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THE PANDEMIC PARADIGM: DECODING INTELLECTUAL CAPITAL'S INFLUENCE ON INDONESIA, THAILAND, AND PHILIPPINES' PROFITABILITY

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Abstract: The COVID-19 pandemic has triggered a global decline in corporate profitability. However, it has also accelerated digital transformation, driven by intellectual capital (IC). This study examines the relationship between IC and its components (Human Capital Efficiency, Structural Capital Efficiency, Capital Employed Efficiency, Relational Capital Efficiency, and Modified Value Added Intelectual Capital) and corporate profitability during the global crisis (2020-2022). Employing a quantitative approach with purposive sampling and multiple linear regression analysis, the study investigates 78 companies in Indonesia, Thailand, and the Philippines. Resource-Based Theory (RBT) elucidates IC's role as a competitive advantage. The findings reveal that CEE and SCE significantly positively impact corporate profitability, while HCE, RCE, and MVAIC exhibit no significant influence.

Keywords: *global crisis, modified VAIC, relational capital, agriculture, food and beverage*

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1. Introduction

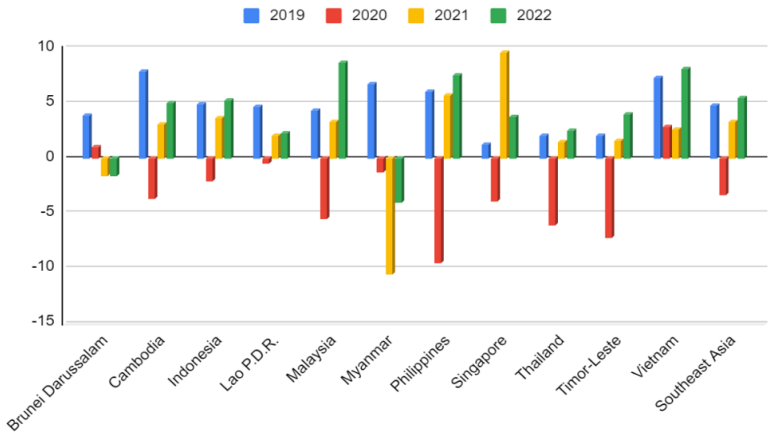

Figure 1. GDP ASEAN in 2019-2022
Source: IMF (2024)

One of the global phenomena that has shaken the economy of the entire world is the COVID-19 pandemic. In ASEAN countries, the pandemic resulted in a simultaneous decline in GDP in 2020 as shown in figure 1. The pandemic has caused significant changes in the

overall stock index activity. During the pandemic, the ASEAN-5 stock indices experienced episodes of innovation in terms of market activity. It is also observed that the regional stock indices experienced phases of volatility persistence, volatility clustering, and long memory of up to four months (Hamil et al., 2023). COVID-19 has a significant negative impact on the profitability of firms in Indonesia (Mulianto et al., 2020). From the ASEAN-5 data for the period Q1-2018 to Q3-2021, it was found that the pandemic affected firms' revenues, costs, profitability, and employment heterogeneously across countries. While revenue loss is the main challenge, widespread and prolonged restrictions in some countries have created additional complications in terms of supplies and unemployed labor. In response to income shocks, firms reduce employment with an elasticity of around 0.10, indicating that a 10 per cent decline in revenue is associated with a 1 per cent reduction in employment in the short run (Ardiyono, 2022).

Agriculture and Food & Beverage (FnB) play an important role in the economies of ASEAN countries such as Indonesia, Thailand, and the Philippines (CIPS, 2022; FAO, 2024; Ramadanti, 2020; Sato, 2022). According to Nathali et al. (2023) and Siregar et al. (2024), the performance of agricultural and FnB companies tended to stabilize and improve during the pandemic. Not only that, but this sector is also a sector that attracts investors because its products are part of basic needs. This is then reinforced by various research findings that COVID-19 had no impact on these two sectors in Indonesia (Darmawan et al., 2021; Nathali et al., 2023). However, on the contrary, COVID-19 had a negative impact on income in these sectors in Thailand and the Philippines (Dili, 2022; Kongmanee & Ahmed, 2021; MANGWAHA et al., 2023; Thammachote & Trochim, 2021).

Overall, COVID-19 didn't only damage the global economy, but also had a positive impact on accelerating digital transformation in various countries such as Indonesia, Thailand, and the Philippines (KOMINFO, 2020; Mia et al., 2024; Srisathan & Naruetharadhol, 2022). The company's drive to transform into the digital world also increases the existence of IC as a company asset. IC is an important component and must be owned by every company so that it can help accelerate digital transformation. This is also supported by the Making Indonesia 4.0, Thailand 4.0, and Philippines 4.0 programs where in these programs the government of each country provides support for companies to be able to compete in the global industry through integrated technology, information, and communication (dtn, 2022; KKBPRI, 2018, 2021; PIDS, 2022).

The COVID-19 pandemic has slowed down the economies of ASEAN countries, with the healthcare industry being the most affected (Dewi et al., 2021). However, some findings suggest that there are industries that can survive the onslaught of the pandemic, which are the agriculture and food industries. Amid the turmoil of various sectors due to the crisis, the agricultural sector in Indonesia emerged as a bastion of economic resilience. When other sectors slumped and experienced negative growth, the agricultural sector showed resilience with growth. This is an important contribution in preventing the downturn of the Indonesian economy, which experienced negative growth in 2020 (Mataram, 2021). Over the past few decades, Thailand's exports have shifted from agricultural products to manufactured products. However, exports of agricultural and food products remain important to the Thailand economy, and Thailand continues to be an exporter of agricultural and food products (Sapbamrer et al., 2022; Thammachote & Trochim, 2021). COVID-19 temporarily increased world demand for Thailand rice exports in the early stages of the outbreak, as Thailand briefly benefited from temporary export restrictions imposed by other exporting countries. Despite the difficulties posed by the pandemic, the Philippines' agriculture and fisheries

sector grew by 1.6% in the second quarter of 2020, contributing significantly to the Philippines' economic viability. It was the only sector to grow during the period (Dili, 2022; Diop, 2020).

This study uses data from the financial statements of the agricultural and FnB sectors of various companies in ASEAN, especially Indonesia, Thailand, and the Philippines. The three countries have characteristics that tend to be uniform, such as being developing countries, non-aligned members who do not take sides in global conflicts, and have other similarities influenced by geography such as climate and culture. In addition, the three countries also do not have regulations that explicitly regulate IC registration. The three countries only regulate intangible assets in PSAK 19 (2015 adjustment), TAS 38 (2017 revision), and PAS 38 (IAI, 2015; SEC, 2019; TFAC, 2017). Research conducted on countries with similar criteria like this is expected to help in narrowing down factors other than variables that appear and affect the results of the study.

This research provides novelty for accounting science in its efforts to fill the gaps in various studies that have not discussed the impact of IC on profitability during the pandemic. Previous research presents similar research variables, but the sample used only covers the country of Indonesia (Bangun et al., 2018; Lisda & Anthony, 2023; Pramathana & Widarjo, 2020; Suherman, 2017). This study provides a wider geographical reach by involving three countries, namely Indonesia, Thailand, and the Philippines. The industry focused on this study is also very specific, namely the agricultural and food and beverage industries. To measure IC, the most recognized and used model is Value-Added Intellectual Capital (VAIC^{TM}). However, this measurement has limitations such as the absence of the relational capital component (Suherman, 2017). Modified Value-Added Intellectual Capital (MVAIC) is the latest IC measurement model that has been modified to include the relational capital component and will be used in this study.

This study used 2020, 2021, and 2022 as research years to see the impact of profitability felt by companies during COVID-19 or during the world experiencing a global crisis. COVID-19 itself has changed its status from a pandemic to an endemic through statements that have been formalized by the governments of Indonesia in June 2023, Thailand in October 2022, and the Philippines along with the declaration of the World Health Organization in May 2023 (Jitanan et al., 2023; Rice, 2023; Sapbamrer et al., 2022; Setkab, 2023). With the change of pandemic status to endemic, COVID-19 is no longer a global crisis that is feared by the world community. But that does not mean that the world economy is no longer threatened. In 2024, new problems have emerged that have become the new fears of the public, such as increasing geopolitical tensions that hamper global energy and food supplies; economic slowdown in China, Germany, and Japan that reduces global demand and affects the economies of developing countries; rising real interest rates that make it difficult for developing countries to pay debts; to natural disasters due to climate change (Gill & Kose, n.d.; Grant Thornton, 2024; Griffin, 2024; Yinuo, 2024). Therefore, this research is expected to be a solution for companies in developing countries, especially Indonesia, Thailand, and the Philippines, so that they can maintain profitability through the utilization of intellectual capital during the global crisis.

Intellectual Capital (IC) is part of intangible assets that can contribute to increasing the competitiveness and profits of the company (Berliana & Hesti, 2021). There are several types of calculations that can be used in calculating IC, some of which are Value-Added Intellectual Capital (VAIC) and Modified Value-Added Intellectual Capital (MVAIC). In this study, calculations with the MVAIC model will be used because it uses additional

measurements such as relational capital so that it is considered a more efficient model compared to the VAIC model (Gupta et al., 2020). MVAIC consists of four components, namely Capital Employed Efficiency (CEE), Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Relational Capital Efficiency (RCE). Some previous studies conducted found that MVAIC and its components are significantly positively correlated with profitability (Gupta et al., 2020; Mohammad & Bujang, 2019; Selvam et al., 2020; Vetchagool, 2022).

Profitability is an important indicator that reflects the company's ability to create profits in a certain period (Darwis et al., 2022; Priatna, 2016). This can be measured through various financial ratios, such as Return on Assets (ROA), Return on Equity (ROE), and EBIT Margin (EBITM). ROA shows the effectiveness of a company in using its assets to create net income. The higher the ROA ratio, the better the company's performance in managing its assets (Handayani, 2018; Nenobais et al., 2022a). This becomes important in the context of Intellectual Capital (IC), because IC is a form of intangible asset that contributes to the profitability of the company (Sudarno & Yulia, 2015). ROE measures how efficiently the company uses its capital to generate profits for stakeholders (Nenobais et al., 2022b). ROE becomes relevant in the assessment of MVAIC (Market Value Added Intellectual Capital), where one of its components is CEE (Capital Employed Efficiency). EBITM, on the other hand, provides an overview of the company's profitability before considering interest and tax expenses (Veselinović et al., 2021). This becomes important in the era of the Covid-19 pandemic, where different interest rate and tax policies in different countries can result in variations in corporate profits. EBITM allows profit analysis without being affected by these external factors. During the Covid-19 pandemic, the company's profitability has become a major concern. Social restriction policies and changes in consumer behavior have a significant impact on the company's financial performance. Profitability analysis by considering ROA, ROE, and EBITM ratios, as well as IC implications, is key to understanding the resilience and prospects of companies in this challenging era.

Resource-Based Theory (RBT) is the lens used to understand a firm's competitive advantage. According to RBT, firms that can maximize their resources will achieve a competitive advantage in the market (Barney, 1991). In this context, Intellectual Capital (IC) emerges as one of the vital strategic resources for firms. IC encompasses the knowledge, skills, and experience embedded in individuals and organizations. These intangible assets play an important role in driving innovation, improving efficiency, and creating added value for the company (Stewart, 1997). Research by Puspitasari et al. (2023) shows that IC contributes significantly to the achievement of competitive advantage and improved company performance. By managing IC effectively, companies can strengthen their position in the market, increase profitability, and ensure long-term business sustainability. The competitive advantage achieved through IC allows companies to be more agile in dealing with changes in a dynamic and competitive business environment. Selvam et al. (2020) prove that HCE, RCE, CEE, SCE partially affect profitability significantly positively. Then other research conducted by Mohammad & Bujang (2019) also stated that CEE, HCE, SCE made a significant positive contribution to profitability. Therefore, the following hypothesis is made:

H_1: HCE has a significant positive effect on profitability.
H_2: RCE has a significant positive effect on profitability.
H_3: CEE has a significant positive effect on profitability.
H_4: SCE has a significant positive effect on profitability.
H_5: MVAIC has a significant positive effect on profitability.

2. Research Method

This study uses a quantitative approach to analyze the effect of Intellectual Capital (IC) on company profitability in the agricultural and food and beverage (FnB) industries in three ASEAN countries, namely Indonesia, Thailand, and the Philippines. This research period is 2020 to 2022. The purposive sampling technique was used to select a sample of companies. Sample selection criteria include: (1) the company is listed on the stock exchange of each country during the study period, (2) belongs to the agricultural or FnB industry, (3) does not experience losses during the study period (to allow better analysis of the effect of IC on profitability), (4) publishes financial reports in English, and (5) has financial data that can be accessed through the official website of the stock exchange or the company's website.

Intellectual Capital (IC) in this study is used as an independent variable along with 4 other components, namely Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Capital Employed Efficiency (CEE), and Relational Capital Efficiency (RCE). (Bellucci et al., 2021). However, the old model used in measuring IC, namely Value-Added Intellectual Capital (VAIC) has limitations in assessing the company's intellectual capital because it cannot measure relational capital. Therefore, this study uses Modified VAIC (MVAIC) in measuring IC (Saddam & Jaafar, 2021). The following formula is used by Jin & Xu (2022); Mohammad (2022); Saddam & Jaafar (2021); Zéghal & Maaloul (2010) in calculating MVAIC:

VA = Net Income + Interest + Tax + Employee Expenditure
CEE = VA/Book Value of Net Assets
HCE = VA/Total Employee Expenditure
SCE = (VA − Total Employee Expenditure)/VA
RCE = Marketing, selling, and advertising expenses/VA
MVAIC = CEE + HCE + SCE + RCE

Note:
MVAIC: Modified Value-Added Intellectual Capital
RCE: Relational Capital Efficiency
SCE: Structural Capital Efficiency
HCE: Human Capital Efficiency
CEE: Capital Employed Efficiency
VA: Value Added

The dependent variable in this study is profitability. Profitability is the company's ability to generate net income from activities carried out in a certain period (Halimah & Fidiana, 2020). Profitability in this study is proxied by ROA, ROE, and EBITDA which based on (Alpi & Nasution, 2019; Astari & Darsono, 2020; Gani et al., 2020; Jayasena & Karunarathne, 2023) is formulated as follows:

ROA = Net income / Total assets
ROE = Net income / Total equity
EBIT Margin = EBIT / Revenue

ROA, ROE, and EBITM are then processed using the Principal Component Analysis (PCA) method to produce a new index that can represent profitability (Ferdiana & Sugiyarto, 2022; Jolliffe, 2002).

The control variable used is company size which is measured using the amount of assets owned by the company. Company size is used as a control variable because it has a direct effect on company performance (Audreylia & Ekadjaja, 2014).

Company Size = ln (Total Asset)

STATA software was used to assist with data processing in this study. First, researchers checked for outliers in the data. After removing companies that are outliers, researchers conduct descriptive testing to see the characteristics of the sample used. Then the data must meet the classical assumptions consisting of a normality test which is used to see whether the data meets normality or not, a multicollinearity test to see if there is a correlation between the independent variables, and a heteroscedasticity test to see if the errors contained in the model affect the independent variables. In this study, autocorrelation was not used. The autocorrelation test is only done on time series data and does not need to be done on cross section data (Setya Budi et al., 2024). Researchers use regression to see the relationship between variables. The regression results are seen through the R-squared to see whether the independent variables in the study can affect the dependent variable, the F value to see the significance between the dependent variable and the independent variable, and the t-test which is used to assess whether the correlation between the dependent and independent variables is negative or positive.

Tabel 1. Equation Models

No	Equation Models
1	$P_{it} = \alpha + \beta_1 HCE_{it} + \beta_2 \ln\_CS_{it} + \varepsilon_{it}$
2	$P_{it} = \alpha + \beta_1 RCE_{it} + \beta_2 \ln\_CS_{it} + \varepsilon_{it}$
3	$P_{it} = \alpha + \beta_1 CEE_{it} + \beta_2 \ln\_CS_{it} + \varepsilon_{it}$
4	$P_{it} = \alpha + \beta_1 SCE_{it} + \beta_2 \ln\_CS_{it} + \varepsilon_{it}$
5	$P_{it} = \alpha + \beta_1 MVAIC_{it} + \beta_2 \ln\_CS_{it} + \varepsilon_{it}$

Note: P is profitability; α is a constant; β is the independent variable and control variable; ε is the error term; i is the company, and t is the company year used.
Source: Research (2024)

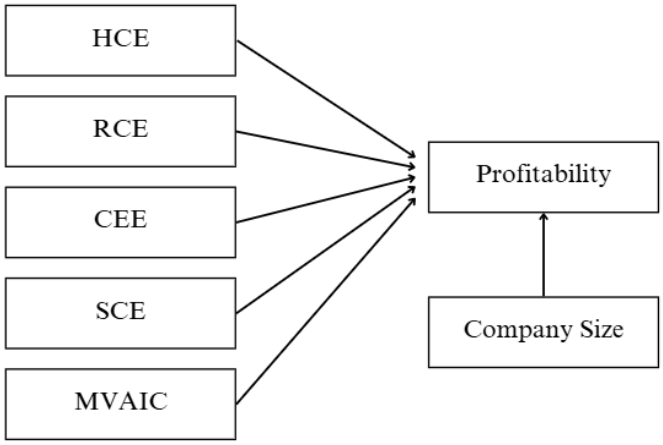

Figure 2. Research Model
Source: Research (2024)

3. Results and Discussion

3.1. Results

Based on data searches through various sources and predetermined criteria, 89 sample companies were obtained. Of these, 39 companies are from Indonesia, 38 companies from Thailand, and 12 companies from the Philippines. After checking the outlier data, 11 data were obtained that needed to be excluded, so that the final research sample observed was 78 companies for the 2020-2022 period. To understand the characteristics of the sample, descriptive statistical analysis was conducted.

Table 2. Descriptive Statistics

No	Variabel	Mean	Maksimum	Minimum	Std. Dev.
1	HCE	2.4447	19.1427	1.0066	2.1287
2	RCE	0.3618	1.9655	0.0000	0.3497
3	CEE	0.3045	1.2451	0.0448	1.6980
4	SCE	0.4515	0.9478	0.0066	0.2277
5	MVAIC	3.5459	20.3910	1.2084	2.2492
6	ln_size	25.4351	32.8264	19.3295	3.5188
7	Profitability	-1.1672	2.9881	-2.0982	2.2492

Source: Research (2024)

Based on the analysis of Table 2, which presents descriptive statistics, the HCE aspect appears to be the most prioritized in MVAIC, with a mean value of 2.4447. Followed by SCE, RCE, and finally CEE. The maximum value of HCE reaches 19.1427, indicating that there are companies that focus more on the HCE aspect than other aspects of MVAIC.

Then, before conducting regression analysis, a classic hypothesis test is conducted to test the data. The results of the classical hypothesis test are presented in Table 3.

Tabel 3. Classical Assumption Test

No	Classical Assumption Test		Summary
1	Normality Test	P-value = 0.1613 > 0.05	Residuals were normal
2	Multicollinearity Test	Mean VIF = 2.61 < 10	There were no multicollinearity issue
3	Heteroscedasticity Test	P-value = 0.0000 > 0.05	Heteroscedasticity occurred, which was treated with the robust method.

Source: Research data (2024)

Then the researcher removed the outlier data until it was found that the data passed the normality test, which means that the residual data is normally distributed. In addition, the research also conducted a multicollinearity test and found that there was no relationship between the dependent variables in this study. Furthermore, the heteroscedasticity test was conducted to help researchers see whether errors affect the independent variables. However, the results showed the presence of heteroscedasticity, so it must be robust (Hair et al., 2019).

Table 4. Multiple Linear Regression

Variabel	Coef.	P>|t|
HCE	-0.0406	0.0940
RCE	0.5663	0.5970
CEE	3.6369	0.0000
SCE	4.4334	0.0000
MVAIC	-0.0545	0.0930
ln_CS	-0.0187	0.1000
_cons	-2.5300	0.0000
R-Squared	0.7591	
P-value of F-statistic	0.0000	

Source: Research data (2024)

Table 4 presents the results of the regression analysis. The F-test (p-value) is used to evaluate the significance of the effect of at least one independent variable on the dependent variable (Mehmetoglu & Jakobsen, 2022). A p-value of less than 0.05 generally indicates a significant effect. In this study, the p-value of 0.0000 indicates that the regression model created can explain the dependent variable profitability well.

R-squared is used to show how much the independent variables can explain the dependent variable in the regression model. The results in Table 3 show that R-squared is 0.7591, which means that the independent variables have 75.91% of the information to explain the dependent variable (Ghozali, 2018).

Based on the t-test, it is found that HCE, RCE, MVAIC, and ln_CS have a p-value > 0.05, which means that the relationship between these variables and profitability is not significant (Mehmetoglu & Jakobsen, 2022). In contrast, CEE and SCE have a p-value < 0.05, which means that the relationship between these two variables and profitability is significant. In addition, CEE and SCE also have a positive relationship with profitability. Therefore, it can be concluded that only H3 and H4 are accepted, while the other hypotheses are rejected.

3.2. Discussion

The results of this study provide an understanding that CEE and SCE have a significant positive effect on profitability. This finding is proven and consistent with previous studies (Mohammad, 2022; Mohammad & Bujang, 2019). This means that the higher the structural capital and capital employed owned by the company, the higher the profitability of the company. This result also indicates that companies in the FnB and agricultural sectors in Indonesia, Thailand, and the Philippines can focus more on optimizing capital and corporate culture during the global crisis. During times of global crisis, companies can achieve increased profitability through the development of efficient infrastructure, processes, procedures, databases, and routines (Vetchagool, 2022). Another study by Xu & Zhang (2021) added that agricultural companies are not only limited to tangible assets such as land, but also need to maximize the use of technology and lean production to improve company performance.

From the research results, it is also known that CEE and SCE support the RBT viewpoint. According to this view, company resources, including CEE and SCE, which are owned and controlled by the company can be a driving force for the company to create and implement strategies that are able to contribute to improving its efficiency and effectiveness (Ulum et al., 2017). CEE and SCE can be superior resources, rare, and difficult to imitate by competitors, so companies that optimize the use of these resources will have a competitive advantage and be able to win the competition.

This study also found that there is no significant relationship between RCE and profitability. This finding is in line with previous research conducted by Mohammad (2022) and Mohammad & Bujang (2019). RCE is calculated by dividing relational capital by value added, which represents the ratio of profit earned per unit of marketing cost. The results that show an insignificant relationship can be interpreted as that the marketing or advertising strategy implemented may not reach its target customers effectively.

HCE shows results in the form of an insignificant effect on profitability. These results are also supported by previous research conducted by Dwipayani (2014). The meaning of these results is that whether HCE shows a high or low number does not have a significant effect on profitability. This can lead to HCE which tends to have a lower influence on the agricultural and food and beverage industries when compared to CEE and SCE.

The insignificant relationship of MVAIC is also in line with previous research by Aybars & Oner (2022) which showed an insignificant relationship of MVAIC due to the lack of emphasis and amount of IC-related investment in Turkey. This finding may mean that in the agricultural and food and beverage industries, the MVAIC aspect is still less influential in creating profitability.

Therefore, from the discussion that has been described, it can be concluded that FnB and agricultural companies in Indonesia, Thailand, and the Philippines can focus on increasing IC intangible assets in the form of SCE and CEE during the global crisis. This is also supported by RBT where IC, namely structural capital and capital employed, can be a competitive advantage that helps companies win competition and increase profitability.

4. Conclusion

The COVID-19 pandemic has resulted in a decline in GDP growth in ASEAN countries, including Indonesia, Thailand, and the Philippines. However, on the other hand, the COVID-19 pandemic has also accelerated digital transformation, especially with the support of IC. This study aims to examine whether IC can influence the profitability of FnB and agricultural sector companies listed on the Indonesia, Thailand, and the Philippines stock exchanges during a global crisis such as the COVID-19 pandemic in the 2020-2022 period. This research is expected to contribute to companies related to optimizing intangible resources to maximize profitability during the global crisis. The results of this study show that during the global crisis, companies in developing countries can focus more on the efficiency of structural capital and capital employed, because CEE and SCE are proven to have a significant positive effect on profitability. In contrast, other variables such as HCE, RCE, and MVAIC have no effect on profitability.

This study has several limitations. First, some of the company's financial statement data is available in a foreign language, while the sample criteria require the use of English. This makes it difficult for researchers to understand and process the data. Second, some aspects of the MVAIC calculation are not included in the company's financial statements, such as employee wage data. This has the potential to affect the accuracy of the calculation results.

Furthermore, researchers recommend several things for future research. First, expand the scope of research to other developed countries for comparative studies. Second, conduct the research in the latest year period, namely 2023, to obtain more current and relevant data. We hope that these recommendations can help other researchers develop more comprehensive and accurate research in this area.

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