# The Effect of R&D Intensity, Intellectual Capital and Managerial Ability on Firms Performance with Political Connection as a Moderation Variable

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# The Effect of R&D Intensity, Intellectual Capital and Managerial Ability on Firms Performance with Political Connection as a Moderation Variable

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## A B S T R A K

*This study aims to examine and analyze the effect of Research and Development intensity, intellectual capital, and managerial ability on firms' performance both directly and moderated by political connection. This study uses manufacturing sector firms listed on the Indonesia Stock Exchange which were selected using the purposive sampling method, with a total of 119 data observations (2013 - 2017) and using a quantitative approach. This study uses multiple linear regression analysis and hierarchical regression analysis. The results of the study prove empirically that the intensity of R&D can improve firms' performance and political connection can increase the relationship of Reseach and development intensity with firms' performance. The results of empirical evidence show that firms' performance can be improved through intellectual capital, but the political connection cannot strengthen or weaken the relationship of intellectual capital to firms' performance. Meanwhile, the empirical evidence of this study related to managerial ability is not able to improve the firms' performance and political connection cannot strengthen or weaken the relationship of managerial ability to firms' performance.*

*Keywords: R&D Intensity, Intellectual Capital, Managerial Ability, Firms' Performance, Political Connection*

## A B S T R A K

*Penelitian ini bertujuan untuk menguji dan menganalisa pengaruh intensitas R&D, modal intelektul, kemampuan manajerial terhadap kinerja perusahaan baik secara langsung maupun dimoderasi oleh koneksi politik. Penelitian ini menggunakan perusahaan sektor manufaktur yang tercatat di Bursa Efek Indonesia yang dipilih menggunakan metoda purposive sampling, dengan jumlah observasi sebanyak 119 data (2013 - 2017) dan menggunakan pendekatan kuantitatif. Penelitian ini menggunakan analisis regresi linier berganda dan hierarchy regression analysis. Hasil penelitian membuktikan secara empiris bahwa intensitas R&D dapat meningkatkan kinerja perusahaan dan koneksi politik dapat meningkatkan hubungan intensitas R&D dengan kinerja perusahaan. Hasil bukti empiris menunjukan kinerja perusahaan dapat ditingkatkan melalui modal intelektual, namun koneksi politik tidak dapat memperkuat atau memperlemah hubungan modal intelektual terhadap kinerja perusahaan. Sedangkan, bukti empiris terkait kemampuan manajerial tidak mampu meningkatkan kinerja perusahaan dan koneksi politik tidak dapat memperkuat ataupun memperlemah hubungan kemampuan manajerial terhadap kinerja perusahaan.*

*Kata Kunci: Intensitas R&D, Modal Intelektual, Kemampuan Manajerial, Kinerja Perusahaan, Koneksi Politik*

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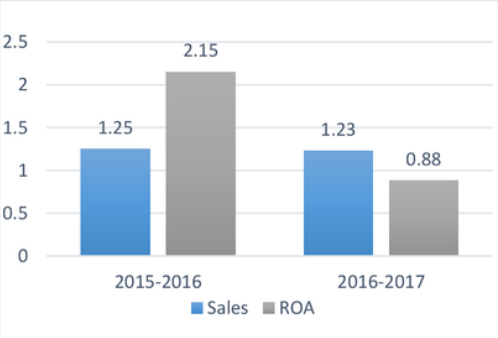
## 1. INTRODUCTION

Performance is a work that can be achieved by a person or group in the organization by the authority and responsibilities of each to achieve organizational goals (Aziz, 2008). In business organizations, producing optimal performance is the main motivation of the firms' to continue carrying out business operations (Górriz & Fumás, 1996). This assumption is not always in line with expectations and firms often experience a decline in performance and even experience liquidation. The decline in performance can be caused by the decline in company sales and the decline in Return on Assets.




**Grafic 1**
**Sales growth and Return on Assets (ROA) of manufacturing firms' listed on the Indonesia Stock Exchange in 2015-2017**

Source: idx.co.id

The table shows that from 2015 to 2016 the firms' sales growth reached 1.25% and in 2017 decreased by 1.23%, while ROA growth in 2015-2016 showed a figure of 2.15% but in 2017 it decreased by 0.88%.

R&D (Research and Development) is one of the firms' intangible assets to improve firms' performance. Creating innovation and new technology is certainly not easy and certainly not cheap. R&D activities have an important role and contribution to firms innovation (Crepon, Duguet, & Mairessec, 1998; B. H. Hall, Lotti, & Mairesse, 2013). The success of an R&D can provide a competitive advantage for firms, because it can be a differentiation strategy to help in global competition (Darmawan, Suharyono, & Iqbal, 2015).

Intellectual capital information is one of the information needed by investors. This is because intellectual capital information can help investors to better assess the capability of the firms in creating wealth in the future. Developments regarding intellectual capital have attracted the attention of several researchers over the past few years. Verduijn (2013) research results show that intellectual capital can improve firms' performance in Poland and the Netherlands. This proves that intellectual capital can be one indicator to predict firms' performance in the future.

Intangible assets such as managerial ability can also affect firms' performance. A very well-known manager can make investment strategies to improve firm performance (Hall, 1992). Measuring managerial ability or talent is central to many important questions in research. Managerial ability is measured using data envelopment analysis (DEA) (Demerjian, Lev, & McVay, 2012).

The politically connected firms will get many benefits including high leverage, low tax pay, high market power, high market share when compared to the firms without political connection. This proves that a firm with political connection becomes stronger when compared to firms without political connection (Faccio, 2006).

The motivation that underlies this research is due to the inconsistency of variables in previous studies, which may be caused by the use of data from different periods, different environmental conditions and measurement of different variables, so the researcher intends to add political connection variables as moderating variables to overcome these inconsistencies.

This study aims to prove empirically the influence of R&D intensity, intellectual capital, and managerial ability on firms' performance with political connection as a moderating variable.

## 2. THEORETICAL FRAMEWORK AND HYPOTHESES

In the view of (Barney, 1991), Resource-Based View (RBV), firms can utilize and manage all its resources to get better performance and competitive advantage by owning, controlling, and utilizing important strategic assets, both tangible or intangible. The intensity of R&D, intellectual capital, and managerial ability is the development of intangible assets that were not initially taken into account by the firms. This theory can help managers in understanding that all firms' resources can improve firms' performance through their excellence.

The existence of political connection can also affect firms performance, because the purpose of political connection can be explained by the Resource Dependence Theory (RDT) theory, which explains that one way firms reduce the uncertainty of the external environment is by building political connection (Hillman & Dalziel, 2003; Pfeffer & Salancik, 1978) which will provide firm with a stronger resource base, such as links to government, advisors, advice, and experience. Previous literature (Mitchell & Joseph, 2010) has stated that political connection is valuable assets that firms can have to minimize external risks, especially in developing countries.

In this study, the political connection variable is considered to strengthen the influence of R&D intensity, intellectual capital and managerial ability on firms performance, because with political connection the firms become stronger (Faccio, 2006) because it gets protection from the government, obtains access to capital loans easily, low risk during a tax audit. Also, they firmly get special rights from the government, for example during a financial crisis, it is easy for firms to get bailouts from the government (Kim & Zhang, 2013).

### Effect of Reseach and development (R&D) Intensity on Firms Performance

Several previous studies are examining the relationship of R&D to performance, research by Hajiheydari, Dastgir, & Soltani (2011); Sampurno (2007) found that increased spending on R&D leads to increases, sales, and profitability infirms. Gleason & Klock (2006) and Black, Jang, & Kim (2006) show that R&D is positively related to Tobin's-q. This shows that the higher R&D undertaken by firms will have a strong impact on improving firms' performance.

H1: The intensity of R&D has a positive effect on firm performance.

### Effect of Intellectual Capital on Firms Performance

Research Ulum (2007), Verduijn (2013) and Gigante (2013) show that intellectual capital has a positive effect on firms' performance. However, not all research results show positive results. Daud & Amri (2008) show that intellectual capital negatively influences firms' performance.

H2: Intellectual capital has a positive effect on firms' performance.

### Effect of Managerial Ability on Firms Performance

Baik, Farber, & Lee (2011) show that more capable managers are better at predicting future earnings, while Demerjian *et al*. (2012) found that financial statements of more capable managers tend to manipulate.

H3: Managerial ability has a positive effect on firms' performance.

### Political Connection Moderate the Effect of R&D Intensity on Firms Performance

The political connection can help in reducing external financing and can

allocate external funding efficiently (Zhang & Guo, 2019). Besides, the political connection can assist in external lenders in conducting firms R&D activities and innovative activities (Ades & Tella, 1999; Boerner & Hainz, 2009; Dreher, Kotsogiannis, & McCorriston, 2007). The higher R&D carried out by the firms will have a strong impact on the increase in firms' performance (Gleason & Klock, 2006).

H4: Political connection strengthens the positive influence of R&D intensity on firms' performance.

**Political Connection Moderate the Effects of Intellectual Capital on Firms Performance**

ntellectual capital is human resources that can affect productivity services (Penrose, 2009). Therefore the firms must be able to build a positive perception of the market so that the firms' performance will improve. Market value can increase if the firm's intellectual capital is put to good use (Chen, Cheng, & Hwang, 2005). With the connection of political connection, it can affect the increase in firms' intellectual capital in terms of capital structure and equity (Pulic, 1999).

H5: Political connection strengthens the positive influence of intellectual capital on firms' performance

**Political Connection Moderate the Effect of Managerial Ability on Firms Performance**

The existence of political connections within the firms can affect the ability of managers because the preparation of firms' strategies in competition must be able to find and take advantage of opportunities in the business environment (Leuz & Oberholzer-Gee, 2006). (Faccio, Masulis, & Mcconnell, 2006) explains that to obtain good financial performance, the firms make a political connection. (Chaney, Faccio, & Parsley, 2011) show that politically connected firms have lower performance compared to a firm that does not have a political connection on an accountant basis.

H6: Political connection strengthens the positive influence of managerial ability on firms' performance.

## 3. RESEARCH METHOD

The study population is manufacturing sector firms listed on the Indonesia Stock Exchange (IDX) from 2013 to 2017. The researcher uses a purposive sampling method to take samples. Sample criteria are manufacturing sector firms that publish annual reports for 5 years in 2013, 2014, 2015, 2016 and 2017 and firms that have complete data related to all indicators of research variables.

The dependent variable is firming performance measured using Tobin's-q ratio. Tobin's-q is calculated using the market value of ordinary shares, the book value of preferred shares and the book value of long-term liabilities, divided by the book value of total assets. The market value of ordinary shares is calculated by multiplying the stock market price at the end of the fiscal year by the number of ordinary shares outstanding (Villalonga & Amit, 2006).

The independent variable, namely R&D intensity, is calculated using R&D costs divided by total assets (Lu et al., 2010). Intellectual capital is measured using VAIC™ (Pulic, 1998), by calculating VA = OUT - IN, VACA = VA / CA where CA is physical capital or available funds (equity), VAHU = VA / HC where HC is human capital or employee expense, and STVA = SC / VA where SC is structural capital or VA - HC. Whereas managerial ability is measured using DEA with sales indicators as output and seven other accounting inputs, consisting of the cost of goods sold, SG&A, PP&E, operating leases, R&D, goodwill, and Otherintangible (Demerjian *et al*., 2012).

While the moderating variable, namely political connection, is calculated by the natural logarithm of the total score of political connection in the firm plus one point or can be formulated with LN (PCINDEX) = LN (1 + PCINDEX). This calculation is used based on the consideration of a skewness index of political connection and the fact that some firms do not have a connection (Tao, Sun, Zhu, & Yang, 2017). Political connection within the firms will be scored according to position/status and status so that political connection score ranges from a score of 0 (no political connection) to a score of 9 (the highest level as a minister. Civil (PNS) in Indonesia (Supatmi, T, Saraswati, & Purnomosidhi, 2019).

Data analysis in this study uses two types of regression analysis namely, multiple regression analysis and Hierarchy Regression Analysis.

$$KP = \alpha + \beta 1\ IRDit + \beta 2\ ICit + \beta 3\ MAit + \varepsilon 1 \quad (1)$$

$$KP = \alpha + \beta 4\ IRDit + \beta 5\ ICit + \beta 6\ MAit + \beta 7\ PCit + \varepsilon 2 \quad (2)$$

$$KP = \alpha + \beta 8\ IRDit + \beta 9\ ICit + \beta 10\ MAit + \beta 11\ PCit + \beta 12\ PCit*IRDit + \beta 13\ PCit*ICit + \beta 14\ PCit*MAit + \varepsilon 3 \quad (3)$$

Keterangan:

KP: The firms' performance in the firms i year t
α: A constant
β1 – β7: The coefficient of the independent variable in the firms i year t
IRD: The intensity of R&D in the firms i year t
IC: Intellectual capital in the firms i year t
MA: Managerial ability in the firms i year t
PC: Political connection to the firms i year to t
ε: Error

## 4. RESULTS AND DISCUSSION

Descriptive statistics explain the characteristics of research data which include minimum, maximum, average, and standard deviation values.

| Variable | Min | Max | Average | Standar Dev. |
|---|---|---|---|---|
| **R&D Intensity** | **0.00** | **0.20** | **0.01** | **0.04** |
| Capital Employed | -2.33 | 2.22 | 0.32 | 0.42 |
| Human Capital | -2.86 | 15.24 | 3.25 | 2.63 |
| Structural Capital | -2.32 | 1.35 | 0.49 | 0.45 |
| **Intellectual Capital** | **-2.35** | **16.39** | **4.06** | **3.01** |
| **Managerial Ability** | **0.43** | **1.95** | **1.10** | **0.17** |
| **Political Connection** | **0.00** | **3.66** | **1.52** | **1.35** |
| **Firm Performance** | **0.58** | **23.29** | **3.25** | **4.09** |

**Table 1**
**Descriptive Statistics of Variable Data Hierarchy Results**

Based on table 1 proves that the standard deviation is lower than the average value. This can be interpreted that the value of one variable to another does not have a large difference, so the data from each variable can be used in this study.

| Variable | I | | II | | III | |
|---|---|---|---|---|---|---|
| | Koef Reg | t | Koef Reg | t | Koef Reg | t |
| R&D Intensity | 0,49* | 6,43 | 0,46* | 6,19 | -0,34* | -2,38 |
| Intellectual Capital | 0,28* | 3,50 | 0,26* | 3,39 | 0,06 | 0,56 |
| Managerial Ability | -0,02 | -0,24 | -0,03 | -0,44 | -0,09 | -0,89 |
| Political Connection | | | 0,23* | 3,29 | -0,40 | -0,72 |
| R&D Intensity x Political Connection | | | | | 0,86** | 5,38 |
| Intellectual Capital x Political Connection | | | | | 0,29 | 1,62 |
| Managerial Ability x Political Connection | | | | | 0,33 | 0,62 |

*, **: significance level at 1% dan 5%

**Table 2**
**Hierarchy Variable Data Regression Analysis Results**

**Effect of R&D Intensity on firms Performance**

From this table, it is known that the R&D intensity variable has a positive effect on firms' performance as measured by Tobin's-q. This can be seen from $t_{count} > t_{table}$. In the table, it can be seen that the $t_{count}$ for R&D intensity is 6.433 which is greater than the table of 1.981. This is supported by a significance value of 0,000 which is smaller than (α) of 5% or 0.05. These results explain that the hypothesis that R&D intensity has a positive effect on firms' performance can be proven.

The results of this study support the theory of RBV (Resources-Based View) which states that firms can firm to gain competitive advantage by managing their resources according to the firms' capabilities (Wernerfelt, 1984). This is because resources have an important role in helping firms to achieve higher firms' performance (Jagelavičius, 2013). With the influence of R&D intensity on the firms' performance in this study, it can be said that the firms can maximize the management of intangible assets to generate firms' profits.

The results in this study support the research of (Gleason & Klock, 2006) and (Black et al., 2006). The results showed that the higher R&D undertaken by the firms would have a strong impact on improving firms' performance. Research conducted by (Lu, Tsai, & Yen, 2010) in a developed country, Taiwan, illustrates that developed countries attach great importance to the research and development of a product to be able to produce innovative products. Therefore, developing countries like Indonesia should be increasingly aware of the importance of conducting research and development because these activities are a way for the firms to be able to compete in the era of the ASEAN Economic Community (AEC).

**Effect of Intellectual Capital on Firms Performance**

The next table information shows that the intellectual capital variable which is measured using VAIC™ has a positive effect on firms' performance. This is evident from the value of $t_{count} > t_{table}$ is 3.496 > 1.981 and the significance value is below the α value of 0.05 which is 0.001. So it can be said that hypothesis 2, namely intellectual capital, has a positive effect on firms' performance.

This finding shows that the market gives a higher value to a firm that has high intellectual capital. A firm that manages its intellectual resources to the maximum will be able to create greater value-added and competitive advantage, which will lead to an increase in firms' performance.

The better the firms in managing the three components of intellectual capital shows the better the firms in managing assets. This shows that the higher intellectual ability, the cost can be efficiently managed. The influence of intellectual capital on firms' performance is by a resource-based theory which states that firms can utilize all of their strategic resources to create competitive advantage (Wernerfelt, 1984). The results of this study also support research conducted by Ulum (2007), Verduijn (2013), and Gigante (2013).

**Effect of Managerial Ability on Firms Performance**

The results of the managerial ability variable measured by Data Envelopment Analysis (DEA) do not affect firms' performance. This is because the value of $t_{count} < t_{table}$, can be seen from $t_{count}$ of -0.243 which is smaller than $t_{table}$ of 1.981. This is also supported by the significance value of 0.808 which is greater than the significance level (α) which is 5% or 0.05.

These findings explain that firms' performance is not determined by the level of managerial ability. This is because managers with high managerial skills are

not yet able to move the firm resources effectively and efficiently in the interests of achieving the goals set by the firms. Like the inability of managers to report goodwill and other stars that should be reported in annual reports but not reported or rarely reported. This can be caused because the reporting of intangible assets is still voluntary.

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**Political Connection Moderate the Effect of R&D Intensity on Firms Performance**

The moderating variable regression results show that political connection can strengthen the positive influence of R&D intensity on firms' performance. This can be seen from the value of $t_{count} > t_{table}$, where the $t_{count}$ is 5.380 and $t_{table}$ is 1.981. While the significance value of 0,000, which means less than the level of significance (α) of 5% or 0.05

A political connection will provide a stronger resource base. The firms that have political connection becomes stronger when firms to firms that do not have a political connection. This is in line with Faccio *et al*. (2006) research which shows that to obtain good performance, the firms make a political connection, this is because politics is one of the main determinants of a country's institutional environment. The encouragement of firms to have political connections has received special attention from economic observers due to the indication of preferential treatment from the government.

The firms can use their connections to attract investors to obtain additional funding in conducting research and development to improve firms' performance. When more and more investors will increase the capital owned by the firms, so the firms can develop their business.

**Political Connection Moderate the Effects of Intellectual Capital on Firms Performance**

The next result of moderation is that political connection can strengthen the positive influence of intellectual capital on firms' performance is not proven, this can be seen from the table data above that the $t_{count}$ is 1.616 smaller than the $t_{table}$ value. This is also evident from the significance value where the value of α is 0.05 less than 0.109. Then it can be concluded that political connection cannot affect intellectual capital on firms' performance.

This finding shows that political connection cannot moderate intellectual capital on firms' performance. This empirical finding can be interpreted that the management of capital resources infirms is not related to the political relationship between the firms and the government, so political factors do not strengthen the relationship between intellectual capital and firms' performance.

The results of this study are in line with Pulic (1999) that the construct of intellectual capital management is more likely to be influenced by employed capital, human capital, and structural capital and does not explain the relationship between political relations with capital resource management and firms' performance.

**Political Connection Moderate the Effect of Managerial Ability on Firms Performance**

Regression results for the last moderating variable are political connection can not influence managerial

ability on firms' performance. This is evident from the existing data that the value of $t_{count}$ is 0.617 smaller than the value $t_{table}$ of 1.981. This is also evident from the significance value where the α value is 0.05 less than 0.538.

Empirical evidence shows that political connection does not moderate the effect of managerial ability on firms' performance. This empirical evidence can be interpreted that political connection with the government cannot strengthen firms' performance, because this can be caused by the regulations that are produced or issued by the government are not profitable for the firms.

The influence of the political connection factor does not strengthen the manager's ability to manage the firms because companies need more connection with investors to obtain sources of funding used in research and development programs. Research and development programs are carried out because they are supported by investors to produce output that has more value, so it also affects firms' performance.

## 5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The purpose of this study is to look at the effect of R&D intensity from R&D expenditures with total assets, intellectual capital that includes employed capital, human capital, and structural capital and managerial ability measured by the Data Envelopment Analysis (DEA) method using output orientation and input to firms performance is proxied through Tobin's-q ratio with political connection as a moderating variable. Firms' performance can be improved by increasing the intensity of R&D and intellectual capital. The existence of political connections can strengthen the influence of the relationship of R&D intensity on firms' performance.

The results showed that the intensity of R&D can improve firms' performance. With research and development, firms can produce innovative products. Intellectual capital has a positive effect on firms' performance. Where in this study using the Pulic model because it is still new. In this study, the Value Added Intellectual Coefficient (VAIC ™) is used to measure the firms' intellectual capital. This method was formed to provide information about the efficiency value of firms' intangible assets while the firms are operating. Managerial ability on firms' performance does not affect. This is caused by managers not paying attention to the intangible assets in the firms. Therefore managerial ability cannot improve firms' performance. The political connection in this research can strengthen the intensity of R&D in the firm's performance because the political connection can provide benefits for the firms as well as attracting investors to provide additional funds in conducting research and development of the firms. Conversely, the political connection does not strengthen or weaken intellectual capital and managerial ability on firms' performance. This is because the presence or absence of a political connection is not a problem for the firms. The firm needs more connections with investors to obtain funding sources used in research and development programs.

Through this research, management and the firms as a whole can increase awareness to be more intensive in managing firms' resources so that these resources can be used effectively to improve firms' performance. Besides, the Accounting Standards-making Agency must encourage the firms to further improve firms' performance by listing intangible assets owned by the firms to improve firms' performance.

Based on the conclusions of some of the findings in the study, it is recommended further research to be able to add other factors that can improve firms' performance, so that it will add variations in the findings.

This study has several limitations, namely the incomplete presentation of reports, especially on intangible assets reported by the firms in the annual report. This is an obstacle for researchers to obtain research data.

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# The Effect of R&D Intensity, Intellectual Capital and Managerial Ability on Firms Performance with Political Connection as a Moderation Variable

GRADEMARK REPORT

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GENERAL COMMENTS

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