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## **THE ROLE OF INNOVATION AND INTELLECTUAL CAPITAL IN IMPROVING COMPANY PERFORMANCE**

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### **ABSTRACT**

Innovation and intellectual capital are essential factors that companies must pay attention to in maintaining their performance and business sustainability. Innovation decisions and investments intellectual capital require support from the owners to improve the company's performance. This study aims to analyze the innovation decisions studied through two strategies: demand-pull and technology push, and the role of intellectual capital in improving company performance, and moderated by family ownership. In this study, the demand-pull and technology push strategy is measured by looking at new product launches and purchases of new equipment by companies for a certain period. Intellectual capital is calculated by using the Value-Added Intellectual Coefficient (VAIC), then Return on Asset (ROA) to measure the company's performance. The subjects of this study were twenty-six (26) companies with family ownership engaged in consumer goods sectors and listed on the Indonesia Stock Exchange (IDX) in the 2015-2019 period. The data used were 130 including 30 data from the study were outliers. This study uses multiple linear regression moderation. The test results show that the innovation factors, namely demand-pull and technology push, and intellectual capital, positively influence company performance. However, family ownership weakens the influence of both innovation factors and can't moderate the effect of intellectual capital on performance.

**Keywords:** innovation, demand-pull, technology push, intellectual capital, performance

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### **INTRODUCTION**

Companies with family ownership are huge in the world, according to Poza (2013) 80 percent to 98 percent of companies in the world is a company that adheres to the system of family ownership. The results of a report from Credit Suisse (2018) say that 1,015 family companies globally have a market capitalization value of 250 million USD or more, and 53 percent are from non-Japan Asia. According to survey data conducted by Price Waterhouse Cooper (2014), more than 95 percent of companies in Indonesia are family businesses. According to Irawan (2016), based on the Badan Pusat Statistik (BPS), companies with a system of family ownership in Indonesia create a

Gross Domestic Product (GDP) of 82.44 where this figure reflects that family companies can have a significant influence and become the main driver for the Indonesian economy.

A family company is a company in which two or more people are family members that serve as the board of directors, seen from the same name, and are shareholders in the company and are consistent with the previous family business (Chang & Shim, 2014). Tjondrorahardja (2005), a company can be said to be a family company when the controlling shares of the company and the company manager are family parties selected based on specific criteria.

In the face of competitive business competition, every company needs to innovate. Innovation is necessary for every company because innovation is an essential determinant of sustainable company performance (Blundell, Griffiths, & Van Reenen, 1999). In addition to innovation, the thing that needs to be utilized by a company is the existence of intellectual capital or intangible assets owned. Intellectual capital needs to be calculated and measured because it can help design and evaluate its strategy implementation. Intellectual capital could help decide the company's decision to diversify and expand, be used as a basis for distribution of compensation, and be used as a communication tool to provide steps to external stakeholders (Marr, Gray & Neely, 2003). When a company has more intellectual capital, it will create better innovation performance and more innovation in developing new products. Innovations and intellectual capital carried out by companies today are expected to improve company performance, which impacts the returns obtained by the company, and then returns these can be distributed to company owners (Karchegani, Sofian & Amin, 2013). The purpose of this study is to determine the role of innovation through technology push, demand-pull, and intellectual capital carried out by family companies that can affect company performance by considering family ownership as a moderating variable.

## **LITERATURE REVIEW**

Rapid environmental changes make companies need to innovate. Innovation is creativity, inventiveness, and strong initiative that can produce something new and has never existed before. Innovation is carried out to create new facilities for humans through discoveries or developments. Research conducted by Soleh (2008) states that innovation has a positive effect on the level of investment, then the level of investment also has a positive effect on company performance. According to Soleh (2008), the better the implementation of innovation in increasing the investment made by the company, the better the performance will be. According to Harsasi (2014), innovation creates ideas or develops technology and produces a new product. Schroeder (2000) formulated three strategies that can be used to introduce new products to the market, namely (1) demand-pull, which is the basis of how a product can be made and sold in the market, in this case, it can be interpreted that the market will determine whether the company needs to create a new product or not, (2) technology push, is the basis that technology is the primary determinant for pursuing profit by innovating so that consumers continue to buy products sold by the company, and (3) inter-functional view.

Furthermore, research on intellectual capital and company performance conducted by McDowell, Peake, Whitney, Coder & Harris, (2018) states a positive relationship between the two components of intellectual capital, namely human capital and

organizational capital, and company performance. This research shows that an efficiently and effectively organized company can utilize skilled and innovative employees to achieve the best performance through innovation.

Research on family ownership on company performance has been done before, but the results are still mixed. A study conducted by Astuti, Rahman and Sudarno (2015) regarding the effect of family ownership on the company's performance with agency cost as the moderating variable. States that there is a positive influence of family ownership on the company's performance. Still, the agency cost as a moderating variable affects the relationship. In family companies, the agency problem between majority and minority shareholders confirms that the effect is entrenchment more dominant. Because of this, the agency costs will be higher. The different studies conducted by Wiranata and Nugrahanti (2013) stated that family ownership harms company profitability. Companies with family ownership systems have personal interests that conflict with management who do not come from families.

#### The Effect of Innovation on Company Performance

The theory resource-based view states that companies with marginal resources can only achieve break-even, but companies with superior resources can generate profits that exceed break-even (Peteraf & Barney, 2003). Research conducted by Nieves & Osorio (2014) stated that the resource-based view can affect a company's innovation capacity and is reinforced by the research results by Urbancova (2013), which says that the resource-based view strategy influences increasing the company's performance and productivity in innovating. A resource-based view is a strategy that can achieve a company's competitive advantage by identifying diverse resources. This approach aims to classify the company's most strategic resources and potentially create a competitive advantage (Akio, 2005).

Estimating the value of a company's resources requires in-depth knowledge of competition, competitors' capabilities, knowledge of the market and its demands, knowledge of the internal company's limits of its capabilities. The wisdom and desire to follow a strategy with a series of emerging opportunities may only be found at the top management level, whereas top management plays an essential role in determining the strategy of the company. This strategy is used to find out what innovations the company must do to achieve a competitive advantage that can improve company performance.

In many studies, the innovation output is often measured by the number of development projects, increased sales of new products, or how often the company launches new products (Laursen and Salter, 2005; Sofka and Grimpe, 2010). Then these studies will evaluate the impact of innovation on company performance by measuring total sales, profits, or market share for all products or services. So, from the explanation of innovation, it can be concluded that the conceptual hypothesis for innovation is as follows.

H1a: Demand-pull has a positive effect on ROA

H1b: Technology push has a positive effect on ROA performance

#### The influence of Intellectual Capital on Company Performance

Intellectual capital leads to the economic value of a company's intangible assets, such as relational capital, organizational capital, and human capital (Bejinaru, 2017; McDowell, Peake, Coder, & Harris, 2018). The main dimensions of identification of intellectual capital, such as relational capital, organizational capital, and human capital,

are essential and can positively influence company performance (Hsu & Fang, 2009; Saxena, 2015). Several other studies have considered the effect of intellectual capital on company performance because the company's resources in the form of intangible assets also create value, along with tangible assets. Intangible assets also play a role in company productivity, which leads to higher performance, so the conceptual hypothesis for intellectual capital is as follows.

H2: Intellectual capital has a positive effect on ROA.

Family Ownership Strengthens the Influence of Innovation and Intellectual Capital on Company Performance

The families of the company owners will generally control companies whose share ownership is majority-owned by families. In a family-owned company, the family considers the company an asset to be passed on to the next generation (Shyu, 2011 and Tsao & Lien, 2011). So they will continue to monitor and control the performance of managers (agents) in managing the company to increase its profitability. Research conducted by Cortés, Sáez, Manchón & Úbeda-García(2015) shows that family companies have an enormous impact in creating products and services as market demands. Intangible assets associated with family companies are the knowledge and abilities of owners and management, values held by family members where both are related to the sustainability and performance of the company (Sirmon & Hitt, 2003).

Based on previous research conducted by Manzaneque, Ramírez & Diéguez-Soto, (2017), which states from a resource-based perspective, family ownership can encourage the ability and willingness to utilize intellectual capital and innovate to increase competitive advantage.

H3: There is a system of family ownership in the company that strengthens the influence of innovation and intellectual capital on firm performance.

This study uses a conceptual framework as follows:

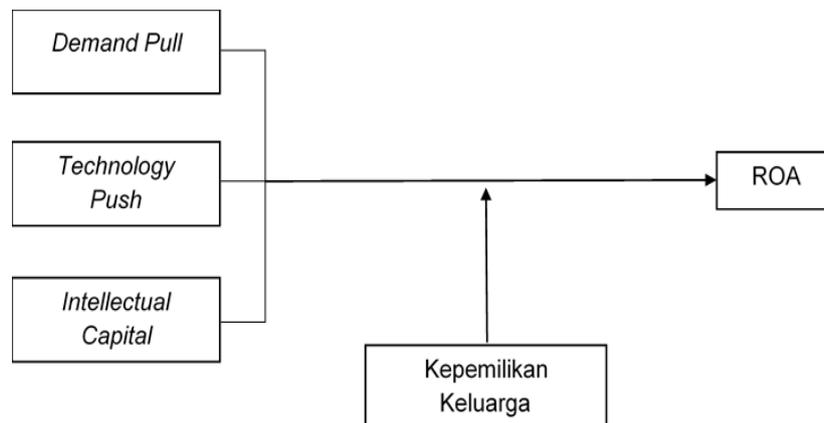


Figure 1. Conceptual Framework

Based conceptual frame image above, obtained a research model as follows:

$$Y = \alpha + b1.DP + b2.TP + b3.IC + b4.KK + b5.DP.KK + b6.TP.KK + b7.IC.KK + \varepsilon$$

Description:

Y = Return on Assets

DP = Demand Pull

IC = Intellectual Capital

A = variable constant

TP = Technology Push

KK = Family Ownership

## METHODS

This study uses secondary data, where the data is to be obtained from existing sources. The data used is in the form of information from the annual reports of companies obtained from the Indonesia Stock Exchange (IDX) website or the official websites of related companies. The annual report used has been audited by an independent auditor so that the information obtained follows the applicable recording and reporting guidelines and standards. In determining the research subject, the criteria for selecting the company to be studied are as follows:

Companies engaged in the sector Consumer Good Industry

A public company listed on the IDX in 2015-2019

Companies with family ownership

Companies that in their annual reports provide information on product and technology innovations

The data used in this study were twenty-six (26) companies in the 2015-2019 period and will be processed using multiple linear regression with the SPSS device. In this study, the variable is demand-pull measured by looking at whether the company innovates on products. Technology push is calculated by looking at the purchase of technology to support the product innovation process (Akova et al., 1998). Intellectual capital is measured using the Value Added Intellectual Coefficient (VAIC), taking into account three things; namely, the Value Added Capital Coefficient (VACA), Value Added Human Capital (VAHU), and Structural Capital Value Added (SCVA) (Pulic, 2000). by looking at whether more than one person in a company has the same last name and occupies the position of directors or commissioners (Tabalujan, 2002) and by seeing whether family members hold controlling shares in the company (Beuren, 2016).

## RESULT AND DISCUSSION

Table 1. Descriptive Statistical Analysis

Variable	Description			
DP	0 = Companies that innovate products in particular year/period			
	1 = Companies that do not innovate products in a specific year/period			
Variables	Minimum	Maximum	Mean	Standard Deviation
TP (in million Rupiah)	455	800.500	111.000,49	178.294,6395
IC	1,58	16,05	5,4068	3,1682
ROA	0	0,61	0,0972	0,0852
KK	0	0,94	0,5777	0,27

Source: Results of Data Analysis

DP is a variable that defines product innovation carried out by the company. Based on the summary of the table above, number 1 is companies that innovate products in a

particular year/period. Then number 0 is companies that do not innovate products in a specific year/period.

TP is defined as the addition of equipment where the equipment is a new technology owned by the company. In supporting product innovation, companies need to improve technology to create the best product. The TP variable in this study has an average of 111,000.49, meaning that the average purchase of equipment made by the company is 111,000.49 million Rupiah with a standard deviation of 178.294.6395 million Rupiah. The standard deviation value is relatively high due to the wide range of additions/purchases of company equipment among research subjects in a specific year/period. PT Hanjaya Mandala Sampoerna Tbk obtained the maximum TP. (HMSP), while PT Mustika Ratu Tbk obtained the minimum TP. (MRAT). HMSP purchased equipment in 2018 because the company wanted to improve business performance, especially volume and market share. HMSP also develops products by launching several products, including Marlboro Filter Black and Dji Sam Soe Magnum Mild. These products are sold in the market at the right price so that they can satisfy all consumers. The HMSP invests in increasing the use of digital tools in business, including mobile applications for stores, consumer databases, and various digital platforms for products offered by the company. The platform is done to establish direct communication with retailers, adult smokers and can obtain information in real-time.

In this study, IC is defined as a collection of knowledge assets owned by the company to improve the company's competitive ability and performance. The IC variable has a mean value of 5.5068 and a standard deviation of 3.1682. The IC variable has a relatively high standard deviation because the range of values of the Value-Added Intellectual Coefficient (VAIC) is quite extensive among research subjects. The maximum IC obtained by PT Ultrajaya Milk Industry Tbk (ULTJ) in 2018 amounted to 16.05 because in 2018, the company added several depots to serve retailers modern so it is necessary to increase the number of employees and improve the quality of work of employees by requiring employees take various tests conducted by third parties. Employees are given some training (training) held within the company and outside the company environment. In comparison, IC was minimum obtained by PT Mustika Ratu Tbk (MRAT) in 2015, which was 1.58, due to the lack of efficiency in utilizing company resources, such as assets and human resources.

ROA is a measure of a company's performance by comparing profits with the number of assets owned by the company. In this study, ROA has a mean of 0.0972 and a standard deviation of 0.0852. Several research subjects have the lowest ROA, namely PT Bumi Teknokultura Unggul Tbk (BTEK) in 2015 and 2016, PT Mustika Ratu Tbk (MRAT) in 2015 and 2019, and PT Sekar Bumi Tbk (SKBM) in 2019 While the highest ROA was obtained by PT FKS Food Sejahtera Tbk (AISA) in 2019, which was 61% where the company could generate income or profit by utilizing or using its assets. It can be proven by the number of total assets owned by the AISA company in 2019 amounting to Rp1,868,966,000,000 and the total net profit obtained by AISA in 2019 was Rp1,134,778,000,000, while in the previous year, AISA suffered a loss which is quite a lot, so it can be concluded that in 2019, AISA used all of its assets to make a profit.

KK is defined as the amount of family ownership in a company, through the amount of share ownership owned by family members, or an entity whose share ownership is also the family. In this study, KK has a mean of 0.5777 and a standard deviation of 0.27. PT Prasadha Aneka Niaga Tbk owned the research subjects with the most significant

family ownership in 2017, while minor family ownership was owned by PT FKS Food Sejahtera Tbk (AISA) in 2019, PT Bumi Teknokultura Unggul Tbk (BTEK) in 2015, and PT Darya -Varia Laboratoria Tbk (DVLA).

Before testing the hypothesis, the classical assumption has been tested by giving the following results.

Table 2. Autocorrelation Test Results

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0,598a	0,357	0,33	0,10893	1,9085

Source: The Data Analysis Results

Durbin-Watson value is 1.9085, while the Durbin Upper and Lower Durbin value for the total data is 100. The number of independent variables is as much as three respectively are 1.7364 and 1.6131. The results of this autocorrelation Durbin Watson value is between Durbin Upper and 4-Durbin Upper so that it can be concluded that there is no autocorrelation symptom.

Table 3. Multicollinearity Test Results

Model	Unstandardized	Standardized	t	Sig.	Collinearity Statistics	
	Coefficients	Coefficients			Tolerance	VIF
(Constant)	B	Beta				
	0,24		3,347	0,001		
<i>Demand Pull</i>	0,045	0,098	1,183	0,24	0,988	1,012
<i>Intellectual Capital</i>	0,298	0,541	6,046	0	0,845	1,183
Kepemilikan Keluarga	0,061	0,117	1,328	0,187	0,873	1,146
<i>Technology Push</i>	-0,083	-0,029	-0,307	0,759	0,751	1,331

Source: SPSS Data Analysis Results

Through the table above, all independent variables, namely demand-pull, intellectual capital, and technology push, have a VIF of less than 10, including family ownership which is a moderating variable, so it can be concluded that in this study, there is no symptom of multicollinearity in the research model.

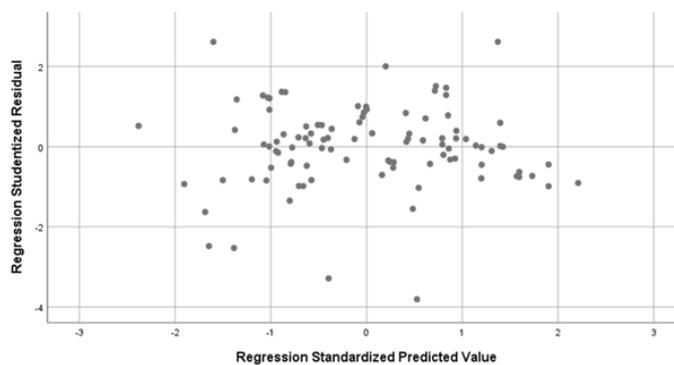


Figure 2. Scatter Plot

Source: SPSS Data Analysis Results.

Through the image scatter plot above, it can be concluded that the points do not clump together or form a specific pattern (wavy, widen, or widen, and then narrow). The points spread

above and below 0 on the horizontal line (Y-axis) so that there are no symptoms of heteroscedasticity.

Table 4. Kolmogorov-Smirnov Normality Test Results

		Unstandardized Residual
N		100
Normal Parameters	Mean	0,0000000
	Std. Deviation	0,10670730
Most Extreme Difference	Absolute	0,084
	Positive	0,060
	Negative	-0,084
Test Statistic		0,084
Asymp. Sig. (2-tailed)		0,081c

Source: SPSS Data Analysis

The table above shows that the p-value in the Kolmogorov-Smirnov test above is 0.081 or greater than 0.05. The results show that the data is standard.

Table 4. Results Multiple Linear Regression Analysis with Moderating Variables

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.779 <sup>a</sup>	0,606	0,576	0,08661

a. Predictors: (Constant), ICKK, Demand Pull, TPKK, TP2, IC1, DPKK, KK1

ANOVA <sup>a</sup>						
Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0,400	0,126		-3,165	0,002
	Demand Pull	0,232	0,090	0,502	2,596	0,011
	TP2	2,714	0,621	0,955	4,371	0,000
	IC1	0,509	0,119	0,923	4,266	0,000
	KK1	1,047	0,170	2,010	6,177	0,000
	DPKK	-0,347	0,122	-0,826	-2,832	0,006
	TPKK	-4,205	0,793	-1,191	-5,303	0,000
	ICKK	-0,305	0,154	-0,611	-1,975	0,051

a. Dependent Variable: ROA2

Source: SPSS Data Analysis

Based on the multiple linear regression analysis results with moderating variables, the variable demand-pull had a significant positive effect on ROA with a p-value of 0.011, which was smaller than 0.05. Then the variable technology push has a significant positive impact on ROA because the p-value is 0.000. Furthermore, it was concluded that intellectual capital has a significant positive effect on ROA because it has a p-value of 0.000 where the p-value is smaller than 0.05. The family ownership variable has a significant positive impact on ROA because the p-value is 0.000, smaller than 0.05. Furthermore, for the interaction between

demand-pull, family ownership, and company performance (DPKK), it is found that demand-pull moderated by family ownership has a significant negative effect on ROA with a p-value of 0.006. Then, for the interaction between technology push, family ownership, and company performance (PKK), the results show that technology push moderated by family ownership has a significant negative effect on ROA with a p-value of 0.000. The interaction between intellectual capital, family ownership, and company performance (ICKK) shows that intellectual capital moderated by family ownership has no significant effect on ROA because the p-value is 0.051.

### **Demand-Pull**

In this study, demand-pull has a significant positive effect on company performance, so it can be concluded that H1a is accepted. Demand-pull is a product innovation that can affect the company's performance because product innovation is a strategy that can achieve a company's competitive advantage; this follows the theory of resource-based view. Companies need to gain a competitive advantage to continue to survive every year. If a company innovates products, the company has created a unique product that can attract people's attention to buy the product, and the company's performance can increase.

### **Technology Push**

In this study, technology push has a significant effect on company performance so that H1b is accepted. The existence of new technology owned by the company can help and support product innovation. Then the technology can improve company performance and allow the organizational structure to be leaner because almost all parts of the company use technology.

### **Intellectual Capital**

Intellectual Capital has data analysis results that show that intellectual capital has a positive effect on company performance. These results are by H2, which states that intellectual capital positively affects ROA because intellectual capital is an intangible asset that can help companies increase productivity. Intellectual capital has several components, namely human capital, structural capital, and customer capital. Human capital is essential in a company because the source of innovation and strategies obtained can make the company more developed. Structural capital is all knowledge within the organization in the form of structures, databases, systems, and everything that gives the company's value exceeding the book value (Bontis, Keow & Richardson, 2000). The system is running well, and it can support workers to achieve organizational goals, namely good company performance. Customer capital is knowledge related to network marketing, where customer and employee satisfaction is essential to manage so that the company's performance is good.

### **Family Ownership**

Family ownership is a company with family members as controlling shareholders or serving on the board of directors. This study found that family ownership weakens the relationship between demand-pull and company performance so that H3 is rejected. According to Block (2012), compared to other companies, family companies rarely invest in innovation. Based on previous research conducted by De Massis, Frattini, Pizzurno & Cassia (2013), the level of innovation carried out by family companies was lower than that of nonfamily companies. Family companies are risk-averse because most costs are irreversible and have uncertain results (Shi, 2003). Owners need to ensure that the funds used for product innovation can be used effectively. Practices like this can hinder the number of innovations carried out by family companies because before making innovations, family companies need to find relevant parties to work together. Family companies are described as a form of business with a long-term vision based on culture, so that family companies often do not innovate (Frank, Kessler, Bachner, Fuetsch & Suess-Reyes, 2019). Then according to Nieto, Santamaria & Fernandez (2015), family ownership can lead to a reduced desire to collaborate with stakeholders who can provide

funds for innovation because they feel independent and do not want outsiders to interfere too much in the company.

Furthermore, the moderating variable of family ownership weakens the relationship between technology push and company performance, so H3 is rejected. Based on previous research conducted by De Massis et al. (2013), who found that family companies are very risk-averse, so spending funds to buy assets or tools is very difficult to do. Technology push is one of the innovations in technology, where technology will support product innovation. According to Layyinaturobania, Sudarsono & Fitriyana, (2014), family ownership makes the value of the asset utilization ratio lower, so it can be concluded that the use of assets or resources related to technology in a family company is not used efficiently.

Another result is that family ownership does not moderate the relationship between intellectual capital and ROA, so H3 is rejected. Management who come from families feels that intellectual capital is less valuable to do. Based on previous research of Ali, Chen & Radhakrishnan (2007), family companies are lower in utilizing intellectual capital than nonfamily companies. Family companies do not overthink the use of intellectual capital because they prioritize the welfare of their own families by prioritizing the capital invested in the company compared to the performance or value of the company (Villalonga and Amit, 2006). In addition, because there are additional costs in utilizing intellectual capital, it is also the reason companies with high levels of family ownership prefer not to do so. These results align with the research results conducted by Ho & Wong (2001), which proves that companies with high family ownership are low in utilizing intellectual capital.

## **CONCLUSION, MANAGERIAL IMPLICATIONS, LIMITATION AND FUTURE RESEARCH**

Based on the results of the study, it can be concluded as follows:

1. Demand-pull, technology push, and intellectual capital have a significant positive impact on ROA. The higher the innovation and intellectual capital of a company, the company's performance will increase.
2. Family ownership weakens the influence of demand-pull and technology push so that when family ownership is more significant, innovation is lower.
3. Family ownership does not moderate the influence of intellectual capital on company performance.

This study has implications for companies to make innovations that are desired and needed by consumers and become a consideration for investors to estimate the value of a company by looking at whether the company innovates in a certain period and how the company manages intellectual capital to maximize the investment value.

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