



Determination of the Value of Banking Companies in Indonesia with Profitability as a Mediation Variable

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Abstract

Purpose of this research is to analyze the influence of banking competition, the implementation of sustainable financial policies, with Net Interest Margin, Capital Adequacy Ratio, Loan to Deposit Ratio, Non-Performing Loan as control variables on the value of banking companies in Indonesia with profitability as a mediating variable and COVID-19 as a moderating variable. The sample was taken using purposive sampling with the criteria of banking stocks listed on the Indonesian Stock Exchange from 2018-2022. The research uses panel data regression with the unbalanced method. Results shown, Market Share, Herfindahl-Hirschman Index, Corporate Governance Index, Loans to Deposit Ratio, Non-Performing Loans, Market Share moderated by COVID-19, and Social Index moderated by COVID-19 were proven to have a negative and significant impact on Return on Assets. Economic Index, Environmental Index, Capital Adequacy Ratio, and Environmental Index moderated by COVID-19 were not proven to have a significant effect on Return on Asset. Social Index, Net Interest Margin, Herfindahl-Hirschman Index moderated by COVID-19, Economic Index moderated by COVID-19, and Corporate Governance Index moderated by COVID-19 were proven to have a positive and significant effect on Return on Asset. Return on Asset has been proven to have a positive and significant effect on Tobin's Q, whereas Return on Asset moderated by COVID-19 has not been proven to have a significant effect on Tobin's Q.

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Introduction

Until now, banking plays a major role as one of the supports for the success of a country's economy (Heffeman, 2005). For this reason, it is necessary to innovate and implement business strategies that can improve company performance and value (Velu, 2016). However, with the rapid changes in business dynamics, banks need to obtain additional capital to win the competition in the market (Boot & Marinč, 2007). This phenomenon is in line with the long-term goal of the firm to increase its value (Jensen, 2001). Firm value is reflected in the value of its assets. This makes companies compete to have a high corporate value, in order to attract investors. Investors also try to obtain complete information about the company and other supporting factors.

Market power depends on the increase in efficiency in the banking industry (Kumar, 2018). The efficiency of banks can be seen from the indicators of operating costs and revenues, as well as net interest margin (Oral & Yolalan, 1990). Market power measures are often used to analyze market competition, as they are more focused on the economic study of the industry (Pleatsikas & Teece, 2001). However, in analyzing an industry, individual bank behavior should not be separated from the market structure (Cetorelli & Gambera, 2002). This makes the analysis of bank competition and efficiency need to refer to the internal analysis of banks. Banks can compete on price with interest rates, and non-price competition with product differentiation and optimization of services to customers. Efficiency is carried out by banks by maximizing profits, revenues, or minimizing costs. Capital Adequacy Ratio is used as an indicator to determine the bank's ability to bear the risk of each risky productive asset (Elbadry, 2018). Capital Adequacy Ratio has a positive influence on profitability as reflected in Return on Assets (Roman & Danuletiu, 2013).

However, loan to deposit ratio and Non Performing Loans also play a major role in profitability, in order to support the existence of banks (Aker & Roy, 2017). The relationship between structure and performance Structure Conduct Performance in the Harvard paradigm is the main determinant of performance and in the Chicago paradigm states that the efficiency of each individual in an organization will improve company performance, so that it will affect its structure (Lelissa & Kuhil, 2018). Market concentration is one of the determinants of profitability (Rinkevičiūtė & Martinkute-Kauliene, 2014). Companies need to do efficiency because it can create market share so that it will result in a more concentrated market. Stable, inclusive and sustainable economic growth is the key to successful sustainable development in a country (Widjaja, 2023). For this reason, support is needed from the financial system that can prevent investment practices that use excessive resources, because they can increase social inequality and environmental damage. The implementation of sustainable finance principles in the financial institution system in Indonesia is the implementation of Law Number 32 of 2009 concerning Environmental Protection and Management to develop and implement environmental economic instruments including environmentally friendly policies in the banking, capital markets and non-bank financial industries. The implementation of sustainable finance principles is also a tangible form of Indonesia's commitment to the international community, by providing funding sources to mitigate and adapt to climate change.

Currently, Financial Services Authority Regulation No. 51 is a reference for the implementation of sustainable finance. Banking by implementing sustainable finance will make the condition of its business existence better and increase its profitability, so that its company value will increase. Country's development success depends on the existence of the monetary sector (Ersel & Kandil, 2006). However, the growing need for this sector has resulted in increased business competition in the banking sector. The COVID-19 pandemic has resulted in changes in people's lifestyle, thus significantly affecting

economic conditions in Indonesia. Therefore, in order to win the competition, additional funds are needed through the sale of company shares. In order to attract investors, companies try to increase company value and provide sustainable report information. Banking in the green economy era, seeks to increase profitability by implementing sustainable financial performance, in order to win the competition. For this reason, it is necessary to study the effect of implementing sustainable financial performance and competition on the value of banking companies in Indonesia with profitability as a mediating variable and COVID-19 as a moderating variable.

Methods

This research is a quantitative study that uses panel data regression with the unbalance method. The variables used are firm value, Return on Asset (ROA), Banking Competition, Implementation of Sustainable Financial Performance, Net Interest Margin (NIM), Capital Adequacy Ratio (CAR), Loans to Deposit Ratio (LDR), Non Performance Loans (NPL). The independent variable applies the Economic, Environmental, Social and Governance (ELST) disclosure index based on OJK regulation NUMBER 51 / POJK.03 / 2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies. Banking competition uses Market Share and Herfindhal Hirschman Index variables, the implementation of sustainable finance policies uses Economic Index, Environmental Index, Social Index, and Corporate Governance Index variables. Control variables use Net Interest Margin, Capital Adequacy Ratio, Loans to Deposit Ratio, and Non Performing Loans, while moderating variables use COVID-19. The mediating variable uses Return on Asset and the dependent variable uses firm value with Tobin's Q. Sampling using purposive sampling with the criteria of banking stocks listed on the Indonesian Stock Exchange in 2018-2022. Data sourced from the Central Bureau of Statistics, Bank Indonesia, Financial Services Authority. Panel model processing by determining the estimation model (Chow test and Hausman Test), determining the estimation model (common effect model, fixed effect model, random effect model), and interpretation (Adjusted R Square, statistical F test, statistical t test). The research framework are following:

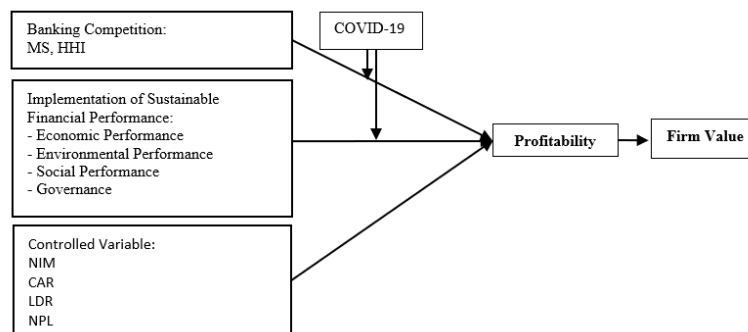


Figure 1. The Research Framework

Description:

- Firm Value = Tobin's Q.
- ROA = profitability.
- MS = Market Share.
- HHI = Herfindahl-Hirschman Index.
- EEGS = Economics, Environment, Social, and Governance.
- ECN = Economic Index.

ENV	= Environmental Index.
SOC	= Social Index.
GOV	= Corporate Governance Index.
NIM	= Net Interest Margin.
CAR	= Capital Adequacy Ratio.
LDR	= Loans to Deposit Ratio.
NPL	= Non-Performing Loans.
COVID-19	= Dummy variable.

Results and Discussions

The average of Return on Asset value (2018-2022) has a downward trend throughout 2018-2020, but in 2020-2022 the trend is increasing. The average value of Return on Asset is 1.13 with a standard deviation of 0.31. The highest average value of Return on Asset occurred in 2022 of 1.49, obtained from MEGA of 4. The lowest average value of Return on Asset occurred in 2020 of 0.70, obtained from BBKP of -4.61. This condition is unique, because during the COVID-19 pandemic, the average Return on Asset experienced an increasing trend.

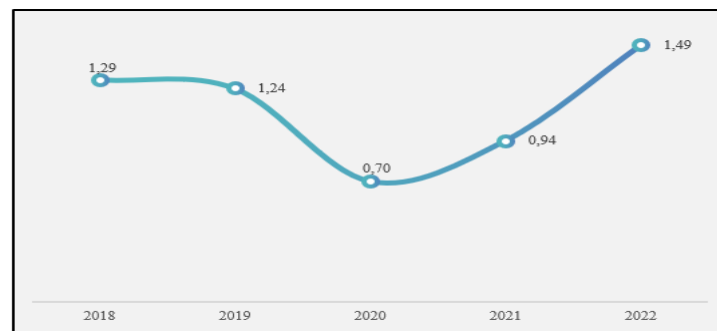


Figure 1. Average ROA Values from 2018 to 2022

The average of Return on Asset experienced an increasing trend during the Covid 19 Pandemic. This condition shows that before the COVID 19 pandemic, the company value was low at only 1.05, but with the outbreak of the COVID 19 pandemic it did initially make the company value increase in 2019, then after that it became flat until 2021 at 1.08, but after that it increased again to 1.20. The highest average enterprise value occurred in 2022 at 1.20, which was obtained from BBMD at 3.82. The lowest average company value occurred in 2018 at 1.05, which was obtained from PNBS at 0.27.

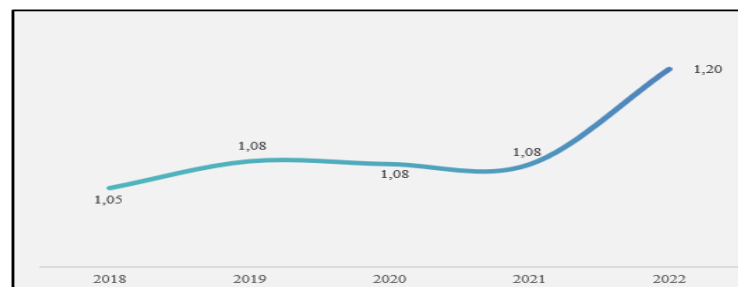


Figure 2. Average Tobin's Q Value from 2018-2022

In the formation of a good regression model, at the initial stage it is necessary to conduct an outlier test. The aim is to minimize the regression model resulting from the influence of extreme data or outliers. Results of this outlier test are obtained in table 1. Results show that there was an improvement of 4 times. This occurs as a result of removing outlier data, from a total sample of 170, there are 9 observations that have outlier data, so that the total sample that can be used in this study is 161 observations.

Table 1. Outlier Testing

No	Sample Size	Outlier Sample	Final Sample
1.	170	4	166
2.	166	2	164
3.	164	1	163
4.	163	2	161

Source: Processed data from researchers, 2026.

In the effort to find the appropriate model, Chow tests and Hausman tests can be conducted. The Chow test is performed to determine the correct model, whether it is the Common Effect Model (CEM) or the Fixed Effect Model (FEM). From the analysis, the probability value from the cross-section chi-square is $0.0000 < 0.05$ for the ROA model, and the probability value from the cross-section chi-square is $0.0001 < 0.05$ for the Tobin's Q model. Therefore, it can be concluded that the appropriate model is the Fixed Effect Model (FEM). Result of the selected Chow test for FEM, it is necessary to conduct a Hausman test. This test is conducted to determine whether the appropriate model is the Random Effect Model (REM) or the Fixed Effect Model (FEM). The processing results yield a random cross-section probability value of $0.0000 < 0.05$ for the ROA model, indicating that the appropriate model is FEM. Meanwhile, for the Tobin's Q model, the random cross-section probability is $0.7358 > 0.05$, suggesting that the appropriate model is REM.

The results of processing the fit model in the Return on Assets model produce an adjusted R square value of 0.9316, which means that the variation or behavior of the independent variables, namely Market Share, Herfindhal Hirschman Index, Economic Index, Environmental Index, Social Index, Corporate Governance Index, Net Interest Margin, Capital Adequacy Ratio, Loans to Deposit Ratio, Non Performance Loans, Market Share *COVID-19, Herfindhal Hirschman Index *COVID-19, Economic Index *COVID-19, Environmental Index *COVID-19, Social Index *COVID-19, and Corporate Governance Index *COVID-19 are able to explain the variation or behavior of the dependent variable, namely Return on Assets by 93.16 percent, while the remaining 6.84 percent is the variation or behavior of other independent variables that affect Return on Assets but are not included in the model. The fit model for the Tobin's Q model produces an adjusted R square value of 0.0019, which means that the variation or behavior of the independent variables, namely Return on Assets and Return on Assets *COVID-19, is able to explain the variation or behavior of the dependent variable, namely Tobin's Q by 0.19 percent, while the remaining 99.81 percent is the variation or behavior of other independent variables that affect Tobin's Q but are not included in the model.

The processing results for global testing, obtained by the Return on Assets model and the Tobin's Q Model have a p-value of F statistics of $0.0000 < 0.05$, so it can be concluded that at least one independent variable has a significant effect on the dependent variable. The processing results for individual tests can be seen in the following table with an explanation:

Table 2. Results of Hypothesis Testing (Uji-t)

Independent Variable	ROA Model Coefficient	t-Stat	P-Value
MS	-0,02089	-5,60176	0,0000*
IHH	-92,91322	-5,01028	0,0000*
ECN	0,00020	0,15872	0,8742
GOV	-0,00165	-1,81936	0,0716**
ENV	-0,00176	-1,39234	0,1666
SOS	0,00709	5,09546	0,0000*
NIM	0,15035	12,01256	0,0000*
CAR	0,00154	0,39692	0,6922
LDR	-0,00622	-1,97622	0,0506**
NPL	-0,25529	-1,79273	0,0000*
MS*COVID-19	-0,22601	-2,30220	0,0232*
IHH*COVID-19	0,50109	3,08293	0,0026*
ECN*COVID-19	0,29732	5,56569	0,0000*
GOV*COVID-19	0,08255	2,52408	0,0130*
SOS*COVID-19	-0,40401	-5,94229	0,0000*
ENV*COVID-19	0,02480	0,87788	0,3819
Independent Variable	Tobin's Q Model Coefficient	t-Stat	P-Value
ROA	0,01995	2,17077	0,0314*
ROA*COVID-19	0,01724	0,89363	0,3729

Source: Processed data from researchers, 2026: * 5% ** 10%

Banking competition is obtained from the Market Share and Herfindhal Hirschman Index tests. Results of the Market Share effect test on Return on Assets obtained an estimated coefficient value of -0.02089 with a p-value of $0.0000 < 0.05$, so it can be concluded that Market Share is proven to have a negative and significant effect on Return on Assets. This result contradicts the research conducted by (Gumilar & Mulyana, 2022). The effect of the Herfindhal Hirschman Index on Return on Assets from the test results obtained an estimated coefficient value of -92.91322 with a p-value of $0.0000 < 0.05$, so it can be concluded that the Herfindhal Hirschman Index is proven to have a negative and significant effect on Return on Assets. This research is in accordance with the results obtained by Sulaiman, Embugus, & Aliyu (2019).

The implementation of Sustainable Financial Performance is carried out by testing the Economic Index, Environmental Index, Social Index, and Corporate Governance Index. The test of the effect of the Economic Index on Return on Assets obtained the result of the estimated coefficient value of 0.00020 with a p-value of $0.8742 > 0.05$, so it can be concluded that the Economic Index is not proven to have a significant effect on Return on Assets. This result contradicts the research conducted by Soeharjoto, Tribudhi, & Salfinnia (2023). The effect of the Environmental Index on Return on Assets from the test results obtained the estimated coefficient value of -0.00176 with a p-value of $0.1666 > 0.05$ so it can be concluded that the Environmental Index is not proven to have a significant effect on Return on Assets. These results are in accordance with research conducted by Yawika & Handayani (2019). The test results of the effect of the Social Index on Return on Assets obtained an estimated coefficient value of 0.00709 with a p-value of $0.0000 < 0.05$, so it can be concluded that the Social Index is proven to have a positive and significant effect on Return on Assets. This research, in accordance with research conducted by Maqbool & Zameer (2018). The test results of the effect of the Corporate Governance Index on Return on Assets obtained an estimated coefficient value of -0.00165 with a p-value of $0.0716 < 0.10$, so it can be concluded that the Corporate Governance Index is proven to have a negative

and significant effect on Return on Assets. The results, like the research conducted by Tiwari & Vidyarthi (2018).

Control variables are tested from Net Interest Margin, Capital Adequacy Ratio, Loans to Deposit Ratio, Non Performance Loans. Effect of Net Interest Margin on Return on Assets from the test results obtained an estimated coefficient value of 0.15035 with a p-value of $0.0000 < 0.05$, so it can be concluded that Net Interest Margin is proven to have a positive and significant effect on Return on Assets. The results of this study are in accordance with those conducted by Widyakto, Rinawati, & Widyarti (2023). The test results of the effect of the Capital Adequacy Ratio on Return on Assets obtained an estimated coefficient value of 0.00154 with a p-value of $0.6922 > 0.05$, so it can be concluded that the Capital Adequacy Ratio is not proven to have a significant effect on Return on Assets. The findings that the Capital Adequacy Ratio is not proven to have an effect on Return on Assets are in line with empirical studies conducted by Hariyanti, Soeharjoto, Tribudhi, Adriana, Octaviani, & Rustam (2022). The test results of the effect of the Loans to Deposit Ratio on Return on Assets obtained the estimated coefficient value of -0.00622 with a p-value of $0.0506 < 0.10$, so it can be concluded that the Loans to Deposit Ratio is proven to have a negative and significant effect on Return on Assets. The findings that the Loans to Deposit Ratio is proven to have an effect on Return on Assets are in line with empirical studies conducted by Chandra & Anggraini (2020). The effect of Non Performance Loans on Return on Assets is obtained from the estimated coefficient value of -0.25529 with a p-value of $0.0000 < 0.05$, so it can be concluded that Non Performance Loans is proven to have a negative and significant effect on Return on Assets. The findings, namely Non Performance Loans, are proven to have an effect on Return on Assets in line with empirical studies conducted by Warsa & Mustanda (2016).

The COVID-19 pandemic as moderation is carried out on banking competition and the Implementation of Sustainable Financial Performance. This phenomenon is followed by profitability on firm value. In banking competition, the test of the effect of Market Share on Return on Assets moderated by COVID-19 obtained an estimated coefficient value of -0.22601 with a p-value of $0.0232 < 0.05$, so it can be concluded that Market Share is proven to have a negative and significant effect on Return on Assets moderated by COVID-19. Testing the effect of the Herfindhal Hirschman Index on Return on Assets moderated by COVID-19 obtained an estimated coefficient value of 0.50109 with a p-value of $0.0026 < 0.05$, so it is concluded that the Herfindhal Hirschman Index is proven to have a positive and significant effect on Return on Assets moderated by COVID-19. At Implementation of Sustainable Financial Performance, the results of the test of the effect of the Economic Index on Return on Assets moderated by COVID-19 obtained an estimated coefficient value of 0.29732 with a p-value of $0.0000 < 0.05$, so it can be concluded that the Economic Index is proven to have a positive and significant effect on Return on Assets moderated by COVID-19.

Effect of the Environmental Index on Return on Assets moderated by COVID-19 obtained an estimated coefficient value of 0.02480 with a p-value of $0.3819 > 0.05$, so it can be concluded that the Environmental Index is not proven to have a significant effect on Return on Assets moderated by COVID-19. Results of the effect of the Social Index on Return on Assets moderated by COVID-19 obtained an estimated coefficient value of -0.4040 with a p-value of $0.0000 < 0.05$, so it can be concluded that the Social Index is proven to have a negative and significant effect on Return on Assets moderated by COVID-19. The effect of the Corporate Governance Index on Return on Assets moderated by COVID-19 obtained an estimated coefficient value of 0.08255 with a p-value of $0.0130 < 0.05$, so it can be concluded that the Corporate Governance Index is proven to have a positive and significant effect on Return on Assets moderated by COVID-19. Test results of the effect of Return on Assets on Tobin's Q obtained an estimated coefficient value of 0.01995 with a p-value of $0.0314 < 0.05$, so it can be

concluded that Return on Assets is proven to have a positive and significant effect on Tobin's Q. However, test results of the effect of Return on Assets on Tobin's Q moderated by COVID-19 obtained an estimated coefficient value of 0.01724 with a p-value of 0.3729 > 0.05, so it can be concluded that Return on Assets is not proven to have a significant effect on Tobin's Q moderated by COVID-19.

Banking competition has a negative and significant effect on Return on Assets on Market Share and Herfindhal Hirschman Index. COVID-19 as moderation on banking competition has a significant effect on Return on Assets, but the Market Share has a different direction to be positive while the Herfindhal Hirschman Index remains negative. Due to the COVID-19 pandemic, this condition has significantly changed people's behavior, so banks need to innovate their products, in order to compete in the market. This means that banks continue to strive to compete in order to win the competition, so that bank profits increase. Implementation of Sustainable Financial Performance on the Social Index and Corporate Governance Index has a positive and significant effect on Return on Assets, while the Economic Index and Environmental Index are not significant. COVID-19 as moderation on the Implementation of Sustainable Financial Performance results in the Economic Index and Corporate Governance Index having a positive and significant effect on Return on Assets, while the Environmental Index is not significant. However, the Social Index is significant but the direction changes from positive to negative.

Social index initially requires higher costs to be able to meet all standards around product responsibility and corporate labor, but with the COVID-19 pandemic this standard has become the main requirement that banks must meet, so companies that have a higher social index will be increasingly favored by the public. This phenomenon, further increases the use of this bank product and increases Return on Assets. Net Interest Margin, Capital Adequacy Ratio, Loans to Deposit Ratio, and Non Performance Loans as control variables have a diverse influence on Return on Assets. Net Interest Margin and Loans to Deposit Ratio have a positive and significant effect on Return on Assets, while Non Performance Loans have a negative and significant effect on Return on Assets. However, Capital Adequacy Ratio has no effect on Return on Assets. This phenomenon is a result of the higher ability of bank capital to maintain the possibility of loss risk, not necessarily significantly affecting the increase in Return on Assets.

This is because banks that have large capital but have not been able to allocate their capital effectively to generate profits, so their capital has not had a significant effect on Return on Assets. Return on Assets has a positive and significant effect on company value, but with COVID-19 as a moderating factor, the effect of Return on Assets on company value becomes insignificant. This condition indicates that banks that rely solely on profitability as a means to enhance company value need to seek other factors related to changes in societal behavior, which has become more practical and desires fast services, leading to the growth of banks utilizing digital platforms. This result shows that a company's value can be enhanced through profitability, supported by a strong, innovative, and efficient banking foundation to win the competition by implementing sustainable financial performance.

Conclusion

The research on the impact of sustainable financial performance and business competition on company value in Indonesia, with profitability as a mediating variable and COVID-19 as a moderating variable, was conducted from 2018 to 2022. This research uses panel data regression with an unbalanced method. The results indicate that the Fixed Effect Model is appropriate for the Return on Assets model, while the Random Effect Model is suitable for the Tobin's Q model. In banking competition, it was found that Market Share has a negative and significant effect on Return on Assets,

while the Herfindahl-Hirschman Index also has a negative and significant effect on Return on Assets. In the application of sustainable financial performance, it was found that the Economic Index does not have a significant effect on Return on Assets, the Corporate Governance Index has a negative and significant effect on Return on Assets, the Environmental Index does not have a significant effect on Return on Assets, and the Social Index has a positive and significant effect on Return on Assets. For the control variables, it was found that the Net Interest Margin has a positive and significant effect on Return on Assets, the Capital Adequacy Ratio does not have a significant effect on Return on Assets, the Loans to Deposit Ratio has a negative and significant effect on Return on Assets, and Non-Performing Loans have a negative and significant effect on Return on Assets. COVID-19 as a moderation has been shown to have a negative and significant impact on Return on Assets, moderated by COVID-19.

The Herfindahl-Hirschman Index has been shown to have a positive and significant effect on Return on Assets, moderated by COVID-19. Economic Index has also been shown to have a positive and significant effect on Return on Assets, moderated by COVID-19. Moderated by COVID 19, Corporate Governance Index has been demonstrated to have a positive and significant effect on Return on Assets, moderated by COVID-19. Conversely, the Social Index has been shown to have a negative and significant effect on Return on Assets. The Environmental Index has not been shown to have a significant effect on Return on Assets moderated by COVID-19. Return on Assets has been proven to have a positive and significant effect on Tobin's Q, while Return on Assets has not been shown to have a significant effect on Tobin's Q moderated by COVID-19. In the next research, it would be advisable to use digital technology utilization and artificial intelligence as supporting variables.

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