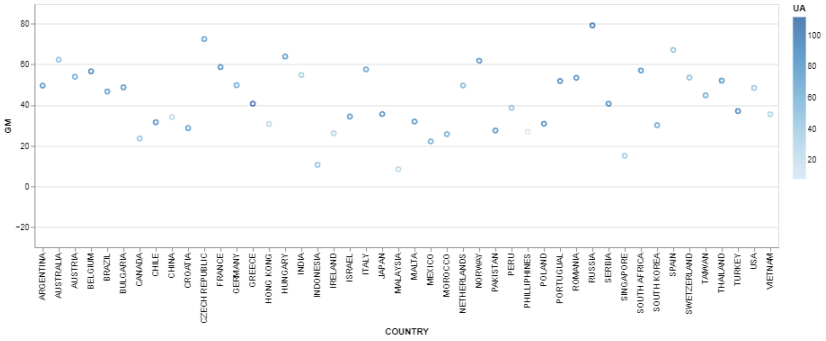

Figure 3. (c) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Uncertainty Avoidance Values of Countries Gross Margin (colored by UA)

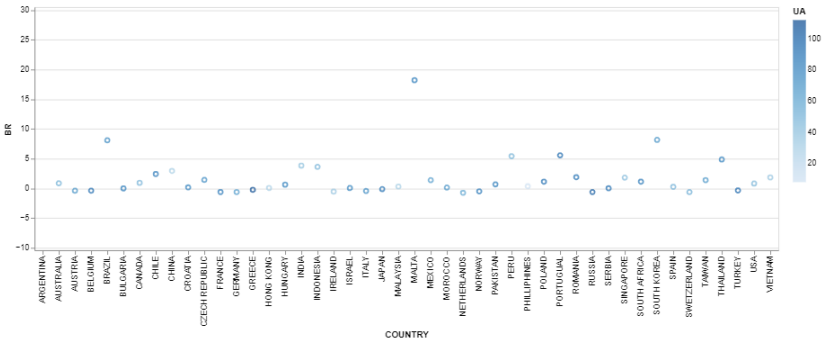

Figure 3. (d) Companies' Debt Structures, Borrowing Costs, and Gross Profit Margins Colored by Uncertainty Avoidance Values of Countries Borrowing Rate By Country (colored by UA)

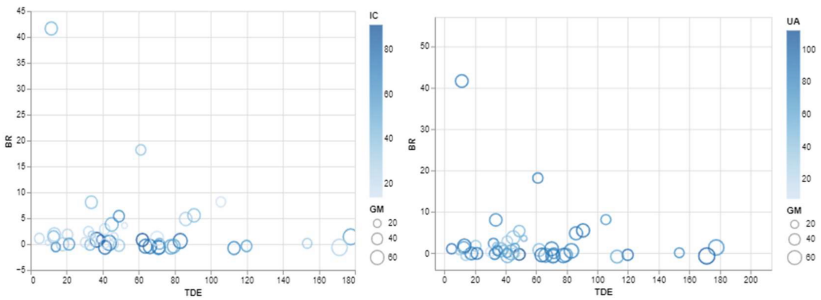

Figure 4. Total Debt To Equity Ratio Relationship with Borrowing Rate (Colored by IC and UA, and sized by GM)

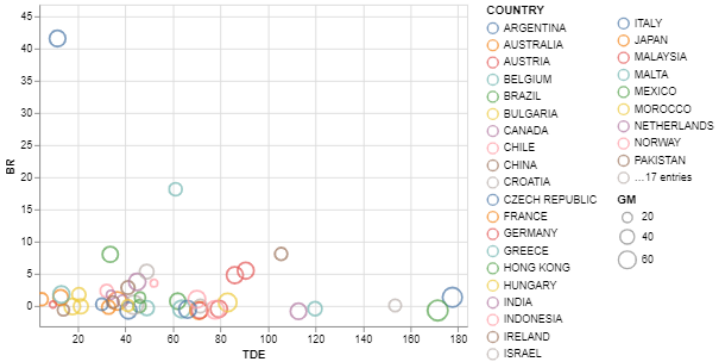

Figure 5. Total Debt To Equity Ratio Relationship with Borrowing Rate (Colored By Country, and sized by Gross Margin)

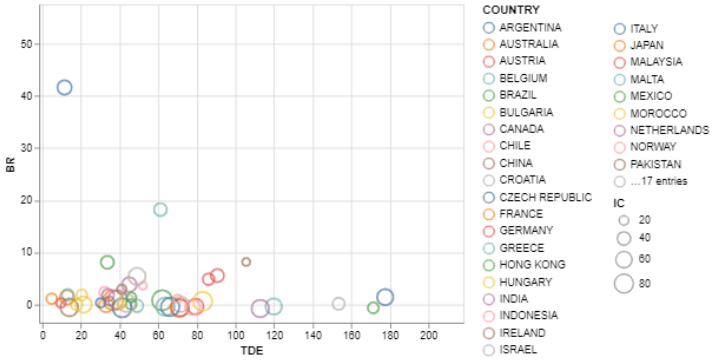

Figure 6. Total Debt To Equity Ratio Relationship with Borrowing Rate (Colored By Country, and sized by IC).

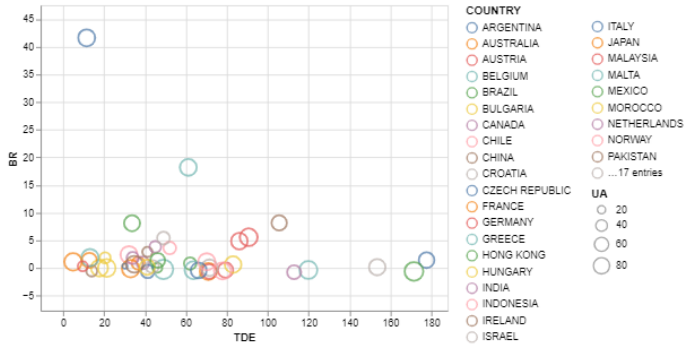

Figure 7. Total Debt To Equity Ratio Relationship with Borrowing Rate (Colored By Country, and sized by UA).

The borrowing rate, also known as the bond yield, plays a crucial role in the model used for determining the cost of capital for financing business and investment activities, particularly when establishing a firm's capital structure (see Figure 2 and Figure 3). In the dynamic and competitive technology sector, characterized by Schumpeter's concept of creative destruction, borrowing rates become particularly significant in shaping firms' capital structures and financing investments in technology, R&D, and innovative products and services protected by intellectual property rights. Additionally, the model incorporates a 5-year average variable for CapEx, reflecting the funds allocated for this purpose. Assessing a firm's borrowing capacity and ability to benefit from the leverage effect of CapEx is essential for ensuring sustainable growth. Long-term debt is preferred for financing CapEx as it allows the present value calculations of cash flows to be spread over a longer period, thus reducing firms' risk premium. Furthermore, the model includes ratios such as long-term debt to equity and total debt to equity (TDE) to quantitatively measure the impact of financial leverage on the capital structure and a firm's capacity for short- and long-term borrowing for CapEx (see Figure 4 and Figure 5).

Firms' profitability rate and return on investments, whether using debt or equity for CapEx and considering the motivations of investors and lenders, heavily depend on an accurate assessment of the demand for their products and services. This is crucial because investments are only viable if they can efficiently and swiftly generate funds. To capture the current state and future momentum of demand for products and services within sectors and firms, the model incorporates the 5-year sales growth variable. The data reveal that the analyzed firms exhibit an average revenue growth exceeding 5% over the past five years. This ratio indicates homogenization and standardization among large-, medium-, and small-cap firms in our dataset, with no instances where a firm's stocks are not favored based on sales trends.

Due to the fierce competition in the technology industry and the need for continuous investment in R&D, there is an increasing demand for higher CapEx and suitable financing options. Consequently, accurately assessing the competitive strength of firms in this industry is crucial, considering the high sales and cost of capital. To achieve this, our model incorporates the 5-year average 'growth margin' and 'net profit margin' variables. A firm's potential to generate profit is influenced by its competitive environment in the industry, alongside investors' profit expectations and lenders' confidence in receiving repayment.

Failure to meet these expectations can engender a decline in profitability. Once the firm has successfully generated profits, the distribution of these profits to investors becomes important as it accounts for the involvement of both firm partners and lenders. Further, 5-year EPS growth $\frac{\text{NetIncome-PrefferedDividens}}{\text{WeightedAvarageofCommonShares}}$ is a measure of the firm's willingness to employ internal resources and its capability to generate earnings per outstanding share. Notably, dividends provided to preferred shareholders are considered similar to debt. This is because preferred shareholders anticipate higher returns due to the higher risk associated with their position and expect to receive dividends before regular shareholders. This ratio is included in the model to assess a firm's ability to increase its current dividend and internal financing in its capital structure. Alongside economic and financial ratios, external factors such as the cost of capital, debt-equity ratio, competitiveness, profitability, and profit distribution policies also influence a firm's capital structure. In this study, the model incorporates four cultural characteristics from Hofstede (2001) that impact capital structure: PD, IC, MF, and UA (see Figures 6 and 7).

Hofstede and Bond (1988) concluded that the cultures of 53 countries primarily differ in the aforementioned four dimensions, which are associated with economic growth. In our study, the dimensions have been correlated with the financial performance indicators of 4,237 technology firms in 46 countries. We focus on these dimensions to include a broader sample of countries and assess international cultural differences.

4. Methodology and Results

We applied the scales used by Hofstede and Bond (1988) in their study of 53 countries where IBM operates. The macroeconomic and firm-based financial data from the 46 countries included in this study were scaled differently. To establish a standardized research model, we initially used averaged financial data from technology firms in these 46 countries over a 5-year period. These data were used to assess firm profitability through financial ratio analyses derived from their capital structures. For standardization, Z-values were calculated using the SPSS software and applied to the administrative and financial records of the 46 countries (Cheung & Chan, 2009). After normalizing the observations, a SEM path analysis was conducted.

The model developed in this study was aimed at investigating the relationships between culture dimensions and firms' financial factors. Additionally, the role of the cost of borrowing (BR) as a potential mediator was examined.

This study aimed to examine whether the independent factors had a significant impact on the dependent variables.

A path analysis model was constructed using AMOS 24 software for SEM, as depicted in Figure 8, to analyze the relationships between the variables.

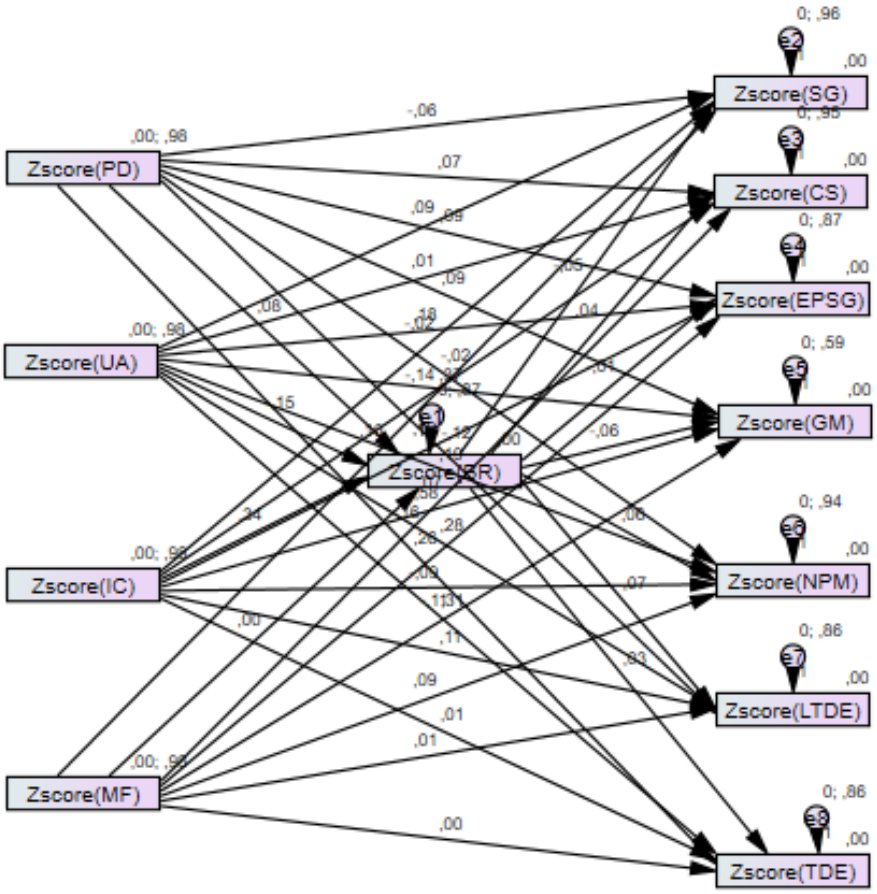

Figure 8. SEM Modelling Route Analysis

The regression coefficients for the model and the standardized regression coefficients are presented in Tables 2 and 3, respectively.

The predictive value of the BR variable on the IC dimension is 0.338. The critical ratio is 2.400, and the p-value of the estimated value is 0.016, which is less than 0.05, indicating that BR is significant. This result is meaningful given that the path coefficient is 0.332 (see Table 3) and the critical ratio is 5.980, which is greater than 1.96 at the 0.05 significance level. This result indicates that countries that emphasize individuality also tend to have higher borrowing rates.

For the impact of GM on the UA dimension, the predicted value is 0.373. The critical ratio is 3.185, and the p-value is 0.001, which is below 0.01, indicating significant GM influence. This is meaningful considering that the path coefficient is 0.357 and the critical ratio is 3.185, surpassing the 1.96 threshold at the 0.01 significance level. This implies that countries with high UA also tend to have a significant GM dimension.

The influence of the UA dimension on the TDE variable shows a predicted value of 0.313. The critical ratio is 2.211, and the p-value is 0.027, which is below the 0.05 mark, denoting significance for UA. This is meaningful as the path coefficient is 0.313 and the critical ratio is 2.211, both exceeding the 1.96 benchmark at the 0.05 significance level. These results indicate that countries with high UA tend to have a higher TDE dimension.

The predicted impact of the IC dimension on GM is 0.585. The critical ratio is 4.754, and the p-value is less than 0.01, confirming its significance. This is meaningful as indicated by the path coefficient of 0.560 (see Table 3) and a critical ratio of 4.754, both exceeding the 1.96 threshold at the 0.01 significance level.

The effect sizes between variables were interpreted using Cohen's (1988) effect size guidelines. According to these, effect sizes of 0.02–0.15 indicate a low level of effect, 0.15–0.35 suggest a moderate level of effect, and values above

Table 2. Model Regression Coefficients

			Estimate	S.E.	C.R.	P	Label
ZBR	<---	ZPD	,083	,141	,587	,557	
ZBR	<---	ZUA	-,147	,141	-1,044	,297	
ZBR	<---	ZIC	,338	,141	2,400	,016**	
ZBR	<---	ZMF	,001	,141	,005	,996	
ZSG	<---	ZBR	-,053	,156	-,341	,733	
ZCS	<---	ZBR	,039	,155	,248	,804	
ZEPSG	<---	ZBR	-,014	,149	-,095	,924	
ZGM	<---	ZBR	-,056	,123	-,452	,651	
ZNPM	<---	ZBR	,065	,155	,419	,675	
ZLTDE	<---	ZBR	,067	,148	,452	,651	
ZTDE	<---	ZBR	,032	,148	,218	,827	
ZSG	<---	ZPD	-,057	,148	-,383	,702	
ZCS	<---	ZPD	,072	,147	,488	,626	
ZEPSG	<---	ZPD	,085	,141	,606	,545	
ZGM	<---	ZPD	,089	,116	,768	,443	
ZNPM	<---	ZPD	-,018	,146	-,126	,900	
ZLTDE	<---	ZPD	-,116	,140	-,832	,406	
ZTDE	<---	ZPD	-,158	,140	-1,123	,261	
ZSG	<---	ZUA	,091	,149	,612	,540	
ZCS	<---	ZUA	,007	,148	,044	,965	
ZEPSG	<---	ZUA	,182	,142	1,277	,201	
ZGM	<---	ZUA	,373	,117	3,185	,001*	
ZNPM	<---	ZUA	,185	,148	1,256	,209	
ZLTDE	<---	ZUA	,279	,141	1,978	,048	
ZTDE	<---	ZUA	,313	,141	2,211	,027**	
ZSG	<---	ZIC	-,019	,156	-,118	,906	
ZCS	<---	ZIC	-,139	,156	-,895	,371	
ZEPSG	<---	ZIC	,117	,149	,781	,435	
ZGM	<---	ZIC	,585	,123	4,754	***	
ZNPM	<---	ZIC	-,092	,155	-,592	,554	
ZTDE	<---	ZIC	,007	,148	,049	,961	
ZLTDE	<---	ZIC	,115	,148	,774	,439	
ZSG	<---	ZMF	,100	,147	,677	,499	
ZCS	<---	ZMF	,074	,147	,506	,613	
ZEPSG	<---	ZMF	,257	,141	1,829	,067	
ZGM	<---	ZMF	-,113	,116	-,972	,331	
ZNPM	<---	ZMF	,094	,146	,646	,518	
ZLTDE	<---	ZMF	,010	,140	,069	,945	
ZTDE	<---	ZMF	-,003	,140	-,022	,983	

Not: ** p<0.01anlamlılık değerinde yorumlanmıştır. ** p<0.01 interpreted as significance.
*p<0.05 anlamlılık değerinde yorumlanmıştır. *p<0.01 interpreted as significance.

Table 3. The Standardized Regression Coefficients

			Estimate
ZBR	<---	ZPD	,081
ZBR	<---	ZUA	-,144
ZBR	<---	ZIC	,332
ZBR	<---	ZMF	,001
ZSG	<---	ZBR	-,054
ZCS	<---	ZBR	,039
ZEPSG	<---	ZBR	-,014
ZGM	<---	ZBR	-,054
ZNPM	<---	ZBR	,066
ZLTDE	<---	ZBR	,069
ZTDE	<---	ZBR	,033
ZSG	<---	ZPD	-,057
ZCS	<---	ZPD	,072
ZEPSG	<---	ZPD	,085
ZGM	<---	ZPD	,085
ZNPM	<---	ZPD	-,018
ZLTDE	<---	ZPD	-,117
ZTDE	<---	ZPD	-,158
ZSG	<---	ZUA	,091
ZCS	<---	ZUA	,007
ZEPSG	<---	ZUA	,181
ZGM	<---	ZUA	,357
ZNPM	<---	ZUA	,185
ZLTDE	<---	ZUA	,282
ZTDE	<---	ZUA	,313
ZSG	<---	ZIC	-,018
ZCS	<---	ZIC	-,140
ZEPSG	<---	ZIC	,116
ZGM	<---	ZIC	,560
ZNPM	<---	ZIC	-,091
ZTDE	<---	ZIC	,007
ZLTDE	<---	ZIC	,116
ZSG	<---	ZMF	,099
ZCS	<---	ZMF	,074
ZEPSG	<---	ZMF	,256
ZGM	<---	ZMF	-,108
ZNPM	<---	ZMF	,094
ZLTDE	<---	ZMF	,010
ZTDE	<---	ZMF	-,003

0.35 indicate a wide-ranging influence. When considering the R^2 transformation, effect sizes of 0.02–0.13 suggest a low level of effect, 0.13–0.26 a moderate level, and values above 0.26 a wide-ranging influence.

It was observed that the BR variable does not directly impact the MF and UA dimensions. However, there is a direct effect of BR on the IC dimension, as indicated in Table 4.

Table 4. Direct Effect Results

	ZMF	ZIC	ZUA	ZPD	ZBR
ZBR	,001	,338	-,147	,083	,000
ZTDE	-,003	,007	,313	-,158	,032
ZLTDE	,010	,115	,279	-,116	,067
ZNPM	,094	-,092	,185	-,018	,065
ZGM	-,113	,585	,373	,089	-,056
ZEPSG	,257	,117	,182	,085	-,014
ZCS	,074	-,139	,007	,072	,039
ZSG	,100	-,019	,091	-,057	-,053

5. Policy Implications

Significant shifts were observed in global monetary and financial market conditions before and after the study period. The onset of the Great Financial Crisis in 2007–2008 profoundly impacted global economies, particularly owing to the implementation of quantitative easing strategies. As 2022 approached, the global economy was poised for a dramatic transformation. Central banks, including the FED, ECB, and BOJ, decided to end the period of quantitative easing. This transitional period created challenges for policymakers who had relied on quantitative easing and negative interest rates to stimulate economic growth at the macro level. Simultaneously, individuals and businesses had to adapt to a changing landscape in terms of consumption, savings, and investment financing channels at a micro level. The COVID-19 pandemic prompted central banks to shift their focus toward raising interest rates, implementing tapering measures, and reducing their balance sheets to control inflation in economies that showed pre-crisis growth patterns in the fourth quarter of 2021. The post-pandemic era was likely to exhibit decreased risk appetite and reduced market liquidity. Thus, it was essential to consider how technology firms, which require substantial cash reserves, would organize their capital structure to finance their investments in this backdrop. Technological progress is often considered a key driver of modern economic growth, making it crucial to understand how these firms navigate the changing financial landscape.

This study aimed to analyze the capital structures of firms between 2014 and 2019 and investigate the influence of varying cultural elements on their capital structure. Hofstede's four cultural dimensions were utilized to examine the risk-taking and investing attitudes of entrepreneurs and individuals from a socioeconomic perspective.

In 2019, the average debt-to-equity ratio of 4,237 businesses from 46 countries was 53.63%. Among these countries, 27 had a debt-to-equity ratio below the average, indicating that they benefited less from financial leverage: Poland, Malaysia, Argentina, Taiwan, Romania, Ireland, Bulgaria, Vietnam, Serbia, Philippines, Chile, Japan, Brazil, Singapore, Pakistan, Australia, Canada, Morocco, China, Switzerland, Spain, India, Hong Kong, Mexico, Greece, Peru, and Indonesia.

In terms of borrowing, interest rates for these 27 nations were 2.92, whereas the other 19 countries had rates of 1.89. According to World Bank data the anticipated changes in the capital structure for 2022 were particularly interesting, with forecasts of higher interest rates and lower global risk appetite and signs indicating the end of negative real interest rates.

Over the previous 5 years, CapEx for technology firms in the 46 countries increased by 10.90%. Among the countries with debt-to-equity ratios lower than the average, the growth in CapEx was 13.33%, while it was 7.45% for the remaining 19 countries. This suggests that in countries with a lower debt-to-equity ratio and significant CapEx growth, internal resources and equity funds are the primary sources of financing. There was no statistically significant difference between the two groups of countries regarding earnings per share. However, sales growth was higher in the 19 countries compared to the 27 countries with debt-to-equity ratios below the 5-year average. In countries with a lower debt-to-equity ratio and higher CapEx, the GM was 36.5%, and the net profit margin was 4.86%. In contrast, countries with a higher debt-to-equity ratio had a GM of 49.26% and a net profit margin of 12.5%, which is more than 2.5 times higher than the other group. These findings indicate that relying more on internal financing options instead of borrowing does not significantly impact the competitive advantage and sales profitability of technology firms. In the 27 countries with lower debt-to-equity ratios, long-term debts accounted for approximately 14% of resources, while in

the other 19 countries, it was 64%. The long payback period of capital investments and the low present value of cash flows at a 1% annual rate negatively affect the profitability of firms in financing costs.

Technology firms typically maintain minimal inventory levels and prefer paid-up capital and capitalization increases over profit distribution policies. Even if these undertakings initially yield low profitability. However, metrics such as GM and net profit margin are crucial indicators of future profitability.

Accumulating cash is a natural outcome in the technology industry; therefore, profit distribution becomes secondary to saving for future investments and corporate acquisitions using internal financing methods. In economies where risk is well-defined and formality prevails, individuals with strong individualistic and UA tendencies prefer leveraging effects to increase their gross profit margins through income and borrowing.

Cultures with high UA heavily rely on social norms, regulations, and processes, whereas cultures embracing individualism tend to avoid uncertainty and rely on formal connections. At the firm level, interest rates are influenced by funders' perception of firm value. Stable relationships between fund providers and seekers are more likely in cultures where risk is measured, UA is high, and individualism prevails.

Financial ratios like interest, debt-to-equity ratio, and GM are associated with Hofstede's cultural subdimensions of individualism and UA. The findings of this study suggest that improving access to accurate information for investors and lenders directly contributes to informed decision-making, thereby aligning actions with expected returns and risk appetite and ultimately increasing opportunities for firms to secure sufficient funds from money and capital markets.

Product, patent, and copyright innovations quickly become outdated in industries with strong competition and emphasis on R&D-based CapEx. This is particularly evident in technology, manufacturing, and service provider industries, which have high cash requirements and intense competition. In such industries, converting received funds into profits to finance future expenditures is essential. Accessing funds at the lowest possible cost is crucial to generate income quickly, especially before products and services reach market maturity, and support internal financing for capital investments.

According to POT, firms prioritize funding capital projects using retained earnings; they resort to borrowing when internal resources are insufficient and issue shares only as a last resort. Effective risk assessment fosters trust among market participants through official channels, thereby avoiding issues like lemon markets and moral hazard. This approach strengthens faith in institutions rather than relying solely on individuals in firm establishment and operation.

In cultures characterized by high UA and individualism, there is an increased inclination to borrow and lend for risky investments. In markets where full information is available and the optimal capital structure is operational, low borrowing costs can minimize firms' capital costs significantly, thus allowing firms to maximize profits. This aligns with the POT and supports the notion that a hierarchical capital structure can enhance a firm's value.

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Peer-review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- F.B., Ö.S., M.A., S.D.; Data Acquisition- F.B., Ö.S., M.A., S.D.; Data Analy-sis/Interpretation- F.B., Ö.S., M.A., S.D.; Drafting Manuscript- F.B., Ö.S., M.A., S.D.; Critical Revision of Ma-nuscript- F.B., Ö.S., M.A., S.D.; Final Approval and Accountability- F.B., Ö.S., M.A., S.D.

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REFERENCES

Agyei, J., Sun, S., & Abrokwah, E. (2020). Trade-off theory versus pecking order theory: Ghanaian evidence. *Sage Open, 10*(3), 1–13. https://doi.org/10.1177/2158244020940987

Ahmad, N. S. M., & Atniesha, M. R. A. A. (2018). The pecking order theory and start-up financing of small and medium enterprises: Insight into available literature in the Libyan context. *Financial Markets, Institutions and Risks, 2*(4), 5–12.

Al-Zoubi, H. A., O'Sullivan, J. A., & Alwathnani, A. M. (2018). Business cycles, financial cycles and capital structure. *Annals of Finance, 14*(1), 105–123.

Ardalan, K. (2017). Capital structure theory: Reconsidered. *Research in International Business and Finance, 39*(B), 696–710.

Arosa, C., Richie, N., & Schuhmann, P. W. (2014). The impact of culture on market timing in capital structure. *Research in International Business and Finance, 31*(1), pp.178–192.

Baker, M., & J. Wurgler, (2002). Market timing and capital structure. *Journal of Finance, 57*(1), 1–32.

Banerjee, S., Heshmati, A., & Wihlborg, C. (1999). *The dynamics of capital structure*. New York University-Salomon Center-Leonard N. Stern School of Business, New York, NY, 6-8.

Bukalska, E. (2019). Testing trade-off theory and pecking order theory under managerial overconfidence. *International Journal of Management and Economics, 55*(2), 99–117.

Cheung, M. W., & Chan, W. (2009). A two-stage approach to synthesizing covariance matrices in meta-analytic structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal, 16*(1), 28–53.

Chen, S. Y., & Chen, L. J. (2011). Capital structure determinants: An empirical study in Taiwan. *African Journal of Business Management, 5*(27), 10974–10983.

Chui, A. C. W., Kwok, C. C. Y., & Lloyd, A. E. (2002). The determination of capital structure: Is national culture a missing piece to the puzzle?. *Journal of International Business Studies, 33*(1), 99–127.

Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. Routledge Academic, New York, NY, 77–83.

De Jong, E., & Semenov, R., (2002). Cross-Country Differences in Stock Market Development: A Cultural View. "Retrieved from" SSRN: https://ssrn.com/abstract=301374 or http://dx.doi.org/10.2139/ssrn.301374.

Du, J., Wu, H., & Jin, R. (2019). Capital structure of public–private partnership projects: a sustainability perspective. *Sustainability, 11*(13), 3505, 1–25.

Durand, D. (1952). Costs of debt and equity funds for business: trends and problems of measurement. In Conference on research in business finance. "Retrieved from" http://www.nber.org/books/univ52-1 (accssed 20 07.2022), 215–262, January.

Durand, D. (1959). The cost of capital, corporation finance, and the theory of investment: comment. *The American Economic Review, 49*(4), 639–655.

Esperanca, J.P., Gama, A.P.M., & Gulamhussen, M.A., (2003). Corporate Debt Policy of Small Firms: An Empirical (Re) Examination. *Journal of Small Business and Enterprise Development, 10*(1), 62–80.

Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal Of Financial Economics, 67*(2), 217–248.

Gleason, K. C., Mathur, L. K., & Mathur, I. (2000). The interrelationship between culture, capital structure, and performance: evidence from European retailers. *Journal of business research, 50*(2), 185–191.

Harris, M., & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance, 46*(1), 297–355.

Hasanuddin, R. (2021). The influence of investment decisions, dividend policy and capital structure on firm value. *Jurnal Economic Resource, 4*(1), 39–48.

Heinkel, R. (1982). A theory of capital structure relevance under imperfect information. *The Journal of Finance, 37*(5), 1141–1150.

Hofstede, G. (1980). *Culture's consequences: International differences in work related values.* Sage, Beverly Hills, CA, 32–244.

Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of International Business Studies, 14*(2), 75–89.

Hofstede, G. H., & Bond, M. H. (1988). The Confucius connection: from cultural roots to economic growth. *Organizational Dynamics, 16*(4), 5–21.

Hofstede, G. (1997). *Cultures and organizations: Software of the mind.* London: McGraw-Hill. Vol.2, 3-7, 2005.

Hofstede, G. H. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Sage Publication, ThoABDnd Oaks CA, 32–244.

House, R. J., Wright, N. S., & Aditya, R. N. (1997). *Cross-cultural research on organizational leadership: A critical analysis and a proposed theory.* In P. C. Earley & M. Erez (Eds.), New perspectives on international industrial/ organizational psychology, The New Lexington Press/Jossey-Bass Publishers, San Francisco, 535–625.

Kearney, C., Mac an Bhaird, C., & Lucey, B. M. (2012). Culture and capital structure in small and medium sized firms. "Retrieved from" SSRN: https://ssrn.com/abstract=2185284 or http://dx.doi.org/10.2139/ssrn.2185284

Kluckhohn, C. (1962). *Culture and behavior*. Free Press Glencoe, New York.

Korajczyk, R. A., & Levy, A. (2003). Capital structure choice: macroeconomic conditions and financial constraints". *Journal of Financial Economics, 68*(1), 75–109.

Kwok, C. C., & Tadesse, S. (2006). National culture and financial systems. *Journal of International Business Studies, 37*(2), 227–247.

Lucas, D. J., & McDonald, R. L. (1990). Equity issues and stock price dynamics. *The Journal of Finance, 45*(4), 1019–1043.

Luigi, P., & Sorin, V. (2009). "A review of the capital structure theories". *Annals of Faculty of Economics, 3*(1), 315–320.

Lyandres, E. (2006). Capital structure and interaction among firms in output markets: Theory and evidence. *The Journal of Business, 79*(5), 2381–2421.

Myers, S. C. (1984). Capital structure puzzle. *NBER Working Paper,1393*, 1–35

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187–221.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review, 48*(3), 261–297.

Papaioannou, G., & Karagozoglu, A. (2017). *Underwriting services and the new issues market.* Academic Press, London, United Kingdom, 129–248.

Rashid, M., Hj, D. S. N. K. P., & Izadi, S. (2020). National culture and capital structure of the Shariah compliant firms: Evidence from Malaysia, Saudi Arabia and Pakistan. *International Review of Economics & Finance.* "Retrieved from" https://doi.org/10.1016/j.iref.2020.10.006. 1–16.

Roberts, M. R., & Sufi, A. (2009). Control rights and capital structure: An empirical investigation. *The Journal of Finance, 64*(4), 1657–1695.

Schwartz, S.H., & Sagiv, L., (1995). Identifying Culture-Specifics in the Content and Structure of Values. *Journal of Cross-Cultural Psychology, 26*, 92–116.

Scott, J., (1976). A theory of optimal capital structure. *The Bell Journal of Economics and Management Science, 7*(1), 33–54.

Shahar, W. S. S. B., & Manja, S. I. (2018). Determinants of capital structure. *Reports on Economics and Finance, 4*(3), 139–149.

Shyam-Sunder, L., & Myers, S. C. (1999). Testing static tradeoff against pecking order models of capital structure. *Journal of Financial Economics, 51*(2), 219–244.

Titman, S. (1984). The effect of capital structure on a firm's liquidation decision. *Journal of Financial Economics, 13*(1), 137–151.

Wang, D., & Esqueda, O. A. (2014). National culture effects on leverage decisions: Evidence from emerging-market ADRs. *Research in International Business and Finance, 31*(1), 152–177.

Xhaferi, S., & Xhaferi, B. (2015). Alternative theories of capital structure. *European Scientific Journal, 11*(7), 327–343.

Wardani, O. M., & Subowo, S. (2020). Factors That Influence Capital Structure With Profitability as A Moderating Variable. *Accounting Analysis Journal, 9*(2), 103–109.

Yang, G. J. A., Chueh, H., & Lee, C. H. (2014). Examining the theory of capital structure: signal factor hypothesis. *Applied Economics, 46*(10), 1127–1133.

Yıldırım, D., & Çelik, A. K. (2021). Testing the pecking order theory of capital structure: Evidence from Turkey using panel quantile regression approach. *Borsa Istanbul Review, 21*(4), 317–331.

Zheng, X., El Ghoul, S., Guedhami, O., & Kwok, C. (2012). National culture and corporate debt maturity. Journal of Banking & Finance, 36(2), 468–488.

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