

The Influence of Intellectual Capital on Financial Leverage Through Firm Risk and Profitability

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DOI: <https://doi.org/10.52403/ijrr.20221213>

ABSTRACT

Data from IDX Statistics 2020 state that the financial sector, especially banking sector has market capitalization rate at 33% of all the total market capitalization in Indonesia. The rate of the market capitalization of banking sector shows that bank sector has a big role in economics of country. This study analyzes the effect of intellectual capital on financial leverage with firm risk and profitability as mediating variables of conventional commercial foreign exchange banks in Indonesia Stock Exchange. The data collection method for this research is a literature study and documentation method, that is the financial statements of conventional commercial foreign exchange banks in the Indonesia Stock Exchange that collecting from 2016 to 2020. There are 29 populations who are all sampled. This research method is descriptive data and Partial Least Square (PLS). The results of the study show that only VACA, VAIC indicator, shaping the value of intellectual capital. Intellectual capital has a negative and significant effect on financial leverage. Intellectual capital has a positive and significant effect on firm risk. intellectual capital has a positive and significant effect on profitability. Firm risk and profitability are not able to mediate the influence of intellectual capital on financial leverage. Firm risk has a positive and insignificant effect on financial leverage. Profitability has a positive and significant effect on financial leverage.

Keywords: Financial Leverage, Firm Risk, Intellectual Capital, Profitability

INTRODUCTION

Banking plays an important role in economic development of a country. Banks are intermediary for owners and users of funds to meet; therefore, banks are involved in the micro and macro-scale of a country's economy. Based on IDX statistics 2020, the financial sector, especially banking, has a market capitalization level of 33% of the total market capitalization. This shows that the banking sector has a major role in a country's economy. Based on the World Economic Outlook from the IMF (2008) in 2008, world economic growth declined to 3.7% from 4.9% in 2007, the slowdown in world economic growth was due to the US economic downturn in 2008, from 2,2% to 0,5%.

According to Brealy et al. (2015) capital structure decision-making is a choice between funding with equity or funding with debt. Brealey et al. (2015) define debt funding as financial leverage. POJK Regulation No. 11/POJK.03/2016 regulates the level of leverage in banking, namely stating that the level of bank leverage may be in the range of 89-92% and the minimum bank capital is in the range of 8-11%. As with other sectors, financial leverage in banking also has the same function and has an impact on company performance, even though banking is a sector with a high level of leverage because it has to maintain its solvency, the amount of debt in the banking sector needs to be taken into account in making capital structure decisions, because

the amount of debt that is too large compared to the amount of its assets reduces the company's ability to meet its obligations.

According to Jin and Xu (2022) there is a paradox between company investment in intellectual capital and financial leverage, even though intellectual capital does not support the use of debt due to the large risks, it can increase company income and increase the company's debt capability.

Factors that affect fluctuations in a company's financial leverage are the development of sources of intellectual capital or intangible assets (D'Amanto, 2020; Jin and Xu, 2022), profitability (D'Amanto, 2020; Jin and Xu, 2022; Dakua, 2018; Odit and

Gobardhun, 2011; Nadem et al., 2012; Pandey, 2001; Onofrei et al., 2015; Ibrahim and Lau, 2019; Mardianto and Budiarsyah; 2021) and firm risk (D'Amanto, 2020; Odit and Gobardhun, 2011; Pandey, 2001). Woodcook and Whiting's research (2011) separates High-IC companies intensive with Low-IC intensive based on the industry. The banking industry is included in the High-IC intensive category and is included in the companies with the largest level of market capital based on the IDX Statistics 2020. In conclusion, companies with intellectual capital levels have the potential to improve company performance.

Table 1. Data on Intangible Assets, Liability Growth and Bank Profit Growth

Company	Year	Intangible Asset Growth	Liability Growth	Profit Growth
PT Bank Central Asia Tbk (BBCA)	2016	0.00%	10.51%	12.58%
	2017	100.00%	8.87%	11.53%
	2018	-27.94%	8.04%	9.79%
	2019	50.68%	9.64%	9.51%
PT Bank Permata Tbk (BNLI)	2016	5.74%	-12.06%	129.09%
	2017	14.90%	-15.31%	998.29%
	2018	2.64%	2.78%	19.48%
	2019	3.58%	5.07%	39.93%
PT Bank Mega Tbk (MEGA)	2016	-96.06%	2.67%	9.09%
	2017	14.04%	15.81%	12.00%
	2018	8.56%	1.10%	17.72%
	2019	13.42%	17.92%	20.14%

Source: IDX.co.id, processed by the author, 2022

In Table 1, in 2019 Bank BCA experienced an increase in intangible assets to 50.68% and an increase in liabilities to 9.64%, this phenomenon is contrary to agency theory which says companies that use intangible assets will reduce the use of debt because the agency cost of debt will increase the cost of debt when there is a conflict of interest between managers and stockholders. Previous research by Myers (1984) and D'Amato (2020) states that intellectual capital negatively affects financial leverage. In 2019, Permata Bank experienced an increase in liabilities of 5.07% and an increase in profits of 39.93%, this is contrary to the pecking order theory (POT) which says a higher level of debt will increase firm risk than reduce company profits. This phenomenon is also different from the research by Dakua (2018) and Castanias (1983) which shows the results that firm risk is negatively related to debt ratios, an

increase in firm risk will reduce financial leverage. In 2017 Bank Mega experienced an increase in profits of 12% and liabilities of 15.81%, this is contrary to POT saying that the use of internal funding will be higher for the companies that has higher levels of profitability. Previous research by Mugosa (2015), Nadem et al. (2012), Pandey (2001), Onofrei et al. (2015), Ibarahim and Lau (2019) show that profitability and financial leverage have a negative relationship. The use of retained earnings and other internal funding will be prioritized over the use of external funding in companies with high profitability.

Based on exposure above this study aims to see the effect of intellectual capital on financial leverage in conventional foreign exchange commercial banks in Indonesia Stock Exchange.

LITERATURE REVIEW

Agency Theory

Agency theory explains that the company's operational activities are influenced by the relationship between stockholders (principal) and managers (agents) who have personal interests, managers expect the availability of free cash flow for investment and company operations while shareholders expect dividend payments, this conflict of interest will cause agency problems and determine the manager's decision making on the company's capital structure which will have an impact on agency costs.

Pecking Order Theory

The pecking order theory was refined by Myers and Majluf (1984) with the assumption that companies will prioritize the use of debt over equity for external funding. Pecking order theory has the following order (Myers, 1984):

1. The company prioritizes internal funding
2. The company will align the Dividend Payout Ratio (DPR) target with investment opportunities and avoid drastic dividend changes.
3. Inflexible dividend policy, fluctuating profitability and unpredictable investment opportunities, meaning that the possibility of investment costs will be less or exceed cash flow from the company's internal activities, if the company is short of cash they will withdraw the securities in the market.
4. When companies need external financing, they issue the safest securities first, in the following order: debt, convertible bonds, and equity.

Financial Leverage

Financial leverage refers to the extent to which the company depends on debt. Ross et al. (2013) defines financial leverage as the extent to which a company depends on debt, and a leveraged company is a company that has debt in its capital structure.

Based on agency theory, companies that have intellectual capital or in accounting terms are called intangible assets will reduce the use of

debt because intellectual capital is a high-risk asset, the high risk arises from the difficulty in monitoring and assessing these assets in currency and cannot be used as collateral. Thus, to avoid agency costs and agency problems, companies will avoid using debt as corporate funding because debt agency costs will increase debt costs when there is a conflict of interest between stockholders and managers. D'Amanto (2020) states that companies whose assets consist mostly of intangible assets or intellectual capital will maintain a lower amount of debt. Jin and Xu's research (2022) states that there is a relationship between intellectual capital and financial leverage. Study Long and Malitz (1985) also stated that the level of debt will be lower in companies that have more intangible assets than tangible assets. Likewise, Booth et al. (2002) on banking in developing countries concluded that the more tangible the asset mix, the higher the long-term debt ratio but the total asset ratio will decrease.

H₁: intellectual capital has a direct negative effect on financial leverage at conventional foreign exchange commercial banks in Indonesia Stock Exchange.

Firm Risk

Indonesian Accounting Standards (IAS) Regulation 38 about Intangible Assets and PSAK 19 explain the relationship between intellectual capital and firm risk, at the time of accounting records, there are several intangible assets that should not be included in the financial statements, thus resulting in asymmetric information between outside parties and parties within the company, the existence of asymmetric information on the company's intellectual capital makes it a high-risk asset. The high risk of intellectual capital is also caused by the infrequent use of intellectual capital as collateral for debt. Agency theory also states that because investment in intangible assets is riskier, companies with total assets dominated by intangible assets will have higher agency costs (Nagaraja and Vinay, 2016).

Research by D'Amanto (2020) and Cantrell,

et al. (2017) stated that companies with intellectual capital-intensive will be more risky than companies with lower intellectual capital because the value is difficult to calculate. Odit and Gobardhun's research (2011) shows that firm risk is negatively related to long-term debt, so high-risk companies will have less debt, but firm risk is not an important determinant when determining short-term debt. Dakua (2018) shows the results that firm risk is negatively related to debt ratios, an increase in firm risk will reduce financial leverage. Research by D'Amanto (2020) shows that firm risk helps explain the relationship between intellectual capital and financial leverage.

H₂: Intellectual capital has a direct positive effect on firm risk in conventional foreign exchange commercial banks in Indonesia Stock Exchange.

H₄: Intellectual capital indirectly affects financial leverage through firm risk at conventional foreign exchange commercial banks in Indonesia Stock Exchange.

H₆: firm risk directly affects financial leverage at conventional commercial banks foreign exchange in Indonesia Stock Exchange.

Profitability

The relationship between intellectual capital and profitability can be explained by the following previous research, research by Zhang and Wang (2019) explains that intellectual capital in each company shows different influences, but in general intellectual capital can increase the company performance. research by Asare et al. (2017); D'Amanto (2020); Suherman (2017) states that intellectual capital is a driver of competitive advantage that will increase the sustainability of the company, and states that companies with high intellectual capital

values generally have high profitability. The same results were found in research by Octavio and Soesetio (2019) on conventional and Islamic banking in Indonesia, the result shows that intellectual capital has a significant positive effect on bank profitability. Xu et al.'s research. (2019) stated that intellectual capital has an impact on bank profitability in the future. The relationship between profitability and financial leverage can be explained by pecking order theory. Based on the pecking order theory, companies with high profitability will first utilize internal funding rather than external funding, such as debt and equity, but if external funding is needed then debt is the first choice and equity is the next choice. Research by Mugosa (2015), Nadem et al. (2012), Pandey (2001), Onofrei et al. (2015) and Ibarahim and Lau (2019), in line with the pecking order theory, which believes that profitability and financial leverage are negatively related. Research by Jin and Xu (2022) and D' Amanto (2020) shows that profitability helps link intellectual capital and financial leverage.

H₃: Intellectual capital has a direct positive effect on profitability in conventional foreign exchange commercial banks in Indonesia Stock Exchange.

H₅: Intellectual capital indirectly affects financial leverage through Profitability at conventional foreign exchange banks in Indonesia Stock Exchange.

H₇: Profitability directly affects the financial leverage of conventional foreign exchange commercial banks in Indonesia Stock Exchange.

Based on the relationship between these variables, the following is the conceptual framework of this study:

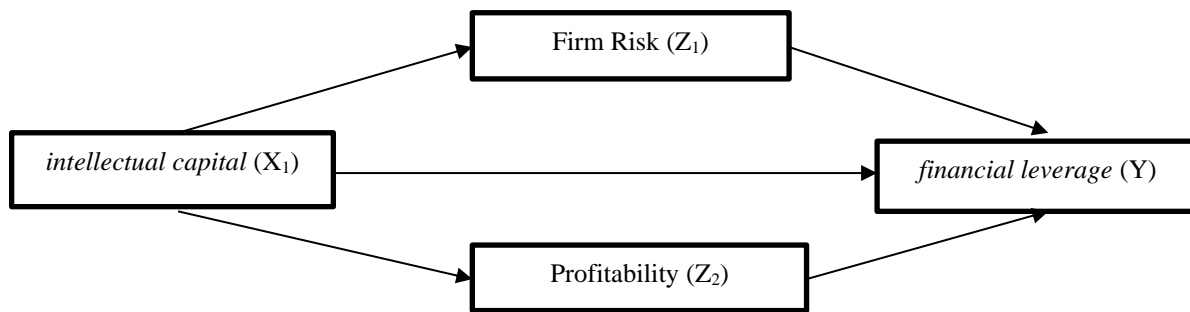


Figure 1. Research Conceptual Framework
Source: processed by the author, 2022.

MATERIALS & METHODS

Analysis of the research data is Partial Least Square (PLS) analysis using SmartPLS software to test the measurement model (outer model) and structural relationship (inner model). According to Ghozali and Latan (2015), PLS is an alternative approach that shifts from a covariance-based SEM approach to a variant-based one. The study used the financial reports of 29 conventional foreign exchange commercial banks on the Indonesia Stock Exchange from 2016 to 2020. The research sample was taken using purposive sampling technique, where the sample selection technique used several criteria. The research criteria are determined based on judgment or based on a certain amount. The considerations for taking this sample are conventional foreign exchange commercial banks on the Indonesia Stock Exchange which have remained listed from January 1st 2022 to December 31st 2020 and have complete data on the variables needed for the research.

The variables studied were intellectual capital (IC) (X) as the independent variable, financial leverage (FL) (Y) as the dependent variable and firm risk (Z₁) and profitability (Z₂) as the intervening variables. Financial Leverage measurement is measured using the Debt-Equity Ratio (Rely, 2018; Lestari, 2021; Velnampy and Niresh, 2012), with the following formula:

$$\text{Debt – Equity ratio} = \frac{\text{Total Liability}}{\text{Stockholder's Equity}}$$

intellectual capital variable is measured using VAIC from Pulic (Xu et. al, 2019; Octavio and Soesetio, 2019), with the

following formula:

$$\text{VAIC} = \text{VACA} + \text{VAHU} + \text{STVA}$$

VACA (Value Added Capital Employed) is the utilization of company resources originating from physical capital. VAHU (Value Added Human Capital) is the utilization of company resources originating from human capital. STVA (Structural Capital Value Added) is the use of company resources derived from structural capital. The calculation of the VAIC indicator is as follows:

$$\text{VACA} = \frac{\text{Value Added}}{\text{Capital Employed}}$$

$$\text{VAHU} = \frac{\text{Value Added}}{\text{Human Capital}}$$

$$\text{STVA} = \frac{\text{Value Added}}{\text{Structural Capital}}$$

$$\text{Value Added} = \text{Net Sales Revenues} \\ - \text{Cost of goods sold} \\ - \text{Depreciation}$$

$$\text{Capital Employed} = \text{Total Asset} - \\ \text{Intangible Asset}$$

$$\text{Human Capital} \\ = \text{Total Expense of Labor (Salary, wages, etc)} \\ \text{Structural Capital} \\ = \text{Value Added} \\ - \text{Human Capital}$$

The intervening variable, namely firm risk, is measured using the Z-index, which is a measure of solvency risk in banking (Beck and Leaven, 2006; Delis et al., 2009; Yeyati and Micco, 2003; Lepetit and Strobel, 2015). The higher the Z value, the lower the probability of bankruptcy. Z-index measurements as follows:

$$Z = \frac{(ROA + EA)}{\sigma ROA}$$

$$EA = \frac{\text{Stakeholder's Equity}}{\text{Total Asset}}$$

$$ROA = \frac{\text{Net Income} + \text{Tax Expense} + \text{Interest Expense}}{\text{Total Asset}}$$

RESULT

The intervening variable, namely profitability, uses Return on Assets (ROA) (Xu et. al, 2019; Octavio and Soesetio, 2019) with the following calculations:

The initial stage of testing is the evaluation of the dimensional level measurement model using the embedded two stage approach, as shown in Figure 2 below:

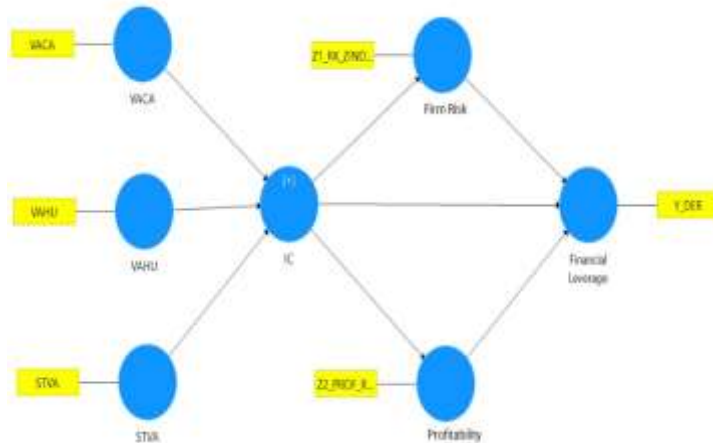


Figure 2. The Second Order Model of the Embedded Two Stage Approach
Source: Secondary data processed, 2022

The first time a dimension level test was carried out with the Second Order Model of the Embedded Two Stage Approach to form a good latent variable score, then at stage 1 a test was carried out on the measurement model (outer model) which was assessed

with outer VIF and outer weight in a formative form. The following is a formative structural model framework that will be used for testing stage 1 (outer model) and stage 2 (inner model).

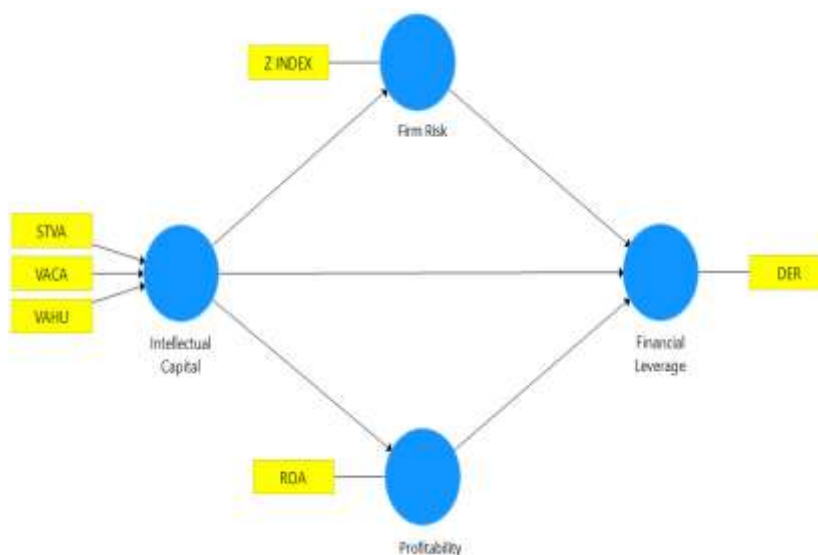


Figure 3. Formative Structural Model
Source: Secondary data processed, 2022

From testing the measurement model (outer model) Figure 3, the outer VIF and outer weight are obtained as follows:

Table 2. Outer VIF

Intellectual Capital Indicator	VIF
STVA	1,023
VACA	1,723
VAHU	1,733

Source: Secondary data processed, 2022

Evaluation of the formative measurement model (Intellectual Capital) which consists of STVA, VACA, and VAHU, each indicator has an outer VIF value <5 , so there are no multicollinear symptoms between items that influence/compose the Intellectual Capital variable.

Table 3. Outer Weight

	Original Sample (O)	Sample Means (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
STVA -> IC	-0.041	-0.068	0.146	0.283	0.778
VACA -> IC	1,044	0.994	0.191	5,466	0.000
VAHU -> IC	-0.063	0.007	0.279	0.225	0.822

Source: Secondary data processed, 2022

Evaluation of the two formative Intellectual Capital (IC) measurement models, only the VACA variable has an outer weight value of 1.044 and a significance of $0.000 < 0.05$, but even so the STVA and VAHU dimensions can still be maintained because the outer VIF

value <5 . Stage 2, namely the evaluation of the structural model (inner model) obtained the path coefficient, R Square, F Square, and the indirect effect, as follows:

Table 4. Path Coefficient

	Original Sample (O)	Sample Means (M)	Standard Deviations	T Statistics	P Values
IC -> Financial Leverage	-0.521	-0.517	0.092	5,639	0.000
IC -> Profitability	0.202	0.227	0.102	1989	0.047
IC -> Firm Risk	0.390	0.419	0.084	4,647	0.000
Profitability -> Financial Leverage	0.181	0.182	0.073	2,468	0.014
Firm Risk -> Financial Leverage	0.073	0.085	0.081	0.902	0.367

Source: Secondary data processed, 2022

IC path coefficient value for Financial Leverage is -0.521, at a significance of 5% T-statistic $5.639 > 1.96$ and P-value of $0.00 < \alpha (0.05)$ means that IC has a negative and significant effect on Financial Leverage. The IC path coefficient value on Profitability is 0.202, at a significance of 5% T-statistic $1.989 > 1.96$ and P-value is $0.047 < \alpha (0.05)$ meaning that IC has a positive and significant effect on Profitability. IC path coefficient value to firm Risk of 0.390, at a significance of 5% T-statistic $4.647 > 1.96$ and P-value of $0.000 < \alpha (0.05)$ means that Intellectual Capital has a positive and significant effect on firm Risk. Profitability path coefficient value on Financial Leverage is 0.181, at a significance of 5% T-statistic $2.468 > 1.96$ and P-Value of $0.014 < \alpha (0.05)$ means that Profitability has a positive and significant effect on Financial Leverage. The path

coefficient value of Firm Risk is 0.073, at a significance of 5% T-statistic $0.902 < 1.96$ and P-value is $0.367 > \alpha (0.05)$ meaning that Firm Risk has a positive and insignificant effect on Financial Leverage.

Table 5. R Square

	R Square
Financial Leverage	0.245
Profitability	0.041
Firm Risk	0.152

Source: Secondary data processed, 2022

R Square of Financial Leverage value is 0.245 or 24.5 percent, this shows that Intellectual Capital, Corporate Risk, and Profitability are able to explain Financial Leverage as much as 24.5 percent and the remaining 75.5 percent is explained by other factors outside the model such as capital regulations, pricing insurance deposits (Gropp and Heider, 2009), liquidity,

institutional ownership, and bank age (Kartika et al., 2018). R Square value of profitability is 0.041 or 4.1 percent, this shows that Profitability can be explained by Intellectual Capital as much as 4.1 percent and the remaining 95.9 percent is explained by other factors outside the model such as cost-to-income ratio, cost-of-fund ratio , macroeconomic environment (Xu et al., 2019), CAR, Net Interest Margin, PDB, Operating Expenses, Operating Revenues

(Sutrisno, 2018). The R Square value of Corporate Risk is 0.152 or 15.2 percent, this shows that Corporate Risk can be explained by Intellectual Capital as much as 15.2 percent and the remaining 84.8 percent is explained by other factors outside the model such as Non-interest income (NII), market power, leverage , equity-to-asset ratio , GDP growth rate, ROA, price-to-book ratio (Xu et al., 2019).

Table 6. Indirect Effects

	Original Sample (O)	Sample Means (M)	Standard Deviations	T Statistics	P Values
IC -> Firm Risk-> Financial Leverage	0.029	0.036	0.036	0.789	0.430
IC -> Profitability -> Financial Leverage	0.037	0.041	0.026	1.411	0.159

Source: Secondary data processed, 2022

Based on Table 6, there is a relationship between intellectual capital and financial leverage in firm risk of 0.029, at a significance of 5% T-statistic $0.789 < 1.96$ and P-value of $0.430 > \alpha (0.05)$, this indicates the risk of the company being unable to mediate the influence of intellectual capital on financial leverage. The relationship between Intellectual capital and financial leverage in Profitability value of 0.037 at a significance of 5% T-statistic $1.411 < 1.96$ and P-Value of $0.159 > \alpha (0.05)$, this shows that profitability is unable to mediate the effect of intellectual capital on financial leverage.

DISCUSSION

From the results of the path coefficient in Table 4 , it explains that intellectual capital significantly influences financial leverage, firm risk and profitability. This suggests that the ownership of intellectual capital in the company's total assets plays a role in making debt decisions (financial leverage), an increase in intellectual capital increases firm risk and also encourages increased profitability in conventional foreign exchange commercial banks in Indonesia Stock Exchange. The results of this study are in line with Long and Malitz (1985), Booth et al. (2002) and D'Amanto (2020) which state that investment in intellectual capital

will reduce the amount of debt. The results of this study are also in line with agency theory and research by D'Amanto (2020) and Cantrell, et al. (2017) which states that companies that have intellectual capital assets will be more at risk. The research results are supported by the research of Asare et al. (2017), D'Amanto (2020) and Suherman (2017) which state that companies that invest in intellectual capital tend to have high profitability. The implication is that the amount of intellectual capital will not only affect the risks that company faced but also increase its profitability, so that the right amount of intellectual capital must balance the level of risk and profit that the company can bear.

The next empirical result in Table 4 is the effect of profitability on financial leverage which shows a positive and significant relationship. The results of this study are different from the pecking order theory and research by Mugosa (2015), Nadem et al. (2012), Pandey (2001), Onofrei et al. (2015), Ibrahimi and Lau (2019), Velnampy and Nires (2012) and Mardianto and Budiarsyah (2021) which state that there is a negative relationship between profitability and financial leverage. The research results are different from previous research and pecking order theory because in the banking sector there are regulations that guarantee a

maximum leverage rate of 89-92%, namely OJK Regulation (POJK) No. 11/POJK.03/2016. The high level of leverage at banks is due to meeting a certain level of capital in order to ensure that solvency is maintained.

The research results from Table 6 show that firm risk and profitability cannot be a mediator between intellectual capital and financial leverage. Banks with a high level of risk cannot apply for additional debt. The results of this study differ from D'Amanto (2020) which states that firm risk is able to mediate the relationship between intellectual capital and financial leverage. Likewise the research of Jin and Xu (2022) and D'Amanto (2020) which shows results that profitability helps explain the negative relationship between intellectual capital and financial leverage. These results are different because the research sample is a banking company that has regulations governing the bank's minimum risk level and the allowable debt level is quite high, namely 89-92%. Likewise with the results of the research in Table 5 which shows the relationship between corporate risk and financial leverage is not significant, this is also due to regulations in banking.

CONCLUSION

Indicator of VACA or physical capital efficiency (equity and current year's profit) is forming value, however VAHU or human capital (costs incurred for labor) and STVA or structural capital (expenses excluding costs for labor) are still calculated as indicators of forming intellectual capital. Based on the hypothesis, it can be concluded that: (1) financial leverage is positively and significantly influenced by profitability but not significantly affected by firm risk, while (2) financial leverage is negatively and significantly influenced by intellectual capital, (3) intellectual capital has a positive effect and significant to company profitability and risk, but (4) firm risk and profitability are unable to mediate the effect of intellectual capital and financial leverage.

Declaration by Authors

Acknowledgement: None

Source of Funding: None

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

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How to cite this article: Annisa Maulida Harahap, Isfenti Sadalia, Nisrul Irawati. The influence of intellectual capital on financial leverage through firm risk and profitability. *International Journal of Research and Review*. 2022; 9(12): 124-134. DOI: <https://doi.org/10.52403/ijrr.20221213>
