Comparative Analysis of Environmental, Social and Governance (ESG) Implementations across Asia

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Abstract
Purpose: The main objective of this study is to compare the ESG implementations from an Asian capital market perspective.
Design/methodology/approach: The current study spanned seven years from 2014 until 2020 across six Asian countries, namely Japan (197), Hong Kong (20), Singapore (27), Philippines (22), Taiwan (105) and Malaysia (56). The ESG implementations were represented by the ESG scores obtained based on the readily calculated ESG Disclosure Score from Bloomberg's database. The current study employed a rank-based nonparametric test of Kruskal-Wallis H in determining the possibility of significant differences that all the ESG scores indicators may vary in six countries
Findings: The results indicate a significant difference exists for ENV_S, SOC_S, GOV_S and ESG_S and support all the postulated hypotheses. In terms of the highest commitment in implementing the ESG across Asian countries, Taiwan was denominated with the highest mean value of total ESG score and reporting the highest maximum score value by 80.99 compared to the others.
Research limitations/implications: Due to data availability, analysis was done based on comparisons of only six Asian countries. Thus, the results might not be inconclusive in explaining the overall performance of ESG investment across the Asian region.
Practical implications: Integrating the ESG factors into investment decision making might be one of the important stimuli towards long-term value creation across Asian future investment prospects.
Originality/value: Current study analyses the ESG implementations across Asian countries by analysing the possibility of statistically significant differences in all the ESG scores indicators using the rank-based nonparametric test.
Paper type: Research paper

Keywords: Environment score, Social score, Governance score

Introduction
The issues related to the area of sustainability, including environmental, social, and governance (ESG), are progressively being incorporated into corporate investment decisions across Asia.

The interest of Asia investors, regulators and consumers headed for positive impacts and fewer risk products and services geared up towards greater roadmaps for ESG investing. Given the higher prospects of Asia's economies that even now account for 40% of world activity and it was expected to be double in size within the next 12 years (Nakao, 2019), and will eventually gain more attraction towards the developments of ESG investment in the Asia region.

Additionally, Asia's major financial hubs' ability to achieve a high level of ESG regulations, compliance, and quality of disclosures within just a short period evidenced the on-going ESG momentum in Asia. It was evidenced by the cumulative value of sustainable issuance in Asia which increased sevenfold within four years to $275 bn in 2020. At the same time, China and South Korea combined to account for two-thirds of the total and the rest for Hong Kong and countries like Japan, India, and the Philippines (Roy, 2021).

Yet, despite the increases in ESG investment awareness among the investors, the economic contribution towards the climate and natural resources issues in Asian countries is also an alarming twist. It's being reported that in being half the world's population, Asia accounts for 75% of today's global coal consumption that supports 75% of the world's coal power plants built in Asia that was either under construction or in the planning stages (Sengupta, 2018). Additionally, an estimated 725 GW annually for the non-renewable power capacity since 2010 is recorded (International Renewable Energy Agency, 2019), with renewables electricity generation representing only 22% (BP, 2019).

This context motivated our interest in further understanding the ESG implementations in Asia by analysing ESG investment across Asia. Nevertheless, climate and natural resources issues and progressive ESG reporting have become pertinent in Asia (Abdul Rahman & Alsayegh, 2021; Alsayegh et al., 2020). Yet, there is limited literature on ESG reporting in Asia (Alsayegh et al., 2020), and the individual country's performance is still inconclusive in confirming its integration across Asia. Thus, there is indeed a surge to provide an empirical analysis of ESG implementation across Asian countries. Consequently, the current study forms its objective to compare the ESG implementations from an Asian capital market perspective.

Literature Review
Agency Theory and Stakeholder Theory
The foundation of the ESG activities can be based from the agency problem that might contribute to wealth deterioration (Peng & Isa, 2020). It has long been argued by Friedman (1970) that wealth maximisation is the shareholders' primary objective that needs to be upheld by the manager. Thus, the manager should wisely manage the firm's resources that could maximise its value instead of utilising them for environmental, social and good governance activities (Peng & Isa, 2020). Additionally, the agency theory (Jensen & Meckling, 1976) contended that the enclosures of ESG contribute towards an agency conflict between managers and shareholders. The problems of agency costs arise due to the managers' decision to deviate their focus beyond essential managerial responsibilities (Jensen, 2002) and shift towards social activities investments that profit personal reputation (Barnea & Rubin, 2010). Therefore, contributing towards the decline of firm value since the manager decided to involve in ESG activities only benefited under the expenses of shareholders (Kruger, 2015) since it will diminish the firm's profit through the direct outflow of funds (Peng & Isa, 2020).

However, the opposition towards agency cost related to ESG towards value maximisation was rationalised by the stakeholder theory proposed by Freeman (Freeman,1984; Freeman et al., 2010). Stakeholder theory suggests the firm's sustainable wealth can be achieved through virtuous association with its stakeholder groups (Garcia et al., 2017). The ability of ESG to increase shareholder wealth is mainly motivated by other stakeholders that contribute to the firm's success with the availability of resources (Shakil, 2021). To achieve this, it's crucial for

the firms to maintain higher integrity in disclosing corporate data and reducing information asymmetry thus able to sustain investors' confidence (Saygili et al., 2021).

Previous Study on ESG across Asian country

Literature related to the individual performance of Asian countries is limited; thus, the literature of selected issues refers to the broad class of investment practice by a variety of terms that integrates the consideration of ESG indicators by various Asian countries. Loh et al. (2016) analysed the sustainability disclosure rate of ESG among ASEAN countries and evidenced that Malaysia shows the highest sustainability disclosure rate (64.5%) among the five ASEAN countries, followed by Singapore (61.7%), Thailand (60%), the Philippines (56.3%) and Indonesia (53.6%). Their findings also indicate an existence of a relationship between sustainability reporting and a firm's financial performance. Aik et al. (2020) in their study focus on listed companies in Malaysia, Singapore, and Thailand from 2011 to 2016. They observe the presence of a cycle relationship between ESG disclosure and financial performance by using ESG disclosure score to measure ESG disclosure and the earnings per share (EPS) as firm's financial performance. Their study evidenced a significant positive cyclic relationship for Malaysian, yet negatively related with Singaporean companies, while no significant cyclic relationship with Thailand's companies. They conclude that only Malaysian companies able to reduce information asymmetry to stakeholders induced by financial appreciation from sustainability reporting.

Bruder et al. (2019) indicate that Asia-Pacific's market is not subtle to E/S/G/ESG scores; thus, cannot conclude the existence of any relationship between risk measures and ESG scores. Yet, their study for Europe and North America evidenced the ability of higher Governance and Environmental scores to reduce the risks measured by maximum drawdown or volatility. Hitherto, in contradiction to Alsayegh et al. (2020) that established the vitality of disclosing ESG practices towards the enhancement of corporate sustainability performance (economic, environmental and social (EES) performance) across Asian corporations. In addition, Abdul Rahman & Alsayegh (2021) analysed the Asian public listed firms using the cross-sectional model for 2005 to 2017. Their study reported that firms' characteristics measured by economic performance, profitability, leverage and size able to unveil additional ESG information.

Methodology

The period covered in the current study is for seven years starting from 2014 until 2020 for six Asian countries, which are Japan (197), Hong Kong (20), Singapore (27), Philippine (22), Taiwan (105) and Malaysia (56). The selected company is based on the availability of the ESG data.

The variable for analysis to resemble the implementations of ESG is the ESG Score. The ESG score is frequently being used as the measurement for corporate sustainability in academic literature (Verga Matos et al., 2020). For the current study, the environmental, social and governance practices will be reflected by the scores of each company by country. The score is obtained based on the readily calculated ESG Disclosure Score from Bloomberg's database. Indicators used to calculate the score disclosed by Bloomberg is presented in Table 1.

In finding the mean difference, the current study firstly utilised the one-way ANOVA analysis to test the hypothesis of mean equality between the six Asian countries. It is important to perform a necessary test to confirm the assumptions of one-way ANOVA in supporting a valid result for a one-way ANOVA. It stands to assume a normal distribution of the dependent variable within each of the group with no outliers in any group. In determining normally distributed data, the Shapiro-Wilk Test for Normality was utilised, while the boxplot was used

to identify the outlier. An equal to normally distributed data was represented by the null hypothesis of Shapiro-Wilk, while the alternative hypothesis indicated otherwise.

Table 1: Indicators Used to Calculate the Score Disclose by Bloomberg

No	Score	Indicator	Score
1	Environment (ENV_S)	Total GHG Omission Total Energy Consumption Total water use Hazardous Waste Total waste Environmental Fines (#) Environmental Fines ($)	Proprietary Bloomberg score based on the extend of the company Environmental, Social and Governance (ESG) data. Company not cover by ESG group will have no score and will show N/A. Companies did not disclose anything will show value of '0'. The scores will range from 0.1 for companies that disclose minimum amount of E, S, G data to 100 based on disclosure of every data point by Bloomberg's. A consistence list of topics, data field and field weight apply across sectors and region. The score measures the amount of ESG data the company report publicly and does not measure the company's performance on any data point.
2	Social (SOC_S)	Number of Employee Employee Turnover % % Employees Unionised %Women in workforces % Women in management Lost time from Accidents Fatalities- Contractors, Fatalities- Employee, Fatalities- Total Community Spending	
3	Governance (GOV_S)	Size of Board Independent Directors % Independents Director Board Duration (Years #Board Meeting Board Meeting Attendance Political Donations	

Sources: All the indicators and score were extract from Bloomberg

Based on the normality test, the indicator for all countries is not normally distributed for ENV_S, SOC_S, GOV_S and ESG_S across all the countries; however, the results are not presented here. The test indicates a significant level of the p-value ($p < .05$), thus rejecting the null hypothesis. However, the non-normality of data does not affect Type I error rate substantially, and the one-way ANOVA can be considered robust to non-normality (Maxwell & Delaney, 2004). Thus, some violation of this assumption is accepted in validating the final results. Additionally, the current study does demonstrate the existence of outliers estimated using the boxplot analysis. Yet, after further inspections, the outliers are basically indisputably odd data points and neither from the consequence of measurement error nor from the data entry error. Thus, the outliers not to be removed the nonparametric Kruskal-Wallis H test was run, which is not affected by outliers. It would be considered if the data failed the assumptions of the one-way ANOVA as one of the nonparametric alternatives.

This rank -based nonparametric test of Kruskal-Wallis H test has the ability to measure the existence of statistically significant differences between two or more groups. The measurement should be obtained based on the independent variable on a continuous or ordinal dependent variable. Further, in determining differences in the ESG performance (ENV_S, SOC_S, GOV_S and ESG_S) between countries, the Independent Sample Kruskal-Wallis test is employed. The following hypothesis was developed:

Hypothesis 1
H_n0: The distributions of ESG_S scores are same
H_A1: The ESG scores may vary in six countries
(χ^2 ESG_$S_1 \neq \chi^2$ ESG_$S_2 \neq \chi^2$ ESG_$S_3 \neq \chi^2$ ESG_$S_4 \neq \chi^2$ ESG_$S_5 \neq \chi^2$ ESG_S_6)

H_n0: The distributions of ENV_S scores are same
H_A2: The ENV_S scores may vary in six countries
(χ^2 ENV_$S_1 \neq \chi^2$ ENV_$S_2 \neq \chi^2$ ENV_$S_3 \neq \chi^2$ ENV_$S_4 \neq \chi^2$ ENV_$S_5 \neq \chi^2$ ENV_S_6)

H_n0: The distributions of SOC_S scores are same
H_A3: The SOC_S scores may vary in six countries
(χ^2 SOC_$S_1 \neq \chi^2$ SOC_$S_2 \neq \chi^2$ SOC_$S_3 \neq \chi^2$ SOC_$S_4 \neq \chi^2$ SOC_$S_5 \neq \chi^2$ SOC_S_6)

H_n0: The distributions of GOV_S scores are same
H_A4: The GOV_S scores may vary in six countries
(χ^2 GOV_$S_1 \neq \chi^2$ GOV _$S_2 \neq \chi^2$ GOV _$S_3 \neq \chi^2$ GOV _$S_4 \neq \chi^2$ GOV _$S_5 \neq \chi^2$ GOV _S_6)

Findings
The Kruskal-Wallis H test is a test of stochastic equality (Vargha & Delaney, 1998) used to interpret whether there are differences in the "distributions" of two or more groups or differences in the "medians" of two or more groups. In confirming the assumption of the distribution for this test with the possibility of having a different shape, the current study analysed the scores using a boxplot. Results indicate that CWWS scores' distributions were not similar for all groups, as assessed by visual inspection of a boxplot. Since the ESG indicators score does not have similarly shaped distributions for all countries, the current study needs to omit the analysis of differences in medians between groups. However, it is still acceptable to investigate differences in distributions regarding lower/higher scores and/or mean ranks. The results are presented in Table 2, Table 3 and Figure 1.

The existence of significant difference for ENV_S scores between groups was observed that differed in terms of the country: Hong Kong(n=134), Japan(n=1327), Philippine(n=142), Singapore(n=177), Taiwan(n=732) and Malaysia(n=375). Values are mean ranks unless otherwise stated. Results justify statistically significantly different between groups since mean ranks of CWWS scores were, $\chi2(3) = 230.86$, $p = .001$. The mean data indicates the highest Environmental score is from Taiwan (32.45), followed by Japan (29.70) and Hong Kong (29.68). The lowest score is Philippines (16.77), followed by Singapore (18.19) and Malaysia (19.29)

Results for the GOV_S also indicates statistically significantly different between groups for the mean ranks of CWWS scores where, $\chi2 (3) = 180.91$, $p = .001$. Thus, results indicate differences in GOV_S scores between groups that differed in terms of country: Hong Kong(n=138), Japan(n=1369), Philippine(n=153), Singapore(n=186), Taiwan(n=732) and Malaysia(n=386). For governance, the highest mean score is denominated by Hong Kong (55.61), followed by Taiwan (55.46) and Japan (51.38). The lowest score for governance is from Malaysia (49.34) followed by Singapore (50.50) and the Philippines (50.75). Based on the figure 1, GOV_S denotes the highest mean score amongst others indicators with a mean value of more than 50 scores of all the country except for Malaysia.

Table 2: The Test Statistics and Descriptive Statistic for ESG Score by Country

Variable	Country	Obs	Mean	Median	Max	Test Statistic $\chi^2(3)$	Degrees of Freedom	Asymptotic Sig. (2-sided test)
ENV_S	Hong Kong	134	29.68	31.01	60.47			
	Japan	1327	29.70	19.76	76.99			
	Philippine	142	16.77	16.50	55.81	230.86	5	0.0001
	Singapore	177	18.19	14.26	44.19			
	Taiwan	732	32.45	16.93	86.05			
	Malaysia	375	19.29	14.11	51.94			
GOV_S	Hong Kong	138	55.61	51.79	88.05			
	Japan	1369	51.38	51.79	96.12			
	Philippine	153	50.75	51.79	88.05	180.91	5	0.0001
	Singapore	186	50.50	51.79	76.79			
	Taiwan	732	55.46	57.14	87.42			
	Malaysia	386	49.23	54.46	87.48			
SOC_S	Hong Kong	136	34.87	33.33	64.91			
	Japan	1336	24.73	24.56	71.93			
	Philippine	143	23.06	20.98	57.89	422.97	5	0.0001
	Singapore	178	27.40	28.07	63.16			
	Taiwan	732	39.96	38.59	85.96			
	Malaysia	378	32.50	36.84	66.67			
ESG_S	Hong Kong	138	36.61	37.88	58.26			
	Japan	1369	33.16	35.14	68.42			
	Philippine	153	25.65	21.07	57.46	211.33	5	0.0001
	Singapore	186	27.09	28.31	54.55			
	Taiwan	732	39.69	39.67	80.99			
	Malaysia	386	29.33	33.04	54.96			

Table 3. Hypothesis Test Summary

No	Null Hypothesis	Test	Sig	Decision
1	The distribution of ENVC is the same across Countries	Independent Sample	0.001*	Reject the null hypothesis
2	The distribution of GOVC is the same across Countries	Kruskal-Wallis Test	0.001*	Reject the null hypothesis
3	The distribution of SOCC is the same across Countries	Independent Sample	0.001*	Reject the null hypothesis
4	The distribution of ESGC is the same across Countries	Kruskal-Wallis Test	0.001*	Reject the null hypothesis

Asymptotic significances are displayed. *The Significance level is 0.05

Thus, results also indicate differences in SOC_S scores between groups that differed in terms of country: Hong Kong(n=136), Japan(n=1336), Philippines(n=143), Singapore(n=178), Taiwan(n=732) and Malaysia(n=378). The mean ranks of CWWS scores for the GOV_S also were statistically significantly different between groups, $\chi 2\ (3) = 422.97$, p = .001. The highest mean value for social score is from Taiwan (39.96), followed by Hong Kong (34.87) and

Malaysia (32.50). While the country having the lowest social score is the Philippines (20.98), followed by Japan (24.56) and Singapore (27.40)

The mean ranks of CWWS scores for the ESG_S also were statistically significantly different between groups, $\chi 2$ (3) = 211.33, p = .001. Thus, results indicate differences in ESG_S scores between groups that differed in terms of country: Hong Kong(n=138), Japan(n=1369), Philippine(n=153), Singapore(n=186), Taiwan(n=732) and Malaysia(n=386). The country that reports the highest total ESG mean score in Asia is Taiwan (39.69), followed by Hong Kong (36.61) and Japan (33.16). While the lowest score is from the Philippines (25.65), followed by Singapore (27.09) and Malaysia (29.33).
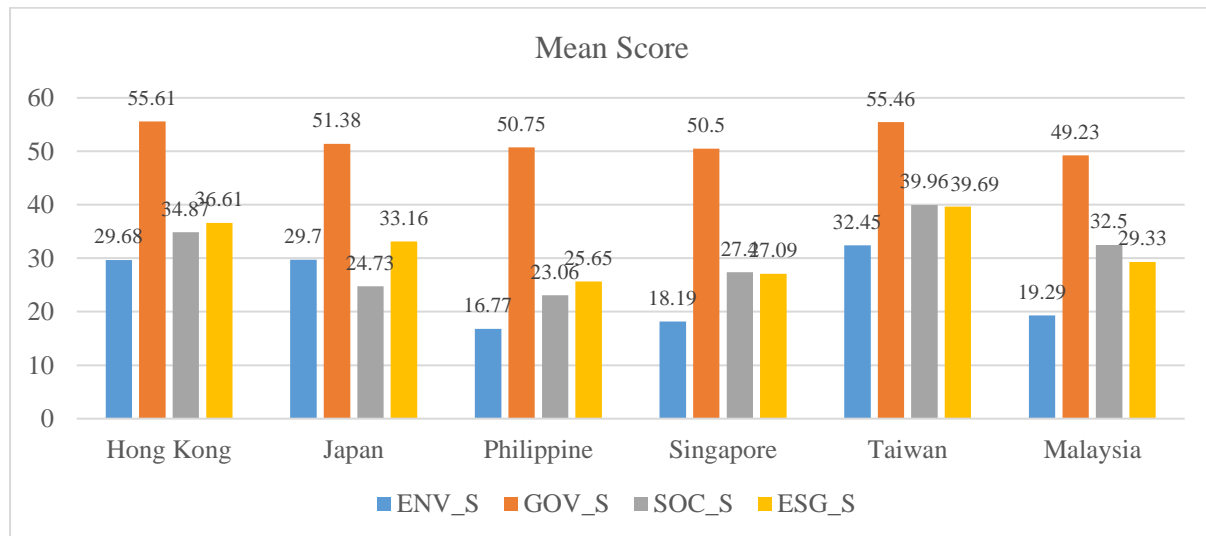

Figure 1: The Mean Score for ENV_S, SOC_S, GOV_S and ESG_S for All Countries

Discussion and Conclusion

The focal objective of the current study is to establish the relative ESG implementation across the Asia region by conducting a comparative performance analysis using four different variables, which are ENV_S, SOC_S, GOV_S and ESG_S. The nonparametric Kruskal-Wallis test examines four hypotheses in identifying significant differences in the ESG indicators across six different Asian countries: Hong Kong, Japan, Philippines, Singapore, Malaysia and Taiwan. The results indicate a significant difference exists for ENV_S, SOC_S, GOV_S and ESG_ and support alternate hypotheses one, two, three, and four.

In terms of the highest commitment in implementing the ESG across Asian countries, Taiwan was denominated with the highest mean value of total ESG score and reporting the highest maximum score value by 80.99 compared to the others. Supported by the findings from Fitch Rating indicating more products were launched based on environmental, social and governance (ESG) factors in Taiwan. The report also revealed in its 4Q20 survey of Taiwanese investment managers that an overwhelming majority consider ESG factors important. At the same time, 90% of respondents have or are planning to adopt a responsible investment policy (Fitch Ratings, 2021). Additionally, a new catalyst towards Taiwan's ESG investment ecosystem has been introduced in 2020. Taiwan Futures Exchange (TAIFEX) launched Asia's first ESG Index futures traded in the FTSE4Good TIP Taiwan ESG Index Futures and that being the first ESG-linked futures contract in Asia. In contradiction, the Philippines indicated the lowest means score among others for the ESG score. Hitherto, the Philippines regulators have arrayed an appropriate policy measure premeditated in encouraging the investors to deliberate ESG factors in their investment decision making and reassure corporations to acts for the benefits society

and the environment (SyCipLaw, 2021). The effort of Philippines regulators in beholding the importance of ESG investing was evidenced among others by the initiative taken from the Sustainable Finance Framework by Bangko Sentral ng Pilipinas (the Philippine Central Bank or BSP) in April 2020. The frameworks necessitate the requirements to embed sustainability principles in the bank's corporate governance framework, risk management systems, and strategic objectives. The sustainable principles such as environmental and social risk areas is expected to be inculcate in accordance to the bank's size, risk profile and complexity of operations (SyCipLaw, 2021).

Practical and Social Implications
It is indisputable that integrating ESG factors into investment or business decisions is vital and growing imperatively. Thus, an appropriate planning and policy implementation might gauge ESG implementation and sustainability aspirations in Asia, hence encouraging sustainable business practices across the region. Additionally, this would integrate Asian businesses into international networks and encourage sustainable business practices across the region (Waiyman, 2018).

Limitations and Suggestions for Future Research
The limitations of the current study are due to the country selection samples for the analysis. Due to data availability, research was done based on comparisons of only six Asian countries; hence, the results might not be inconclusive in explaining the overall performance of ESG investment across the Asian region. It is suggested that future studies cover a wider sample of Asian countries and use other ESG indicators that could provide more comprehensive finding. Thus, the challenge of the ESG issues in Asia is left for the futures to be further explored.

Acknowledgment

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