sustainability

MDPI

Article

Does Intellectual Capital Affect Financial Leverage of Chinese Agricultural Companies? Exploring the Role of Firm Profitability

Guangchun Jin and Jian Xu *

Department of Economics and Management, Qingdao Agricultural University, Qingdao 266109, China; 201901004@qau.edu.cn

* Correspondence: jianxusword@qau.edu.cn

Abstract: The objective of this paper is to examine the relationship between intellectual capital (IC) and firms' financial leverage by exploring whether firm profitability mediates this relationship, using a dataset of Chinese agricultural listed companies during the period of 2014–2020. Financial leverage is measured by the debt-to-asset ratio, and IC is measured via the modified value-added intellectual coefficient (MVAIC) model. The results reveal that financial leverage is lower in firms with higher levels of IC, and IC positively affects firm profitability. In addition, firm profitability partially mediates the relationship between IC and financial leverage. When MVAIC is disaggregated into its four components, firm profitability has a partially mediating effect on the relationship between physical and human capitals and financial leverage. This paper might provide corporate managers with a clear understanding of IC's impact on firm indebtedness.

Keywords: intellectual capital; financial leverage; firm profitability; agricultural listed companies; mediating effect

Citation: Jin, G.; Xu, J. Does Intellectual Capital Affect Financial Leverage of Chinese Agricultural Companies? Exploring the Role of Firm Profitability. *Sustainability* **2022**, *14*, 2682. https://doi.org/10.3390/su14052682

Academic Editors: Marc A. Rosen, Goran Roos and Yulia Farafonova

Received: 25 November 2021
Accepted: 24 February 2022
Published: 25 February 2022

1. Introduction

In the knowledge era, new technology has transformed the way we live and the way we do business. As an intangible asset, intellectual capital (IC) is a potential driver of firm competitiveness and value growth [1–7]. According to the resource-based view (RBV) of firms, IC is valuable, scarce, and irreplaceable. What's more, IC has the characteristics of high uncertainty and high firm specificity [8], which can affect firms' financing decisions. In recent decades, IC has been strongly debated among researchers and practitioners.

The agricultural sector makes a vital contribution to the development of China's national economy [9]. This sector has low knowledge intensity, and the efficiency of IC usage is low [10]. China is experiencing a rapid economic transformation, and the traditional pattern of agricultural development is no longer suitable for the goal of modern agriculture. By the effective utilization of IC resources, the agriculture sector can contribute greatly to improving overall national competitiveness [11]. At present, a wide body of literature on IC was conducted in different industries such as manufacturing [2–4,6,12], banking [13–16], and information technology (IT) [1,17] but little has been conducted in the agricultural industry. What's more, most researchers focus on the impact of IC on firm performance, and the mechanism of the relationship between IC and financial leverage is still ambiguous.

There is a paradox between firms' IC investment and financial leverage. That is, although IC discourages debt due to great risk, it generates higher returns, thus increasing debt service capacity. Using a sample of 36 agricultural listed companies during the period of 2014–2020, this paper intends to examine the relationship between IC and financial leverage, and we also explore the mediating effect of firm profitability, which helps us have a deeper understanding of this paradox. Financial leverage is measured by the debt-to-asset

ratio, and we modified Pulic's [18] value-added intellectual coefficient (VAIC) model by the introduction of relational capital (RC) to measure IC.

The contributions of this paper are in three aspects. First, it is novel and among the first studies that focus on IC and capital structure and provides new evidence by exploring the mediating effect of firm profitability. To the best of our knowledge, very little is currently known about this relationship. Second, there are still few studies that focus on the role of IC in the agricultural sector. This study extends the current literature by using data from agricultural companies in the Chinese context. Finally, this study could enable managers to deeply understand the relationship between IC and financial leverage to strengthen firms' capital structure with the consideration of asset characteristics.

The current paper is structured as follows. In Section 2, we review the literature and develop the research hypotheses. Section 3 presents the methodology, and Section 4 presents the results. We then discuss the results in Section 5. Finally, Section 6 concludes the paper.

2. Literature Review and Research Hypotheses

2.1. IC Definition and Its Elements

Edvinsson and Sullivan [19] described IC as knowledge that can be converted into firm value. IC is a knowledge-based firm resource that is valuable, unique, and inimitable. It is also a sort of hidden asset that has no specific shape and is difficult to quantify its financial value [20].

Most scholars [3,21–27] stated that IC can be categorized into human capital (HC), structural capital (SC), and RC. HC is embedded in people, including the combination of knowledge, skills, expertise, and capabilities of employees [28]. As the central source of IC, it can help to enhance firm performance [29]. SC denotes organizational structure, processes, and procedures that enable employees to utilize their intellectual resources [30]. RC is linked with the relationships with various stakeholders (e.g., government, customers, suppliers, distributors, and competitors) [31]. Following this, this study adopts the triadic classification of IC.

2.2. IC and Financial Leverage

The financing decisions of firms have caught the eye of scholars in the corporate finance literature. In the knowledge economy, firms' production patterns shift from capital-intensive to knowledge-intensive [3,32,33]. Under such circumstance, this issue acquires even more relevance.

A firm with more tangible assets such as property, plant, and equipment is likely to hold more debt [34]. If a firm invests more in intangible assets, the amount of risky debt should be limited [35–38]. The findings could be explained in several ways. On the one hand, intangibles are not used as collateral for debt because they are not redeployed at relatively low transaction costs when the borrowers bear financial burden. On the other hand, intangibles are generally risky and difficult to value. These reasons cause a negative relationship between asset intangibility and financial leverage. Fu [39] found that considering the incentive of IC, managers can optimize firms' capital structure by restructuring assets and liabilities. Based on U.S. public firms, Lim et al. [40] concluded that some intangible assets with high valuation risk and poor collateralizability discourage debt financing while identifiable intangible assets support debt. The findings of D'Amato [41] revealed that firms with more IC resources have lower financial leverage in Italy. However, for tourism companies, Dalwai and Sewpersadh [42] found that aggregated IC has no impact on total debt.

There is an increasing demand to identify and evaluate firms' IC resources. IC as a type of intangible asset is expected to negatively influence financial leverage. Therefore, we propose the first hypothesis:

Hypothesis 1 (H1). *IC is negatively related to firms' financial leverage.*

2.3. IC, Firm Profitability, and Financial Leverage

Any resources possessed by a firm are considered to have value for financial accounting. As per the RBV, knowledge is one of the important firm resources [43]. The utilization efficiency of knowledge resources, especially IC resources, directly affect firms' competitive advantage and economic performance [2,3,44,45].

The effect of IC on financial performance has the focus of recent research, particularly in developing economies [3]. A large amount of research has been conducted to investigate the impact of IC investment on firms' financial results and most research demonstrates a positive and significant relationship between them. Specifically, Sydler et al. [46] carried out their study in pharmaceutical and biotechnology firms and found that an increase in IC can result in a higher return over time. Asare et al. [47] pointed out that investment in IC positively influences profitability of insurers in Ghana. Employing the VAIC model, Gupta et al. [48] argued that IC has a positive effect on firm profitability in India. In a study by Haris et al. [49], it was shown that IC can stimulate profitability in Pakistan's banking sector. Weqar et al. [25] concluded that IC, as measured with the modified value-added intellectual coefficient (MVAIC) model, is positively related to firm profitability. Using data from pharmaceutical listed companies, Ge and Xu [5] empirically demonstrated the existence of a positive relationship between IC and firm profitability. Liu et al. [50] concluded that a 1% increase in IC results in a 0.208% increase in financial competitiveness of renewable energy companies in China. Using a sample of 56 general insurance companies during the period of 2008–2019, Olarewaju and Msomi [51] highlighted that IC helps to improve firm profitability. Xu and Liu [6], Neves and Proença [52], and Ren et al. [53] also found the same results. However, according to Firer and Williams [54], there is no relationship between IC and financial performance. Qomariah et al. [55] also found that IC has no significant impact on the profitability of pharmaceutical companies in Indonesia. Therefore, we propose the second hypothesis:

Hypothesis 2 (H2). *IC is positively related to firm profitability.*

The pecking order theory (POT) suggests a negative relationship between profitability and financial leverage because profitable firms can generate cash internally and borrow less [56,57]. Singh and Singh [58], Nguyen and Nguyen [59], Ullah et al. [60], Mathur et al. [61], and Thi and Phung [62] also confirmed this negative relationship. Frank and Goyal [63] found that profitable firms are more likely to have low levels of financial leverage. We can predict that firms with more investment in IC have lower leverage due to their high profitability. Therefore, the third hypothesis is as follows:

Hypothesis 3 (H3). *Firm profitability mediates the relationship between IC and firms' financial leverage.*

3. Methods

3.1. Sample and Data Collection

We used an unbalanced panel data approach to investigate a sample of agricultural companies listed on the Shanghai and Shenzhen stock exchanges during the 2014–2020 period. Our initial sample consists of 55 agricultural listed companies. We exclude companies with missing information, delisted companies, special treatment (ST) companies, and companies issuing other kinds of shares. Finally, 36 agricultural listed companies with 202 observations are left for the analysis. We winsorized all variables at the 1% and 99% levels to reduce the influence of outliers. The data are sourced from the China Stock Market Accounting Research (CSMAR) database.

3.2. Variables

(1) In terms of financial leverage as dependent variable, the debt-to-asset ratio (DAR) is used, which is in line with Xu et al. [57], Duan et al. [64], Guo et al. [65], Nguyen

et al. [66], Obeidat et al. [67], Pernamasari and Sugiyanto [68], Zhou et al. [69], and Iqbal et al. [70].

(2) Regarding independent variables, the MVAIC model is used to assess the contribution of integrated elements of IC to value creation [71]. Pulic's [18] VAIC model can be easily calculated and provides a standardized measure that allows comparison across firms and countries [54]. Furthermore, it is reliable and verifiable using the information retrieved from audited financial statements [54]. However, some researchers argued that the VAIC method is not a proper tool for evaluating firms' future value because of the historical data from annual financial reports. This method is incapable of measuring IC value for organizations with a negative book value of equity [72]. Pulic [18] did not value IC directly, but he proposed measuring its efficiency [73]. In addition, some elements of IC (e.g., RC) are missing in this model [71,72]. Therefore, the MVAIC model indirectly measures IC as the sum of capital employed efficiency (CEE), human capital efficiency (HCE), structural capital efficiency (SCE), and relational capital efficiency (RCE). CEE measures how much value has been created per dollar of capital employed. HCE measures how much value has been created by one invested unit of HC, SCE shows how much capital has been created by SC, and RCE measures how much capital has been created by RC. This method provides information about the efficiency of both tangible and intangible assets of a firm. To calculate MVAIC, in accordance with Xu and Wang [23] and Xu et al. [74], we define value added (VA) as the sum of net income, interest, tax, and employee expenditure. HC is measured by total employee expenditure, SC is measured by the difference between VA and HC, and RC is measured through marketing, selling, and advertising expenses. The calculation processes are as follows:

$$\text{CEE} = \text{VA}/\text{book value of net assets} \quad (1)$$

$$\text{HCE} = \text{VA}/\text{total employee expenditure} \quad (2)$$

$$\text{SCE} = (\text{VA} - \text{total employee expenditure})/\text{VA} \quad (3)$$

$$\text{RCE} = \text{Marketing, selling, and advertising expenses}/\text{VA} \quad (4)$$

$$\text{MVAIC} = \text{CEE} + \text{HCE} + \text{SCE} + \text{RCE} \quad (5)$$

(3) The mediator of the current study is firm profitability, which is measured by the ratio of net income to average total assets [3,7,14,24,75].

(4) As for control variables, guided by D'Amato [41], Nguyen et al. [66], Sharma [76], Dakua [77], Ibrahim and Lau [78], and Van Hung and Nhung [79], we consider a set of variables that might determine firms' financial leverage. Firm size (SIZE), tangibility (FIX), sales growth rate (SALES), current ratio (CR), and non-debt tax shields (NDTS) are chosen. In addition, a year dummy (YEAR) is included in our models.

Table 1 lists the definition of all variables.

3.3. Models

To test H1, we use Model (1) (Equation (6)).

$$\text{DAR}_{i,t} = \beta_0 + \beta_1\text{MVAIC}_{i,t} + \beta_2\text{SIZE}_{i,t} + \beta_3\text{FIX}_{i,t} + \beta_4\text{SALES}_{i,t} + \beta_5\text{CR}_{i,t} + \beta_6\text{NDTS}_{i,t} + \text{YEAR}_i + \varepsilon_{i,t} \quad (6)$$

Model (2) (Equation (7)) is employed to test whether IC positively affects firm profitability.

$$\text{ROA}_{i,t} = \beta_0 + \beta_1\text{MVAIC}_{i,t} + \beta_2\text{LEV}_{i,t} + \beta_3\text{SIZE}_{i,t} + \beta_4\text{FIX}_{i,t} + \beta_5\text{SALES}_{i,t} + \beta_6\text{CR}_{i,t} + \beta_7\text{NDTS}_{i,t} + \text{YEAR}_i + \varepsilon_{i,t} \quad (7)$$

Following Baron and Kenny [80], we performed a mediation analysis to test H3 using Models (1), (2), and (3) (Equations (6)–(8)).

$$\text{DAR}_{i,t} = \beta_0 + \beta_1\text{MVAIC}_{i,t} + \beta_2\text{ROA}_{i,t} + \beta_3\text{SIZE}_{i,t} + \beta_3\text{FIX}_{i,t} + \beta_4\text{SALES}_{i,t} + \beta_5\text{CR}_{i,t} + \beta_6\text{NDTS}_{i,t} + \text{YEAR}_i + \varepsilon_{i,t} \quad (8)$$

Given that MVAIC is the sum of CEE, HCE, SCE, and RCE, we also test the mediating effect of firm profitability on the relationship between IC components and financial leverage by using Models (4)–(6) (Equations (9)–(11)).

$$DAR_{i,t} = \beta_0 + \beta_1 CEE_{i,t} + \beta_2 HCE_{i,t} + \beta_3 SCE_{i,t} + \beta_4 RCE_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 FIX_{i,t} + \beta_7 SALES_{i,t} + \beta_8 CR_{i,t} + \beta_9 NDTS_{i,t} + YEAR_i + \varepsilon_{i,t} \quad (9)$$

$$ROA_{i,t} = \beta_0 + \beta_1 CEE_{i,t} + \beta_2 HCE_{i,t} + \beta_3 SCE_{i,t} + \beta_4 RCE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 FIX_{i,t} + \beta_8 SALES_{i,t} + \beta_9 CR_{i,t} + \beta_{10} NDTS_{i,t} + YEAR_i + \varepsilon_{i,t} \quad (10)$$

$$DAR_{i,t} = \beta_0 + \beta_1 CEE_{i,t} + \beta_2 HCE_{i,t} + \beta_3 SCE_{i,t} + \beta_4 RCE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 FIX_{i,t} + \beta_8 SALES_{i,t} + \beta_9 CR_{i,t} + \beta_{10} NDTS_{i,t} + YEAR_i + \varepsilon_{i,t} \quad (11)$$

where i is the firm; t is the year; β is the presumed parameter; and ε is the error term.

Table 1. Variable definition.

Variable	Symbol	Description
Financial leverage	DAR	Total debts/total assets
Modified value-added intellectual coefficient	MVAIC	CEE + HCE + SCE + RCE
Capital employed efficiency	CEE	VA/book value of net assets
Human capital efficiency	HCE	VA/total employee expenditure
Structural capital efficiency	SCE	(VA—total employee expenditure)/VA
Relational capital efficiency	RCE	Marketing, selling, and advertising expenses/VA
Firm profitability	ROA	Net income/average total assets
Firm size	SIZE	Natural logarithm of total assets
Tangibility	FIX	Fixed assets/total assets
Sales growth rate	SALES	(Current year's sales—last year's sales)/last year's sales
Current ratio	CR	Current assets/current liabilities
Non-debt tax shields	NDTS	Total depreciation expenses/total assets
Year dummy	YEAR	Dummy variable that takes 1 for the test year, 0 otherwise

4. Results

4.1. Descriptive Statistics

Table 2 shows the descriptive statistics for our sample. The mean value of DAR (0.4234) suggests approximately 42% of the total financing is debt, consistent with the findings of Xu and Wang [9], Xu et al. [57], and Xu and Zhang [75]. Agricultural listed companies have an average profitability of 3.61% with a standard deviation of 0.0757. Xu and Wang [9] and Liu et al. [81] found that the profitability of these companies is relatively lower. In our sampled companies, MVACI is 2.6974 on average, which suggests that agricultural companies create RMB 2.6974 by every RMB 1.00 investment in IC resources. We note that the sum of HCE, SCE, and RCE (2.5105) is about 13 times as much as the mean CEE (0.1869). In the knowledge society, intangibles play an increasingly more important role than tangibles [82].

In addition, SIZE has a mean value of 22.0899 with a minimum of 20.4336 and a maximum of 24.9065. The mean FIX (0.2863) suggests that fixed assets occupy about 29 percent of total assets of agricultural listed companies. SALES has a mean value of 0.1173, which implies that agricultural listed companies experience an annual sales growth rate of 11.73%. The mean value of CR is 1.9216, indicating that such companies have ample liquidity to pay off their debt. The mean value of NDTS is 0.0313, which means that the existing fixed assets within companies are only worth around 97% of their original value.

Based on the median of MVAIC, the full sample is divided into two groups, namely, high-IC-level group and low-IC-level group. Table 3 shows the descriptive statistics by IC level. It is observed that companies with high levels of IC have lower debt ratio. In the high-IC-level group, companies significantly outperform their counterparts. In addition, there are significant differences in DAR, HCE, SCE, RCE, ROA, and SIZE. These provide evidence for H1 and H2.

Table 2. Descriptive statistics of full sample.

Variable	N	Mean	Median	Maximum	Minimum	Std. Dev.
DAR	202	0.4234	0.4030	0.8978	0.0930	0.1639
MVAIC	202	2.6974	2.5296	7.6159	−7.7169	1.6336
CEE	202	0.1869	0.1655	0.6384	−0.3082	0.1412
HCE	202	1.8165	1.6560	6.2986	−2.2711	1.3016
SCE	202	0.4013	0.4258	3.2326	−9.9047	1.0308
RCE	202	0.2927	0.1924	4.3859	−1.7968	0.5190
ROA	202	0.0361	0.0213	0.3300	−0.1578	0.0757
SIZE	202	22.0899	21.9860	24.9065	20.4336	0.9275
FIX	202	0.2863	0.2753	0.6948	0.0121	0.1531
SALES	202	0.1173	0.0771	1.6662	−0.5926	0.3346
CR	202	1.9216	1.5240	7.6673	0.3726	1.3689
NDTS	202	0.0313	0.0293	0.0725	0.0024	0.0142

Table 3. Descriptive statistics by IC level.

Variable (Mean)	High IC Level	Low IC Level	Difference *t*-Statistics
DAR	0.3991	0.4477	−2.127 *
MVAIC	3.7438	1.6511	11.845
CEE	0.2381	0.1357	5.515
HCE	2.6297	1.0032	11.364 **
SCE	0.5661	0.2366	2.295 ***
RCE	0.3099	0.2756	0.468 *
ROA	0.0799	−0.0078	10.089 ***
SIZE	22.1376	22.0423	0.729 ***
FIX	0.2748	0.2977	−1.065
SALES	0.1664	0.0681	2.105
CR	2.0963	1.3245	1.825
NDTS	0.0313	0.0312	0.048

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4 shows the results of the Shapiro–Wilk test, suggesting that all variables do not have a normal data distribution ($p < 0.05$).

Table 4. Results of normality test.

Variable	Statistic	Dif	Sig.
DAR	0.983	202	0.017
MVAIC	0.880	202	0.000
CEE	0.967	202	0.000
HCE	0.901	202	0.000
SCE	0.459	202	0.000
RCE	0.747	202	0.000
ROA	0.887	202	0.000
SIZE	0.957	202	0.000
FIX	0.966	202	0.000
SALES	0.875	202	0.000
CR	0.820	202	0.000
NDTS	0.978	202	0.003

4.2. Correlation Analysis

The results of correlation analysis are presented in Table 5. MVAIC is negatively associated with DAR and positively associated with ROA. In terms of IC components, CEE correlates with DAR and ROA. HCE negatively correlates with DAR while it positively correlates with ROA. SCE positively correlates with ROA, whereas RCE does not correlate with DAR and ROA. Additionally, all values of variance inflation factor (VIF) are between 1.10 and 4.81, suggesting that multi-collinearity is not a serious problem in our models.

Table 5. Pearson correlation matrix.

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1 DAR	1											
2 MVAIC	−0.187 ***	1										
3 CEE	0.134 *	0.525 ***	1									
4 HCE	−0.174 **	0.890 ***	0.581 ***	1								
5 SCE	−0.090	0.453 ***	−0.048	0.066	1							
6 RCE	−0.012	−0.127 *	0.018	0.004	−0.711 ***	1						
7 ROA	−0.359 ***	0.756 ***	0.721 ***	0.797 ***	0.142 **	−0.096	1					
8 SIZE	0.024	0.107	0.293 ***	0.165 **	0.015	−0.187 ***	0.296 ***	1				
9 FIX	0.152 **	−0.089	0.345 ***	−0.050	−0.077	−0.097	0.154 **	0.238 ***	1			
10 SALES	0.051	0.210 ***	0.280 ***	0.224 ***	0.010	0.005	0.341	0.130 *	0.158 **	1		
11 CR	−0.594 ***	0.164 **	−0.268 ***	0.162 **	0.053	0.078	0.070	−0.195 ***	−0.459 ***	−0.138 *	1	
12 NDTS	0.120 *	−0.061	0.426 ***	−0.057	−0.085	0.006	0.208 ***	0.211 ***	0.779 ***	0.180 **	−0.385 ***	1

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

4.3. Regression Results

Table 6 presents the results of Models (1)–(3). Our six models are significant at the 1% level. In Model (1), the estimated coefficient of MVAIC indicates that it has a significant and negative impact on financial leverage ($\beta = -0.009$, $p < 0.01$). Therefore, H1 is not rejected. Model (2) tests the impact of IC on firm profitability. The results show that MVAIC has a significant and positive impact on the ROA indicator ($\beta = 0.031$, $p < 0.01$). Therefore, we conclude that H2 cannot be rejected. When ROA is added to Model (3), the coefficient of ROA is negative and significant ($\beta = -1.450$, $p < 0.01$), and the coefficient of MVAIC remains significant, but its effect increases from −0.009 to 0.038. Therefore, we confirm that firm profitability serves as a channel through which IC affects financial leverage, which suggests that H3 cannot be rejected.

Table 7 presents the results of Models (4)–(6). In Model (4), we show that CEE positively affects DAR while HCE exerts a negative impact. In Model (5), we highlight that physical and human capitals have a positive and significant impact on firm profitability. This is in line with Xu and Wang [9] and Xu and Zhang [75]. SCE is also observed to have a positive impact on the ROA indicator. It is worth noticing that firm profitability partially mediates the relationship between CEE and HCE and financial leverage. The coefficient of CEE is increased in its effect from 0.185 in Model (4) to 0.667 in Model (6). The coefficient of HCE is reduced in its effect from −0.021 in Model (4) to 0.058 in Model (6) when ROA is added. In addition, the negative relationship between ROA and DAR supports the POT, consistent with the findings of Xu et al. [57].

4.4. Robustness Checks

We re-estimate all models with independent and control variables lagged one year and exclude the year 2020 because of the COVID-19 pandemic. The results are shown in Table 8, which is similar to the findings of Table 6. We also use the debt-to-equity ratio and return on equity (measured through the ratio of net income to average shareholders' equity) to replace DAR and ROA and re-estimate Models (1)–(3). The results are similar to those shown in Table 5.

Table 6. Regression results of Models (1)–(3).

Variable	Model (1)	Model (2)	Model (3)
	DAR	ROA	DAR
Constant	0.850 *** (3.65)	−0.265 *** (−3.85)	0.280 (1.22)
MVAIC	−0.009 * (−1.65)	0.031 *** (17.92)	0.038 *** (4.48)
ROA			−1.450 *** (−7.25)
DAR		−0.151 *** (−7.25)	
SIZE	−0.009 (−0.82)	0.011 *** (3.73)	0.010 (0.99)
FIX	−0.141 (−1.38)	0.015 (0.51)	−0.089 (−0.98)
SALES	0.013 (0.45)	0.028 *** (3.32)	0.052 * (1.91)
CR	−0.078 *** (−9.82)	−0.007 ** (−2.42)	−0.070 *** (−9.95)
NDTS	−0.208 (−0.19)	0.879 *** (2.88)	1.112 (1.15)
YEAR	Yes	Yes	Yes
R^2	0.3914	0.7686	0.5244
Adj. R^2	0.3528	0.7526	0.4915
F	10.13 ***	48.03 ***	15.94 ***
N	202	202	202

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *t*-values are in parentheses.

Table 7. Regression results of Models (4)–(6).

Variable	Model (4)	Model (5)	Model (6)
	DAR	ROA	DAR
Constant	0.931 *** (3.80)	−0.070 (−1.40)	0.339 * (1.79)
CEE	0.185 * (1.77)	0.223 *** (10.73)	0.667 *** (7.62)
HCE	−0.021 ** (−1.98)	0.027 *** (13.20)	0.058 *** (5.73)
SCE	−0.016 (−1.19)	0.005 * (1.92)	0.004 (0.40)
RCE	−0.020 (−0.73)	−0.007 (−1.39)	−0.030 (−1.47)
DAR		−0.176 *** (−12.20)	
ROA			−2.536 *** (−12.20)
SIZE	−0.012 (−1.11)	0.004 (1.64)	0.002 (0.27)

Table 7. *Cont.*

Variable	Model (4)	Model (5)	Model (6)
	DAR	ROA	DAR
FIX	−0.137 (−1.32)	−0.009 (−0.45)	−0.100 (−1.28)
SALES	0.010 (0.33)	0.022 *** (3.68)	0.060 *** (2.66)
CR	−0.073 *** (−8.83)	−0.005 ** (−2.54)	−0.053 *** (−8.29)
NDTS	−0.948 (−0.82)	0.314 (1.37)	0.270 (0.31)
YEAR	Yes	Yes	Yes
R^2	0.4037	0.8927	0.6695
Adj. R^2	0.3556	0.8835	0.6409
F	8.39 ***	96.23 ***	23.42 ***
N	202	202	202

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *t*-values are in parentheses.

Table 8. Regression results of one-year lagged effect.

Variable	Model (1)	Model (2)	Model (3)
	DAR	ROA	DAR
Constant	0.035 (0.09)	−0.166 (−0.91)	−0.176 (−0.50)
MVAIC	−0.015 * (−1.86)	0.011 *** (2.74)	0.039 *** (3.07)
DAR		0.047 (1.25)	
ROA			−1.668 *** (−5.29)
SIZE	0.029 * (1.75)	0.003 (0.41)	0.031 * (1.91)
FIX	−0.187 (−1.22)	0.085 (1.13)	−0.057 (−0.39)
SALES	0.055 (1.24)	−0.025 (−1.14)	0.109 ** (2.62)
CR	−0.061 *** (−6.00)	0.007 (1.35)	−0.053 *** (−5.70)
NDTS	−0.902 (−0.54)	1.113 (1.35)	−0.314 (−0.20)
YEAR	Yes	Yes	Yes
R^2	0.2820	0.1662	0.4025
Adj. R^2	0.2303	0.0997	0.3539
F	5.46 ***	2.50 ***	8.27 ***
N	150	150	150

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *t*-values are in parentheses.

5. Discussion

Our findings show that IC-intensive agricultural companies have low levels of financial leverage. That is, firms with high levels of IC tend to borrow less. This study corroborates the hypothesis in the capital structure literature that intangible-intensive firms have low firm leverage due to high bankruptcy cost [36,83,84]. IC could become an important determinant when making capital structure decisions. However, Liu and Wong [85] reported a positive relationship between IC measured by three patent-based variables and debt in high-tech firms. The findings of Sardo and Serrasqueiro [86] also revealed that European high-tech firms rely more on internal finance to fund IC assets instead of debt.

We find that an increase in IC can lead to high profitability of Chinese agricultural listed companies. Xu and Wang [9] and Xu and Zhang [75] also found the same results. Kozera [87] claimed that IC is important to generate value in the Polish agricultural sector. Modern agriculture needs to utilize the wealth of IC and manage knowledge bases to improve productivity and efficiency [88].

Firm profitability is found to partially mediate the relationship between IC and financial leverage. For Italian firms, D'Amato [41] also confirmed the mediating role of firm profitability between them. Based on the POT, profitable firms are more likely to use equity to finance their IC investment. This study provides empirical evidence in the mechanism of IC and financial leverage.

When dividing MVAIC into its four components, investment in HC can lower firms' financial leverage, while physical capital is found to have an opposite impact, consistent with Dalwai and Sewpersadh [42]. SC and RC have a negative but non-significant impact on financial leverage. Modern agriculture needs smart devices to improve production efficiency, and these expenses might result in the financial burden of agricultural companies. For employees, although employee training causes expenses, efficient working methods and skills can reduce production costs, thus improving firm profits [89,90]. By analyzing Russian companies, Teplova et al. [91] pointed out that increasing IC elements can reduce the cost of debt. A recent study by D'Amato [41] revealed that CEE, HCE, and SCE have a significant and negative impact on financial leverage.

Regarding the impact of IC elements on firm profitability, our results show that human and structural capitals can enhance the ROA indicator in agribusinesses. RC is not related to firm profitability, which is consistent with Xu et al. [27], Xu and Zhang [75], and Zhang et al. [92]. According to Xu and Wang [9] and Xu and Zhang [75], the profitability of Chinese agricultural companies is determined by physical capital and HC. Employing the original VAIC model, Lee and Mohammed [93] found that physical assets and SC have a positive impact on agricultural firms' profitability in Malaysia. Ovechkin et al. [94] used their own method to estimate IC and found that the utilization efficiency of SC and the stock of HC have the biggest impact on the profitability of firms operating in the agribusiness industry. However, Ivanovic et al. [95] argued that physical capital is the most important element of IC, and that SC has a negative influence on the ROA of agricultural firms in West Balkan countries. From the prospect of RC, agricultural development depends on new economic growth drivers and investment promotion [96].

6. Conclusions

Based on a dataset of 36 Chinese agricultural listed companies during the 2014–2020 period, this study examines the relationship between IC on financial leverage and the mediating role of firm profitability on this relationship. Financial leverage is measured by the debt-to-asset ratio, and IC is measured via the MVAIC model. The main conclusions are summarized as follows:

(1) Companies with a high level of IC are less leveraged in China's agricultural sector.
(2) IC investment can enhance the profitability of Chinese agricultural listed companies. Regarding IC components, HC and SC positively affect firm profitability.
(3) Firm profitability partially mediates the relationship between IC and firms' financial leverage.

The theoretical contributions of this paper are two-fold. First, in our study, new evidence is provided on the relationship between IC and financial leverage with the introduction of firm profitability as the mediator. Researchers could benefit from exploring potential mediating factors between IC and financial leverage. Second, managers could have a deeper understanding of the channels through which this relationship operates when making financing decisions.

The findings also provide practical implications and useful advice for agricultural businesses. Firstly, agricultural listed companies should increase investment in IC resources and estimate the impact of these resources on financial leverage in order to maintain a reasonable debt structure. Because intellectual assets generally have higher risk than physical assets, such companies would be advised not to finance them with much debt. Secondly, the results show that IC improves firms' profitability, which could make companies more independent from external financing. Therefore, corporate managers should utilize leverage in such a positive way. Thirdly, corporate managers should emphasize the important role of HC, strengthen the training of employees, and make an incentive mechanism to motivate their employees. Finally, agricultural listed companies should disclose information on IC management so that bankers can make rational decisions on the supply of debt capital.

There are some limitations in this paper. First, our sample is only limited to agricultural listed companies and further studies should include other industries. Second, other potential mediators are needed to explore the mechanism between IC and financial leverage in more detail. In addition, other IC components (e.g., innovation capital and process capital) could be included in the further studies.

Author Contributions: Conceptualization, G.J. and J.X.; methodology, J.X.; software, J.X.; validation, G.J. and J.X.; formal analysis, J.X.; data curation, J.X.; writing—original draft preparation, G.J. and J.X.; writing—review and editing, G.J. and J.X.; supervision, J.X.; project administration, G.J. and J.X.; funding acquisition, J.X. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Shandong Provincial Humanities and Social Sciences Research Project (grant number 2021-YYGL-09), the Qingdao Philosophy and Social Science Planning Project (grant number QDSKL2101245), and the Scientific Research Foundation for High-Level Talents of Qingdao Agricultural University (grant number 6631120701).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: No new data were created or analyzed in this study. Data sharing is not applicable to this article.

Acknowledgments: We would like to thank the editors and the anonymous reviewers for their valuable comments and suggestions on earlier drafts.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Wang, W.-Y.; Chang, C. Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan. *J. Intellect. Cap.* **2005**, *6*, 222–236. [CrossRef]
2. Xu, J.; Wang, B. Intellectual capital, financial performance and companies' sustainable growth: Evidence from the Korean manufacturing industry. *Sustainability* **2018**, *10*, 4651. [CrossRef]
3. Xu, J.; Li, J. The impact of intellectual capital on SMEs' performance in China: Empirical evidence from non-high-tech vs. high-tech SMEs. *J. Intellect. Cap.* **2019**, *20*, 488–509. [CrossRef]
4. Xu, J.; Liu, F. The impact of intellectual capital on firm performance: A modified and extended VAIC model. *J. Compet.* **2020**, *12*, 161–176. [CrossRef]
5. Ge, F.; Xu, J. Does intellectual capital investment enhance firm performance? Evidence from pharmaceutical sector in China. *Technol. Anal. Strateg. Manag.* **2021**, *33*, 1006–1021. [CrossRef]
6. Xu, J.; Liu, F. Nexus between intellectual capital and financial performance: An investigation of Chinese manufacturing industry. *J. Bus. Econ. Manag.* **2021**, *22*, 217–235. [CrossRef]
7. Xu, J.; Zhang, Y. Exploring the nonlinear effect of intellectual capital on financial performance: Evidence from listed shipping companies in China. *Complexity* **2021**, *2021*, 9004907. [CrossRef]

8. Lev, B. *Intangibles: Management, Measurement, and Reporting*; Brookings Institution Press: Washington, DC, USA, 2001.
9. Xu, J.; Wang, B. Intellectual capital and financial performance of Chinese agricultural listed companies. *Custos Agronegocio Line* **2019**, *15*, 273–290.
10. Kozera-Kowalska, M. Intellectual capital: ISVA, the alternative way of calculating creating value in agricultural entities—Case of Poland. *Sustainability* **2020**, *12*, 2645. [CrossRef]
11. Nešković, S.; Jovanović, Z.; Čavlin, M. Economic intelligence and intellectual capital in agriculture competitiveness—Case study. *Ekon. Poljopr.* **2016**, *63*, 445–459. [CrossRef]
12. Cisneros, M.A.I.; Hernandez-Perlines, F. Intellectual capital and Organization performance in the manufacturing sector of Mexico. *Manag. Decis.* **2018**, *56*, 1818–1834. [CrossRef]
13. Ozkan, N.; Cakan, S.; Kayacan, M. Intellectual capital and financial performance: A study of the Turkish Banking Sector. *Borsa Istanb. Rev.* **2017**, *17*, 190–198. [CrossRef]
14. Xu, J.; Haris, M.; Yao, H. Should listed banks be concerned with intellectual capital in emerging Asian markets? A comparison between China and Pakistan. *Sustainability* **2019**, *11*, 6582. [CrossRef]
15. Vidyarthi, H.; Tiwari, R. Cost, revenue, and profit efficiency characteristics, and intellectual capital in Indian Banks. *J. Intellect. Cap.* **2019**, *21*, 1–22. [CrossRef]
16. Ousama, A.A.; Hammami, H.; Abdulkarim, M. The association between intellectual capital and financial performance in the Islamic banking industry: An analysis of the GCC banks. *Int. J. Islamic Middle East. Financ. Manag.* **2020**, *13*, 75–93. [CrossRef]
17. Zhu, W.; Dai, X.; Tian, Y.; Hu, X.; Chao, Z. How intellectual capital combination method can improve corporate performance in China's information technology industry. *IEEE Access* **2020**, *8*, 4824–4837. [CrossRef]
18. Pulic, A. VAIC^{TM}—An accounting tool for IC management. *Int. J. Technol. Manag.* **2000**, *20*, 702–714. [CrossRef]
19. Edvinsson, L.; Sullivan, P. Developing a model for managing intellectual capital. *Eur. Manag. J.* **1996**, *14*, 356–364. [CrossRef]
20. Fincham, R.; Roslender, R. Intellectual capital accounting as management fashion: A review and critique. *Eur. Account. Rev.* **2003**, *12*, 781–795. [CrossRef]
21. Bontis, N. Intellectual capital: An exploratory study that develops measures and models. *Manag. Decis.* **1998**, *36*, 63–76. [CrossRef]
22. Edvinsson, L.; Malone, M. *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower*; Harper Collins: New York, NY, USA, 1997.
23. Xu, J.; Wang, B. Intellectual capital performance of the textile industry in emerging markets: A comparison with China and South Korea. *Sustainability* **2019**, *11*, 2354. [CrossRef]
24. Xu, J.; Shang, Y.; Yu, W.; Liu, F. Intellectual capital, technological innovation and firm performance: Evidence from China's manufacturing sector. *Sustainability* **2019**, *11*, 5328. [CrossRef]
25. Weqar, F.; Khan, A.M.; Haque, S.M.I. Exploring the effect of intellectual capital on financial performance: A study of Indian banks. *Meas. Bus. Excell.* **2020**, *24*, 511–529. [CrossRef]
26. Xu, J.; Li, J. The interrelationship between intellectual capital and firm performance: Evidence from China's manufacturing sector. *J. Intellect. Cap.* **2022**, *23*, 313–341. [CrossRef]
27. Xu, X.L.; Li, J.; Wu, D.; Zhang, X. The intellectual capital efficiency and corporate sustainable growth nexus: Comparison from agriculture, tourism and renewable energy sector. *Environ. Dev. Sustain.* **2021**, *23*, 16038–16056. [CrossRef]
28. Youndt, M.A.; Subramaniam, M.; Snell, S.A. Intellectual capital profiles: An examination of investments and returns. *J. Manag. Stud.* **2004**, *41*, 335–361. [CrossRef]
29. Stewart, T.A. *Intellectual Capital: The New Wealth of Organizations*; Doubleday: New York, NY, USA, 1997.
30. Bontis, N.; Dragonetti, N.C.; Jacobsen, K.; Roos, G. The knowledge toolbox: A review of the tools available to measure and manage intangible resources. *Eur. Manag. J.* **1999**, *17*, 391–402. [CrossRef]
31. Roos, G.; Roos, J. Measuring your company's intellectual performance. *Long Range Plan.* **1997**, *30*, 413–426. [CrossRef]
32. Xu, X.-L.; Yang, X.-N.; Zhan, L.; Liu, C.K.; Zhou, N.-D.; Hu, M. Examining the relationship between intellectual capital and performance of listed environmental protection companies. *Environ. Prog. Sustain. Energy* **2017**, *36*, 1056–1066. [CrossRef]
33. Li, X.; Nosheen, S.; Ul Haq, N.; Gao, X. Value creation creation during fourth industrial revolution: Use of intellectual capital by most innovative companies of the world. *Technol. Forecast. Soc. Chang.* **2021**, *163*, 120479. [CrossRef]
34. Harc, M. The relationship between tangible assets and capital structure of small and medium-sized companies in Croatia. *Ekon. Vjesn.* **2015**, *28*, 213–224.
35. Harris, M.; Raviv, A. The theory of capital structure. *J. Financ.* **1991**, *46*, 297–355. [CrossRef]
36. Frank, M.Z.; Goyal, V.K. Testing the pecking order theory of capital structure. *J. Financ. Econ.* **2003**, *67*, 217–248. [CrossRef]
37. de Jong, A.; Kabir, R.; Nguyen, T.T. Capital structure around the world: The roles of firm- and country-specific determinants. *J. Bank Financ.* **2008**, *32*, 1954–1969. [CrossRef]
38. Fan, J.P.H.; Titman, S.; Twite, G. An international comparison of capital structure and debt maturity choices. *J. Financ. Quant. Anal.* **2012**, *47*, 23–56. [CrossRef]
39. Fu, Y.L. Firm intellectual capital and structure optimization. *China Ind. Econ.* **2002**, *3*, 83–90. (In Chinese)
40. Lim, S.C.; Macias, A.J.; Moeller, T. Intangible assets and capital structure. *J. Bank Financ.* **2020**, *118*, 105873. [CrossRef]
41. D'Amato, A. Does intellectual capital impact firms' capital structure? Exploring the role of firm risk and profitability. *Manag. Financ.* **2021**, *47*, 1337–1356. [CrossRef]

42. Dalwai, T.; Sewpersadh, N.S. Intellectual capital and institutional governance as capital structure determinants in the tourism sector. *J. Intellect. Cap.* **2021**. [CrossRef]
43. Spender, J.-C.; Grant, R.M. Knowledge and the firm: Overview. *Strateg. Manag. J.* **1996**, *17*, 5–9. [CrossRef]
44. Jardon, C.M. The use of intellectual capital to obtain competitive advantages in regional small and medium enterprises. *Knowl. Manag. Res. Pract.* **2015**, *13*, 486–496. [CrossRef]
45. Ibarra-Cisneros, M.A.; Hernández-Perlines, F.; Rodríguex-García, M. Intellectual capital, organisational performance and competitive advantage. *Eur. J. Int. Manag.* **2020**, *14*, 976–998. [CrossRef]
46. Sydler, R.; Haefliger, S.; Pruksa, R. Measuring intellectual capital with financial figures: Can we predict firm profitability? *Eur. Manag. J.* **2014**, *32*, 244–259. [CrossRef]
47. Asare, N.; Alhassan, A.L.; Asamoah, M.E.; Ntow-Gyamfi, M. Intellectual capital and profitability in an emerging insurance market. *J. Econom. Adm. Sci.* **2017**, *33*, 2–19. [CrossRef]
48. Gupta, K.; Goel, S.; Bhatia, P. An analysis of intellectual capital and firms' profitability: With reference to Indian IT companies. *NMIMS Manag. Rev.* **2019**, *37*, 77–91.
49. Haris, M.; Yao, H.; Tariq, G.; Malik, A.; Javaid, H.M. Intellectual capital performance and profitability of banks: Evidence from Pakistan. *J. Risk Financ. Manag.* **2019**, *12*, 56. [CrossRef]
50. Liu, S.; Yu, Q.; Zhang, L.; Xu, J.; Jin, Z. Does intellectual capital investment improve financial competitiveness and green innovation performance? Evidence from renewable energy companies in China. *Math. Probl. Eng.* **2021**, *2021*, 9929202. [CrossRef]
51. Olarewaju, O.M.; Msomi, T.S. Intellectual capital and financial performance of South African development community's general insurance companies. *Heliyon* **2021**, *7*, e06712. [CrossRef]
52. Neves, E.; Proença, C. Intellectual capital and financial performance: Evidence from Portuguese banks. *Int. J. Learn. Intellect. Cap.* **2021**, *18*, 93–108. [CrossRef]
53. Ren, C.; Ting, I.W.K.; Kweh, Q.L. A value-added view of intellectual capital and financial performance in knowledge management: A case of Chinese insurance companies. *Int. J. Learn. Intellect. Cap.* **2021**, *18*, 188–218. [CrossRef]
54. Firer, S.; Williams, M.S. Intellectual capital and traditional measures of corporate performance. *J. Intellect. Cap.* **2003**, *4*, 348–360. [CrossRef]
55. Qomariah, N.; Nursaid, E.B.S. Improving financial performance and profits of pharmaceutical companies during a pandemic: Study on environmental performance, intellectual capital and social responsibility. *Qual.-Access Success* **2021**, *22*, 154–165.
56. Fama, E.F.; French, K.R. Testing trade-off and pecking order predictions about dividends and debt. *Rev. Financ. Stud.* **2002**, *15*, 1–33. [CrossRef]
57. Xu, J.; Sun, Z.; Shang, Y. Capital structure and financial performance in China's agricultural sector: A panel data analysis. *Custos Agronegocio Line* **2021**, *17*, 445–463.
58. Singh, B.; Singh, M. Impact of capital structure on firm's profitability: A study of selected listed cement companies in India. *Pac. Bus. Rev. Int.* **2016**, *8*, 46–54.
59. Nguyen, H.T.; Nguyen, A.H. The impact of capital structure on firm performance: Evidence from Vietnam. *J. Asian Financ. Econ. Bus.* **2020**, *7*, 97–105. [CrossRef]
60. Ullah, A.; Pinglu, C.; Ullah, S.; Zaman, M.; Hashmi, S.H. The nexus between capital structure, firm-specific factors, macroeconomic factors and financial performance in the textile sector of Pakistan. *Heliyon* **2020**, *6*, e04741. [CrossRef]
61. Mathur, N.; Tiwari, S.C.; Ramaiah, T.S.; Mathur, H. Capital structure, competitive intensity and firm performance: An analysis of Indian pharmaceutical companies. *Manag. Financ.* **2021**, *47*, 1357–1382. [CrossRef]
62. Thi, A.H.V.; Phung, T.D. Capital structure, working capital, and governance quality affect the financial performance of small and medium enterprises in Taiwan. *J. Risk Financ. Manag.* **2021**, *14*, 381. [CrossRef]
63. Frank, M.Z.; Goyal, V.K. Capital structure decisions: Which factors are reliably important? *Financ. Manag.* **2009**, *38*, 1–37. [CrossRef]
64. Duan, Y.Y.; Wang, R.N.; Zhou, W. Analysis of the Dynamic Impact of Intangible Assets on Capital Structure of Listed Companies in the Construction Industry. 2019. Available online: https://iopscience.iop.org/article/10.1088/1755-1315/330/2/022093/pdf (accessed on 10 October 2021).
65. Guo, H.; Legesse, T.S.; Tang, J.; Wu, Z. Financial leverage and firm efficiency: The mediating role of cash holding. *Appl. Econ.* **2021**, *53*, 2108–2124. [CrossRef]
66. Nguyen, C.D.T.; Dang, H.T.T.; Phan, N.H.; Nguyen, T.T.T. Factors affecting financial leverage: The case of Vietnam firms. *J. Asian Financ. Econ. Bus.* **2020**, *7*, 801–808. [CrossRef]
67. Obeidat, S.; Al-Tamimi, K.; Hajjat, E. The effects of intellectual capital and financial leverage on evaluating market performance. *J. Asian Financ. Econ. Bus.* **2021**, *8*, 201–208.
68. Pernamasari, R.; Sugiyanto. The effect of intellectual capital and debt policy on bankruptcy predictions and its implications on firm value. *Asian J. Econ. Bus. Account.* **2021**, *21*, 37–49. [CrossRef]
69. Zhou, M.; Li, K.; Chen, Z. Corporate governance quality and financial leverage: Evidence from China. *Int. Rev. Financ. Anal.* **2021**, *73*, 101652. [CrossRef]
70. Iqbal, N.; Xu, J.F.; Fareed, Z.; Wan, G.; Ma, L. Financial leverage and corporate innovation in Chinese public-listed firms. *Eur. J. Innov. Manag.* **2022**, *25*, 299–323. [CrossRef]

71. Pirogova, O.; Plotnilov, V. Intellectual Capital Management within the Framework of the VBM Concept. 2020. Available online: https://www.e3s-conferences.org/articles/e3sconf/pdf/2020/17/e3sconf_ktti2020_04007.pdf (accessed on 11 January 2021).
72. Vo, D.H.; Tran, N.P. Measuring national intellectual capital: A novel approach. *J. Intellect. Cap.* **2021**. [CrossRef]
73. Ståhle, P.; Ståhle, S.; Aho, S. Value added intellectual capital (VAIC): A critical analysis. *J. Intellect. Cap.* **2011**, *12*, 531–551. [CrossRef]
74. Xu, X.L.; Chen, H.H.; Zhang, R.R. The impact of intellectual capital efficiency on corporate sustainable growth–Evidence from smart agriculture in China. *Agriculture* **2020**, *10*, 199. [CrossRef]
75. Xu, J.; Zhang, Y. Does intellectual capital measurement matter in financial performance? An investigation of Chinese agricultural listed companies. *Agronomy* **2021**, *11*, 1872. [CrossRef]
76. Sharma, R.K. Factors affecting financial leveraging for BSE listed real estate development companies in India. *J. Financ. Manag. Prop. Constr.* **2018**, *23*, 274–294. [CrossRef]
77. Dakua, S. Effect of determinants on financial leverage in Indian steel industry: A study on capital structure. *Int. J. Financ. Econ.* **2019**, *24*, 427–436. [CrossRef]
78. Ibrahim, H.; Lau, T.C. The determinants of financial leverage for surviving listed companies in Malaysia. *Int. J. Bus. Soc.* **2019**, *20*, 75–94.
79. Van Hung, D.; Nhung, L.T. Estimation of factors affecting the financial leverage of enterprises in Vietnam. *Adv. Appl. Stat.* **2021**, *69*, 23–40.
80. Baron, R.M.; Kenny, D.A. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J. Pers. Soc. Psychol.* **1986**, *51*, 1173–1182. [CrossRef]
81. Liu, L.; Xu, J.; Shang, Y. Determining factors of financial performance of agricultural listed companies in China. *Custos Agronegocio Line* **2020**, *16*, 297–314.
82. Ionita, C.; Dinu, E. The effect of intangible assets on sustainable growth and firm value–Evidence on intellectual capital investment in companies listed on Bucharest Stock Exchange. *Kybernetes* **2021**, *50*, 2823–2849. [CrossRef]
83. Titman, S.; Wessels, R. The determinants of capital structure choice. *J. Financ.* **1988**, *43*, 1–19. [CrossRef]
84. Delcoure, N. The determinants of capital structure in transitional economies. *Int. Rev. Econ. Financ.* **2007**, *16*, 400–415. [CrossRef]
85. Liu, Q.; Wong, K.P. Intellectual capital and financing decisions: Evidence from the U.S. patent data. *Manag. Sci.* **2011**, *57*, 1861–1878. [CrossRef]
86. Sardo, F.; Serrasqueiro, Z. Intellectual capital and high-tech firms' financing choices in the European context: A panel data analysis. *Quant. Financ. Econ.* **2021**, *5*, 1–18. [CrossRef]
87. Kozera, M. The Impact of Intellectual Capital Efficiency on the Profitability of Agricultural Enterprises. In *The Essence and Measurement of Organizational Efficiency*; Springer Proceedings in Business and, Economics; Dudycz, T., Osbert-Pociecha, G., Brycz, B., Eds.; Springer: Cham, Switzerland, 2016.
88. Kader, M. Intellectual capital management in agricultural research efforts and the role of smartcard applications in enabling knowledge exchange. *J. Agric. Trop. Subtrop.* **2001**, *102*, 53–58.
89. Ferguson, K.L.; Reio, T.G. Human resource management systems and firm performance. *J. Manag. Dev.* **2010**, *29*, 471–494. [CrossRef]
90. Tanaka, M. The role of human capital on the performance of manufacturing firms in Bangladesh. *Manag. Decis. Econ.* **2021**, *42*, 21–33.
91. Teplova, T.V.; Sokolova, T.V.; Teplov, A.S. Intellectual Capital of Russian Companies as a Driver of Reducing the Cost of Debt. 2017. Available online: http://www.econorus.org/repec/journl/2017-36-107-134r.pdf (accessed on 10 October 2021).
92. Zhang, L.; Jin, Z.-J.; Xu, J. The impact of intellectual capital on financial performance and sustainable development of agricultural listed companies. *J. Qingdao Agric. Univ. (Soc. Sci.)* **2021**, *33*, 40–45. (In Chinese)
93. Lee, S.P.; Mohammed, S. Intellectual capital on listed agricultural firms' performance in Malaysia. *Int. J. Learn. Intellect. Cap.* **2014**, *11*, 202–221. [CrossRef]
94. Ovechkin, D.V.; Romashkina, G.F.; Davydenko, V.A. The impact of intellectual capital on the profitability of Russian agricultural firms. *Agronomy* **2021**, *11*, 286. [CrossRef]
95. Ivanovic, T.; Maksimovic, G.; Mandaric, M.; Radivojevic, N.; Jovic, M. The impact of intellectual capital on the financial performance of agricultural enterprises: Evidence from the West Balkans Counties. *Custos Agronegocio Line* **2021**, *17*, 350–376.
96. Wang, X.; Chen, W. Solution to the "ARF" (Agriculture, Rural Land, Farmers) Problems in China: An Intellectual Capital Framework. 2008. Available online: https://ieeexplore.ieee.org/document/4680294 (accessed on 19 November 2021).