A Conceptual Paper on Intellectual Capital Efficiency and Environment, Social and Governance Performance: The Moderating Role of Innovation and Sensitive Industries

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Abstract

The research aims to examine the relationship between Intellectual Capital Efficiency (ICE) and Environmental, Social, and Governance (ESG) performance and the moderating role of innovation and sensitive industries of Public Listed Companies (PLCs) in Malaysia using the Modified Value-Added Intellectual Coefficient (MVAIC) model. The theoretical framework draws on the Resource-Based View (RBV) theory, which proposes that strategic resources a firm uses to attain a sustainable competitive advantage. The research employs a quantitative research design and data will be obtained from the firm's annual reports and the LSEG ESG web portal. All variables will be tested using PLS-SEM software covering 160 firms listed on Bursa Malaysia in the financial year 2022. The research's findings have practical implications as they establish suggestions for firm managers to make legitimate decisions related to the strategic management of ICE components, innovation practices, and the firm's characteristics in sensitive industries to improve ESG performance.

Keywords: Intellectual Capital Efficiency, Environmental, Social, and Governance Performance, Innovation, and Sensitive Industries

Introduction

In a rapidly evolving world, the significance of sustainability as a key factor in business operations is vital. The environment, social, and governance (ESG) have emerged as the critical framework for developing a more sustainable and inclusive future (Boffo & Patalano, 2020). However, the COVID-19 pandemic has indeed deeply impacted the sustainability growth in the environment, society, and economy, affecting progress towards the United Nations Sustainable Development Goals (Hannan, et al., 2022).

An assessment of the pandemic's effects showed that it had a low positive impact on only 20.12% of the targets across the SDGs and a high negative impact on 31.95% of the targets, with the economy and society being the most affected groups (Hannan, et al., 2022). In December 2022, the market capitalization of Malaysian PLCs accounted for 91.6% of the country's nominal GDP, compared to 109.7% in the previous year (CEIC, 2023). The reduction in the market capitalization ratio to GDP from the previous year could be attributed to several factors. It includes the delisting of companies when a company fails to meet the listing requirements of the stock exchange due to poor firm performance (Raza, et al., 2019).

Malaysian PLCs play a significant role in the country's economic development and contribute to achieving the SDGs. However, several PLCs were found not complying with the ESG standards set by the regulators, hindering the firm's efficiency towards achieving high ESG performance. In the most recent June 2023 semi-annual review, eight (8) companies were delisted from the ESG index, CJ Century Logistics Holdings, DKSH Holdings (Malaysia), FGV Holdings, Media Chinese International, SCGM, Sunway Real Estate Investment Trust, Vitrox, and Malaysian Airports (Bursa Malaysia, 2023). The removal from the index could signal a poor firm's ESG performance.

The ICE components have been accepted as a predictor of firm performance across diverse contexts in past studies. However, a notable gap exists in the past studies, as they do not shed light on how ICE influences ESG performance. Moreover, the previous research has overlooked the inclusion of innovation and sensitive industries as potential moderators, further limiting the understanding of this relationship. Existing literature also suggests that the impacts of ICE on firm performance may vary inconsistently, an aspect that has not been adequately explored (Wang & Juo, 2021). The gap raises several unanswered questions, particularly in the context of concerns related to ESG performance. Consequently, the research seeks to address the knowledge gap and contribute to a more profound comprehension of the intricate relationship between ICE and ESG performance.

Research Objectives

1. To examine the relationship between intellectual capital efficiency (human capital efficiency, structural capital efficiency, relational capital efficiency, and capital employed efficiency) and ESG performance in Malaysian Public Listed Companies.

2. To examine the moderating role of innovation in the relationship between intellectual capital efficiency (human capital efficiency, structural capital efficiency, relational capital efficiency, and capital employed efficiency) and ESG performance in Malaysian Public

Listed Companies.

3. To examine the moderating role of sensitive industries in the relationship between intellectual capital efficiency (human capital efficiency, structural capital efficiency, relational capital efficiency, and capital employed efficiency) and ESG performance in Malaysian Public Listed Companies.

Research Theoretical Framework

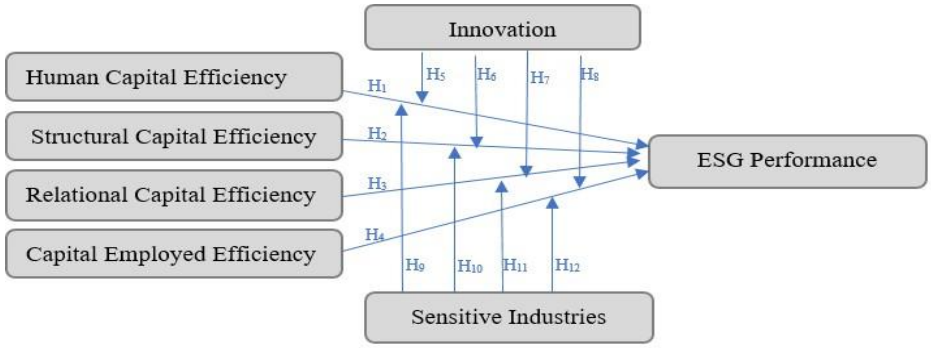

Figure 1: Theoretical Framework of Intellectual Capital Efficiency, Innovation and Sensitive Industries and Environment, Social and Governance Performance

Hypothesis Development

The research hypotheses were formulated based on the mainstream literature on ICE, innovation, sensitive industries, and ESG performance. The hypotheses are as follows:

H_1: There is a significant positive relationship between HCE and ESG performance.

H_2: There is a significant positive relationship between SCE and ESG performance.

H_3: There is a significant positive relationship between RCE and ESG performance.

H_4: There is a significant positive relationship between CEE and ESG performance.

H_5: The positive relationship between HCE and ESG performance is strengthened in highly innovated companies.

H_6: The positive relationship between SCE and ESG performance is strengthened in highly innovated companies.

H_7: The positive relationship between RCE and ESG performance is strengthened in highly innovated companies.

H_8: The positive relationship between CEE and ESG performance is strengthened in highly innovated companies.

H_9: The positive relationship between HCE and ESG performance is strengthened by sensitive industries.

H_{10}: The positive relationship between SCE and ESG performance is strengthened by sensitive industries.

H_{11}: The positive relationship between RCE and ESG performance is strengthened by sensitive industries.

H_{12}: The positive relationship between CEE and ESG performance is strengthened by sensitive industries.

Research Methodology

Data and Method

The research adopts secondary data collection, primarily sourcing information from two key platforms: The London Stock Exchange Group (LSEG) ESG web portal and the Bursa Malaysia website. ESG scores will be extracted from the LSEG ESG web portal for 160 firms listed on the Main Board of Bursa Malaysia during the financial year 2022 to assess their ESG performance. Simultaneously, data on the ICE components and innovation will be extracted from the annual reports of these firms, which will be downloaded from the Bursa Malaysia website.

The calculation of ICE components involves determining the sum of a company's intangible and tangible assets using the MVAIC model. Additionally, the innovation data uses the ratio of research and development expenses to operating income. Subsequently, all 80 firms out of 160 PLCs then will be classified into sensitive industries based on the classification criteria provided by the Department of Environment (DOE) of Malaysia. After the data collection process, the researcher will organize the collected data in a Microsoft Excel spreadsheet. This organized dataset will then be imported into Partial Least Squares Structural Equation Modeling (PLS-SEM) software for further analysis, serving as input variables for the research.

Variable Measurement

The research proposes ESG performance as the dependent variable and utilizes the LSEG ESG Score, encompassing over 630 company-level ESG measures. A subset of 186

measures are categorized into 10 groups, which, in turn, contribute to the formulation of three pillar scores, environmental, social, and corporate governance and the ultimate ESG score. The pillar weights are normalized to percentages ranging between 0 and 100 (LSEG, 2023).

The research adopts the MVAIC model to assess the independent variable, ICE components, comprising HCE, SCE, RCE, and CEE. Developed by Ulum, et al. (2014), the MVAIC model extends the VAIC and addresses its limitations. Originating from Pulic's 1998 model, the VAIC model lacks the measurement of RCE. Ulum, et al. (2016) contend that this limitation led to the development of the MVAIC model, which incorporates RCE along with HCE, SCE, and CEE, all present in the original VAIC model.

The formula for calculating ICE uses MVAIC adopted by Ulum, et al. (2014) to determine the value added (VA): OP+ EC+ D+ A. The next step is calculating the efficiency from the three components of ICE consisting of HCE, SCE, and RCE, and also the additional component from tangible capital; CEE as follows:

HCE = VA/HC SCE = SC/VA

RCE = RC/VA CEE = VA/CE

Thus the MVAIC = ICE (HCE+SCE+RCE) +CEE

- *HC: Human capital; employee expenses total, including training*
- *SC: Structural capital; VA-HC*
- *RC: Relational capital; marketing costs*
- *CE: Capital employed; book value from total asset*
- *OP: Operating profit*
- *EC: Employee costs*
- *D: Depreciation*
- *A: Amortization.*

The measurement method for innovation proposed as a moderator variable for the research will be using the ratio of research and development (R&D) to operating income in line with past studies by Huong, et al., (2021). Reeb argued that R&D spending is the most widely used measure of corporate innovation activity (Reeb, 2017).

The classification of sensitive firms as moderator variables is similar to past studies by Sulaiman, et al. (2014). Dummy 1 will be identified for sensitive firms, a variable that identifies whether the company belongs to an industry that is seen as being environmentally

sensitive. The sectors are industrial products (including oil and gas, cement manufacturing, metal manufacturing, chemical, etc.), consumer products, property, plantation trading and services, mining, construction, and infrastructure, and another 80 PLCs will be identified as dummy 0 for non-environmentally sensitive firms.

Model Specification

Three regression models have been formulated to measure the impact of intellectual capital efficiency components, innovation, and sensitive industries on the ESG performance of Malaysian PLCs.

Model 1: Relationship between ICE and ESG performance

$$ESG = \alpha + \beta 1HCE + \beta 2SCE + \beta 3RCE + \beta 4CEE + \beta 5AGE + \beta 6SIZEi + \varepsilon$$

Where:

ESG = ESG Performance for firm,

α = is the constant,

$\beta = \beta 1$ to $\beta 6$ is the slope of the independent variable and control variable,

HCE = Human Capital Efficiency,

SCE = Structural Capital Efficiency,

RCE = Relational Capital Efficiency,

CEE = Capital Employed Efficiency,

AGE = is the age for firm,

SIZE = is the size for firm,

ε = is the error term

Model 2: Relationship between ICE and ESG performance with moderator of Innovation.

$$ESG = \alpha + \beta 1HCE + \beta 2SCEn + \beta 3RCE + \beta 4CEE + \beta 5INNO + \beta 6HCE * INN + \beta 7SCE * INN + \beta 8RCE * INN + \beta 9CEE * INN + \beta 10AGE + \beta 11SIZE + \varepsilon$$

Where:

ESG = ESG Performance for firm,

α = is the constant,

β = β1 to β11 is the slope of the independent variable, moderator variable and control variable,

HCE = Human Capital Efficiency,

SCE = Structural Capital Efficiency,

RCE = Relational Capital Efficiency,

CEE = Capital Employed Efficiency,

INN = Innovation,

AGE = is the age for firm,

SIZE = is the size for firm,

ε = is the error term

Model 3: Relationship between ICE and ESG performance with moderator of Sensitive Industries

$$ESG = \alpha + \beta 1HCE + \beta 2SCE + \beta 3RCE + \beta 4CEE + \beta 5SI + \beta 6HCE * SI + \beta 7SCE * SI + \beta 8RCE * SI + \beta 9CEE * SI + \beta 10AGE + \beta 11SIZE + \varepsilon$$

Where:

ESG = ESG Performance for firm,

α = is the constant,

β = β1 to β11 is the slope of the independent variable, moderator variable, and control variable,

HCE = Human Capital Efficiency,

SCE = Structural Capital Efficiency,

RCE = Relational Capital Efficiency,

CEE = Capital Employed Efficiency,

SI = Sensitive Industries

AGE = is the age for firm,

SIZE = is the size for firm,

ε = is the error term

References

Boffo, R., & R. Patalano. (2020). *ESG Investing: Practices, Progress and Challenges.* OECD Paris. from https://www.oecd.org/finance/ESG-Investing-Practices-ProgressChallenges.pdf.

Bursa Malaysia. (2023). *FTSE4GOOD Bursa Malaysia June 2023 semi-annual review*. from https://www.bursamalaysia.com/cn/about_bursa/media_centre/ftse4good-bursa-malaysia-june-2023-semi-annual-review.

CEIC. (2023). *Malaysia Market Capitalization: % of GDP*. from https://www.ceicdata.com/en/indicator/malaysia/market-capitalization-nominal-gdp.

Hannan, M. A., Abd Rahman, M. S., Al-Shetwi, A. Q., Begum, R. A., Ker, P. J., Mansor, M., Mia, M. S., Hossain, M. J., Dong, Z. Y., & Mahlia, T. M. I. (2022). Impact assessment of COVID-19 severity on environment, economy and society towards affecting sustainable development goals. *Sustainability (Switzerland), 14*(23), 1-23. [15576]. https://doi.org/10.3390/su142315576.

Huong P.T, Cherian J., Hien N.T, Sial M.S, Samad S., TuanB.A. (2021). Environmental Management, Green Innovation, and Social–Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(1), 89.

LSEG. (2023). *Environmental, social and governance scores from LSEG*. from https://www.lseg.com/content/dam/dataanalytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf.

Raza, A., Wan Hussin, W. N., & Abdul Majid, J. (2019). Delisting of firms in Malaysia; what the financial conditions and auditor reports reveal? *Advances in Social Sciences Research Journal, 6*(5) 90-97.

Reeb, D. M. (2017). *Measuring the Degree of Corporate Innovation*. ADBI Working Paper 781. Tokyo: Asian Development Bank Institute. from https://www.adb.org/publications/measuring-degree-corporate-innovation.

Sulaiman, M., Abdullah, N., & Fatima, A. (2014). Determinants of Environmental Reporting Quality in Malaysia. *International Journal of Economics, Management and Accounting, 22*(1).

Ulum, Ihyaul & Ghozali, Imam & Agus, Purwanto. (2014). IC Performance of Indonesian Banking Sector: A Modified VAIC (M-VAIC) Perspective. *Asian Journal of Finance & Accounting, 6*, 103.

Ulum, I., & Jati, A. W. (2016). Intellectual capital performance: A comparative study between financial and non-financial industry of Indonesian biggest companies. *International Journal of Economics and Financial Issues, 6*(4), 1436-1439.

Wang, C. H., & Juo, W. J. (2021). An environmental policy of green IC: Green innovation strategy for performance sustainability. *Business Strategy and the Environment, 30*(7), 3241-3254.