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THE HANG SENG UNIVERSITY OF HONG KONG

ESG 研究中心
RESEARCH CENTRE FOR ESG

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Establishing a Research Infrastructure for ESG Intelligence: A Multi-Stakeholder Perspective (RGC Ref. No.: UGC/IDS(R)14/21)

Final Report

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Objective

This report is based on research funded by an IDS project titled "Establishing a Research Infrastructure for ESG Intelligence: A Multi-Stakeholder Perspective" (RGC Ref. No.: UGC/IDS(R)14/21). We recognize the importance of measuring ESG efforts and performance from stakeholders' perspectives. The objective of this report is to provide a clear road map with a scientific methodology to demonstrate how the stakeholders of the four Research Components (RCs) can use a tailor-made ESG intelligence through our research findings from the IDS project. Our goal is to create an alternative data for listed firms to support an efficient business decision for the stakeholders.

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Disclaimer

This report is prepared by the Project Investigator of the IDS grant and The Research Centre for ESG at the Hang Seng University of Hong Kong. This report and the results should be used only as a reference for understanding the subject matters. The Research Centre for ESG, RGC, Prolific, Credamo, Dyana, and the research team accept no responsibility or liability for the accuracy and completeness of such information in the report. In case of any discrepancy between the Chinese and the English versions of the materials, the English version shall prevail.

Executive Summary

This report presents research findings and recommends a scientific methodology to demonstrate how stakeholders across the four Research Components (RCs) obtain customized ESG intelligence under the IDS project. The stakeholders for the four RCs are 1) investors; 2) accounting professionals; 3) consumers and employees; and 4) corporate communication professionals. The objective is to provide stakeholders with effective business decision-making tools using alternative data for publicly listed companies.

For RC1, it aims to integrate social returns into ESG portfolio performance benchmarks. The research reveals a critical market insight: when comparing investor behavior between the United States and China, Mainland Chinese investors demonstrate a stronger willingness to pay premium prices for stocks with solid ESG performance. This finding implies that Chinese investors give higher priority to ESG alignment over short-term financial returns. For listed companies, particularly those in Hong Kong and Mainland China, this behavioral pattern translates to actionable value. By systematically enhancing their ESG disclosures and performance metrics, these firms can better position themselves to attract capital from this growing cohort of ESG-driven investors, effectively turning sustainability achievements into competitive financial advantages.

For RC2, it aims to improve KPIs of ESG reporting for listed firms. The stakeholders are accounting professional bodies. Finding shows that greenwashing undermines the integrity of ESG reporting, as it poses significant risks to corporate credibility, investor trust, and global sustainability efforts. In addition to empirical research findings, a systematic approach to detect and mitigate such practices by evaluating disclosure consistency is recommended.

For RC3, we explore consumer satisfaction with ESG performance at firm-level. The stakeholders are consumers and employees. Results suggest that employees' perceptions of their employers' CSR performance enhance their green purchase behaviors as consumers. Comparing the US and Hong Kong survey respondents, the employee-consumers in Hong Kong are subject to a stronger positive influence (in terms of personal green consumption) by firms' CSR policy than those in the US.

In RC4, we aim to enhance the effectiveness of strategic corporate communication on ESG efforts for listed firms. The stakeholders are corporate communications professionals. Survey finding concludes that carbon and greenhouse gases are the most common topics related to IR job duties. Early-stage and mature firms face different situations when their IR teams handle ESG issues. In short, there is still room for IR to incorporate ESG into its implementation to enhance value.

In terms of ESG data intelligence, we construct an ESG i-score using a simple divergence adjustment mechanism to control the uncertainty due to ESG rating variation. Additionally, an integrated weighted-average measure known as the i-Composite by combining the i-score and a sustainability sentiment score. In conclusion, we provide suggestions on what ESG data measures are more relevant to each stakeholder.

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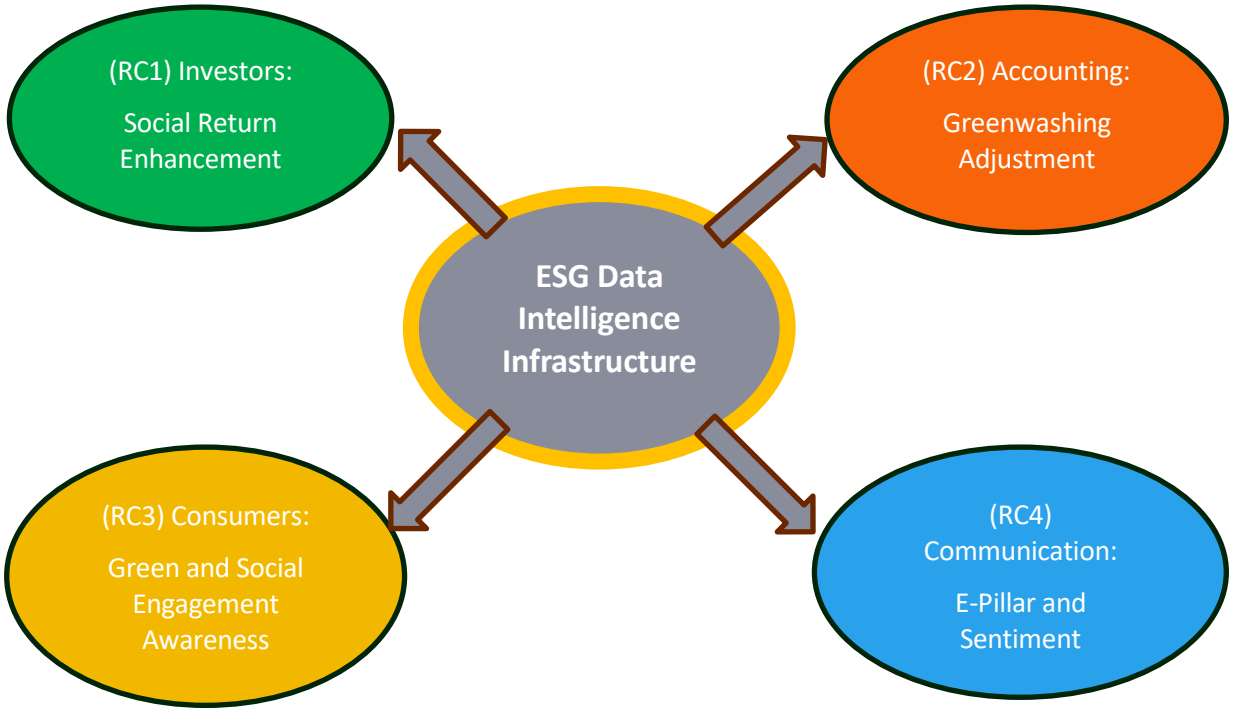
1. OVERVIEW

Figure 1: Design of ESG Data Intelligence Infrastructure



1.1 Overview

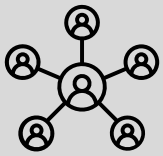
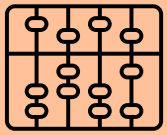
The objective of this report is to provide a clear road map with a scientific methodology to demonstrate how the stakeholders of the 4 Research Components (RCs) can use a tailor-made ESG intelligence through our research findings from the IDS project. Our aim is to create an alternative data for listed firms to support an efficient business decision for the stakeholders.

Based on the datasets purchased under the IDS grant, we obtained ESG performance data from MSCI and SynTao Green Finance. Adding with the Asset4 subscribed by HSUHK, we construct the ESG i-score using a simple divergence adjustment mechanism derived by the implication from Berg et al. (2022)[1]. In addition, the sustainability sentiment score generated from RavenPack is employed to create an integrated measure called i-Composite. Our research outcomes for each RC are generated to add insight to create a unique approach tailor-made for the stakeholders of each RC (See Figure 1). Specifically, for RC1, the stakeholder is the investor group. For RC2, the stakeholder is the accounting professional group. For RC3 and 4, the stakeholders are consumers and corporate communication professionals respectively.

[1] Florian Berg, Julian F Kölbel, Roberto Rigobon, Aggregate Confusion: The Divergence of ESG Ratings, *Review of Finance*, Volume 26, Issue 6, November 2022, Pages 1315–1344, https://doi.org/10.1093/rof/rfac033

Following our initial IDS proposal, the ESG intelligence for each stakeholder group is guided by the research objective listed in the table below.

Table 1.
Objectives and Stakeholders listed in the Initial IDS Proposal

Overall Objective **Research Centre on ESG & Business Sustainability**	**Aim to integrate knowledge from researchers and experts from different academic areas in finance, accounting, marketing, decision sciences, and communication to construct a comprehensive research infrastructure on ESG intelligence for future ESG research under a new Research Centre on ESG & Business Sustainability.**	**Stakeholders**	
RC1	Integrating social returns into performance benchmarks related to ESG portfolios.	Investors	
RC2	Improve KPIs of ESG reporting for listed firms.	Accounting professionals	
RC3	Measure consumer satisfaction with ESG performance.	Consumers	
RC4	Enhance the effectiveness of strategic corporate communication on ESG efforts for listed firms.	Corporate communication professionals	

2. RC1: Integrate Social Returns into ESG Performance Benchmarks

2.1 Objective and Investigation Path

The main objective of RC1 is to identify the role of social return in creating ESG intelligence to gauge the satisfaction of asset owners. We believe that an effective way to overcome this challenge is to better quantify the value (i.e., utility/satisfaction) of social returns to asset owners and buy-side professionals. Based on this goal, our investigation path takes the form of an online survey to understand the Environmental, Social, and Governance (ESG) integration in stock investments.

To achieve the aforementioned objective, we conducted online survey experiments in Mainland China and the US to investigate how investors make trade-offs between ESG considerations and investment returns when evaluating stocks and portfolios. Our study has two novel features. Firstly, it examines the willingness to invest in ESG stocks across various ESG dimensions, including carbon emissions, greenhouse gas emissions, solid waste, employee health and safety, product safety, and data security. This approach enables the investigation of potential differences in preferences for ESG stocks across these dimensions. Secondly, the study engages participants from both the US and Mainland China, facilitating a comparison of investor preferences for ESG stocks between these two countries. By considering perspectives from both countries, the research aims to provide insights into the divergences or similarities in ESG investment preferences among investors in the US and Mainland China.

291 US investors and 300 Mainland Chinese investors participated in the survey. The survey focused on their willingness to pay for high ESG stocks, aversion to low ESG stocks, and risk tolerance related to ESG investments.

The study employed several tasks to measure ESG investment preferences, including a task to elicit ESG premium, an incentivized bidding task, a task to elicit expected annual return, a task to elicit expected range of return, and a task to elicit willingness to invest in stock. These tasks assessed investors' willingness to invest in high and low ESG stocks under varying conditions of return and risk.

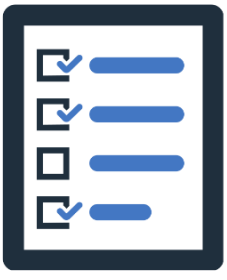


Figure 2a: Gender by Country

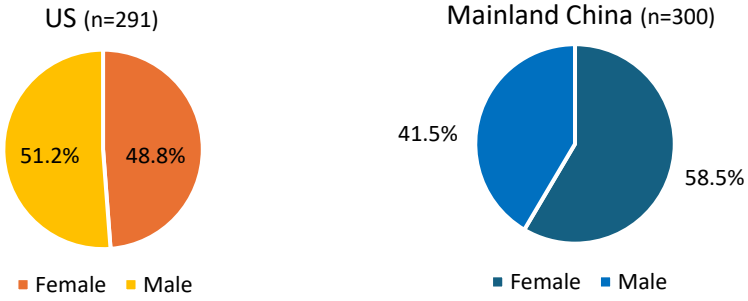


Figure 2b: Average Age by Country

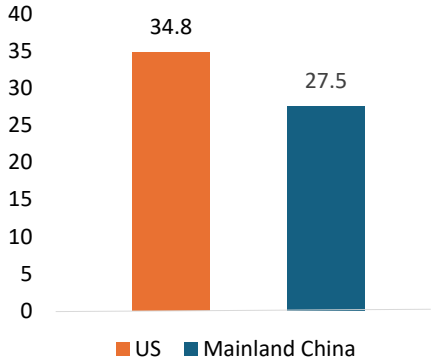
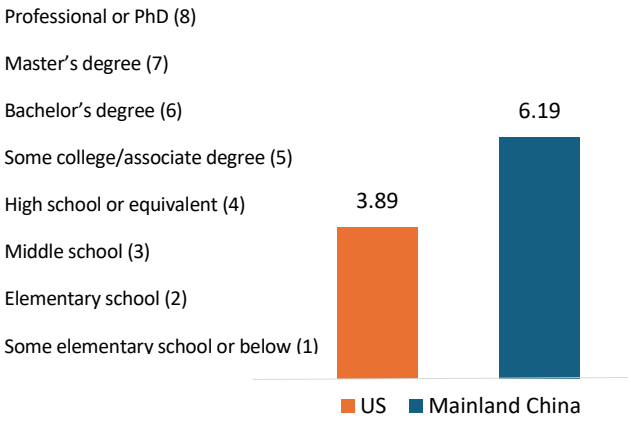


Figure 2c: Average Education Level by Country



2.2 Key Findings

Basic findings:

1) ESG affects investors' valuation of stocks.
2) Investors bid higher for good ESG performance stocks, indicating that they are willing to accept lower returns from high ESG stocks relative to low ESG stocks.

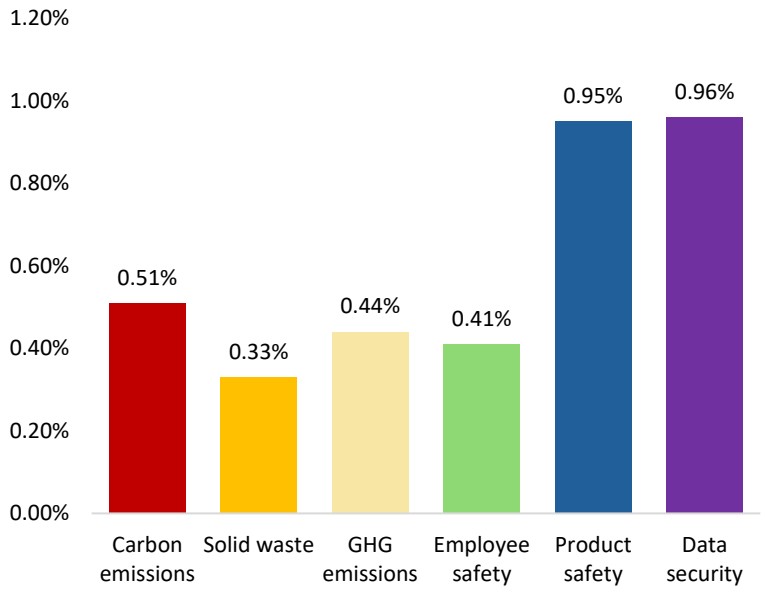
Country-specific findings:

1) Mainland China investors care more about ESG measured by differential returns between high and low ESG stocks in the areas of data security (4.02%), greenhouse gas emissions (3.82%), and employee health and safety (3.80%).
2) For the US, the investors care more about carbon emission (1.90% differential return), and data security (4.02% differential return).
3) In short, investors from the two countries are willing to sacrifice returns in pursuing stronger performance in different ESG aspects.

Comparing the US and Mainland China:

Mainland China investors are willing to sacrifice more return than the US investors (See Figure 2d). Among all the ESG issues, Mainland China investors care the most about product safety and data security. They sacrifice the highest return in these two categories compared with the US investors.

Figure 2d:
Expected Trade-offs (Sacrifice) for High ESG Stocks (Differential Annual Return) between Mainland China and the US



Note: *Positive figures imply larger sacrifice from Mainland China investors relative to the US.*

3. RC2: Improve KPIs of ESG Reporting for Listed Firms

3.1 Objective and Investigation Path

The key objective of RC2 is to improve KPIs of ESG reporting for listed firms. This is a relatively broad objective. After some careful evaluation based on the latest research direction in academic publications, we decided to take on the effect of greenwashing as the main ESG intelligence for stakeholders of RC2.

RC2 takes on a wider scope. Therefore, our investigation path begins with different research issues related to ESG disclosure, ratings, and their effects on firm-level performance. The research outputs are listed below:

1. Zeng, K. J., Yu, I. Y., Tso, S. H., & Yang, M. X. (2022). Employees' geographic social identity and group pro-environmental behaviors: Cross-cultural evidence from 45 countries. *Business Strategy and the Environment*, *32*(6), 3848–3860. https://doi.org/10.1002/bse.3341
2. Louis T.W. Cheng, Shen, J., & Wojewodzki, M. (2023). A cross-country analysis of corporate carbon performance: An international investment perspective. *Research in International Business and Finance*, *64*, Article 101888. https://doi.org/10.1016/j.ribaf.2023.101888
3. Cheng, L. T. W., Lee, S. K., Li, S. K., & Tsang, C. K. (2023). Understanding resource deployment efficiency for ESG and financial performance: A DEA approach. *Research in International Business and Finance*, *65*, Article 101941. https://doi.org/10.1016/j.ribaf.2023.101941
4. Wojewodzki, M., Tsun Se Cheong, Shen, J., & Louis T.W. Cheng. (2023). Does corporate carbon performance converge in the global market? Evidence from a distribution dynamic approach. *Journal of Environmental Management*, *342*, Article 118355. https://doi.org/10.1016/j.jenvman.2023.118355
5. Fan, K. Y., Shen, J., Hui, E. C. M., & Cheng, L. T. W. (2024). ESG components and equity returns: Evidence from real estate investment trusts. *International Review of Financial Analysis*, *96*, Part B, Article 103716. https://doi.org/10.1016/j.irfa.2024.103716
6. Cheng, L. T. W., Cheong, T. S., Wojewodzki, M., & Chui, D. (2024). The effect of ESG divergence on the financial performance of Hong Kong-listed firms: An artificial neural network approach. *Research in International Business and Finance*, *73*, Part A, Article 102616. https://doi.org/10.1016/j.ribaf.2024.102616

7. Cheng, L. T. W., Tsang, C. K., & Lee, S. K. (2025). Comparing the Financial Performance Effect of International and Local ESG Ratings: A Two-stage DEA Approach. *Annals of Financial Economics*. *19*(4), Article 2550001. https://doi.org/10.1142/s2010495225500010

8. Kong, P., Cheng, L. T. W., Pan, L., Shen, J., & Yu, Q. (2025). Non-financial information uncertainty, firm growth, and market value during crisis: Evidence from China. *Pacific-Basin Finance Journal*, *91*, Article 102748. https://doi.org/10.1016/j.pacfin.2025.102748

9. Ma, L., Li, J., Cheng, L. T. W., & Cao, J. (2025). The role of independent directors in mitigating corporate greenwashing: evidence from board voting in China. *The European Journal of Finance*, 1–21. https://doi.org/10.1080/1351847x.2025.2481957

3.2 Key Findings

However, among these different related research issues under RC2, we find that greenwashing is a more prominent topic that can be singled out as the ESG intelligence for the RC2 stakeholders. Therefore, our summary of the key findings focuses on greenwashing.

- Shen (2024) points out that strategic ESG initiatives do not constitute greenwashing, because companies do not engage in dishonest behavior such as concealing their unethical actions or exaggerating their responsible efforts.
- Ma et al. (2025) indicate that independent directors are more likely to dissent as corporate greenwashing intensifies, highlighting their role in curbing misleading ESG practices.
- The research of Yang et al. (2024) produces results with regional disparity: U.S. REITs experience higher Tobin's Q value and gross profit margin when implementing ESG washing while European REITs present lower Tobin's Q value and diminished profit margins.

Greenwashing undermines the integrity of ESG reporting, as it poses significant risks to corporate credibility, investor trust, and global sustainability efforts. A systematic approach to detect and mitigate such practices by evaluating disclosure consistency is needed.

In conclusion, greenwashing undermines the integrity of ESG reporting, as it poses a significant risk to corporate credibility, investor trust, and global sustainability efforts. A greenwashing detection mechanism should be considered to detect and mitigate such practices by evaluating disclosure consistency and balance between environmental and social pillars. By applying this methodology, ESG consultants can enhance transparency and align reports with regulatory frameworks, whereas academic researchers can penalise misleading disclosures through adjusted ESG ratings. Ultimately, this methodology serves as a tool to enhance accountability in ESG reporting, helping to ensure that sustainability claims in ESG reports reflect real-life performance, and to foster long-term trust among stakeholders.

4. RC3: Measure Consumer Satisfaction on ESG Performance

4.1 Objective and Investigation Path

The key objective of RC3 is to examine the effectiveness of corporations' ESG efforts from the perspectives of employees and consumers. More specifically, we added the employees' perspective to our survey and linked the opinions and expectations of the respondents as an employee as well as an individual (consumer). Previous research has indicated that consumers place high importance on the environmental and social aspects of products in terms of their materials, ingredients, and production processes. We believe that additional brand value and trust from consumers are generated by the ESG performance of firms. In short, we will use the findings to enhance our ESG intelligence data set for relevant firms.

Using survey and experimental design in the field of consumer psychology, RC#3 evaluated the role of ESG efforts of listed firms in creating ESG intelligence from the consumers' perspective.

We engaged Dynata to conduct the survey in the US and Hong Kong respectively in October 2023. There are 72 questions in the survey excluding the demographic questions. The survey was conducted in English in the US and traditional Chinese in Hong Kong. The final sample sizes for the US are 315, and 317 for Hong Kong.

Figure 3a: Gender by Location

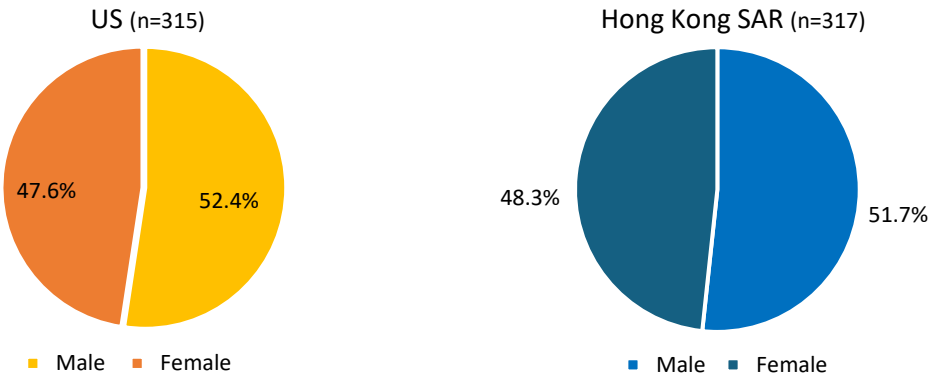


Figure 3b: Age Distribution

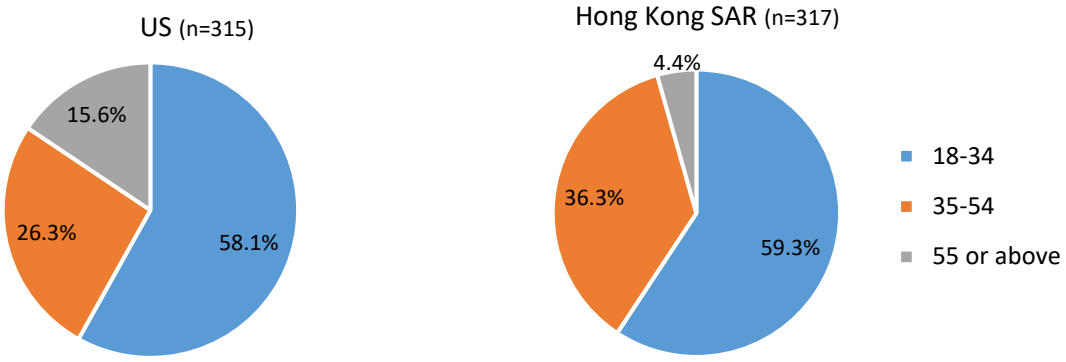


Figure 3c: Education Level by Location

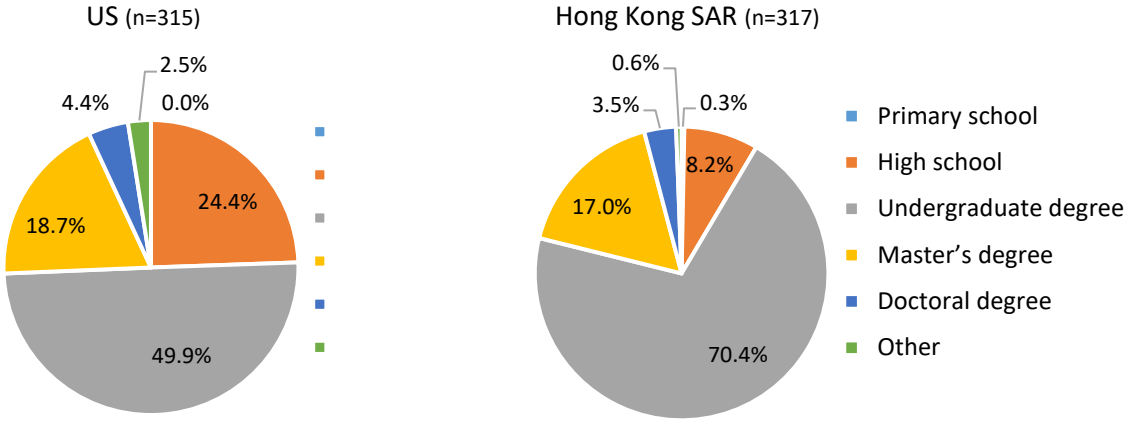


Figure 3d:
Employees' Perceived Corporate Social Responsibility of Their Firms Scale:1-7

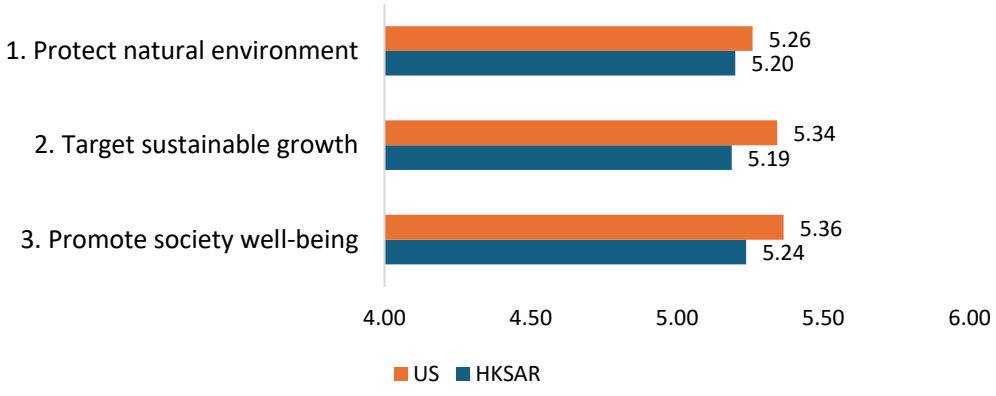
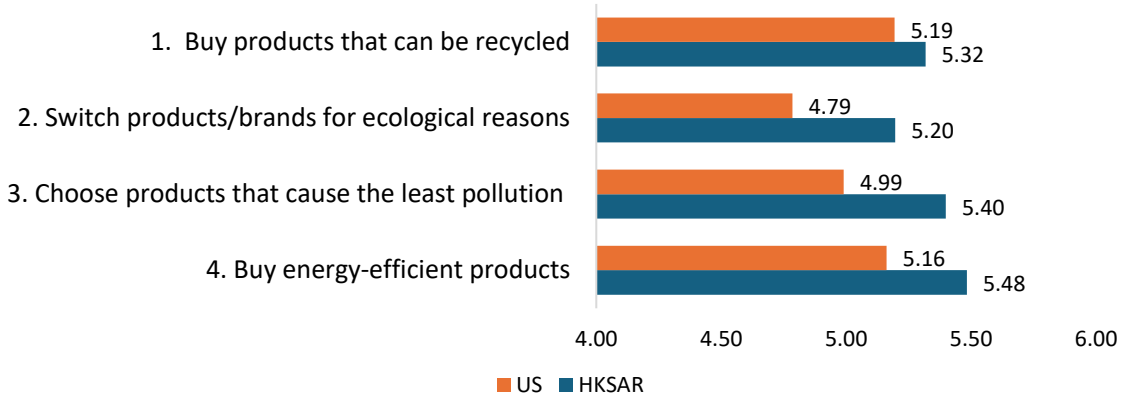


Figure 3e:
Employees' Own Environmental Purchasing Behaviors as Consumers Scale:1-7



4.2 Key Findings

Employees' perceptions of their companies' CSR performance would eventually enhance their green purchase behaviors as individual customers.

Comparing the US and Hong Kong SAR samples, the employee-consumers in Hong Kong SAR appear to have a stronger preference for green purchase behaviors than those in the US.

Based on additional research analysis not reported here, we conclude that the positive relationship is stronger between companies' CSR performance and green purchase behaviors of their employee-consumers if the corporate value is more synchronized with the individual life value of the employe

5. RC4: Enhance the Effectiveness of Strategic Corporate Communication on ESG Efforts for Listed Firms

5.1 Objective and Investigation Path

The key objective of R4 is to enhance effectiveness of strategic corporate communication on ESG efforts for Listed firms. Effective corporate communication is the key to success to disseminate quality ESG information to the market, especially to the related institutional investors efficiently. Nowadays, finance and accounting professionals face difficulties in communicating ESG information to stakeholders. This research will identify the role of communications in creating ESG intelligence.

For RC4, we conducted survey and focus group interview to explore 1) whether there are particular issues of the certain E, S, G pillars bringing the most challenges for the IR/CC units to handle; 2) the operation differences between early-stage firms and mature firms in handling ESG issues. We conducted a focus group to reach out to the IR/CC professionals:

Date	Supporting Organization/ Host (number of Participants)
September 25, 2023	Hong Kong Investor Relations Association, Hang Seng University of Hong Kong (n=7)

5.2 Key Findings

Early-stage and mature firms face different situations when their IR teams handling ESG issues.

a) For the **early-stage firms**, the main barrier for IR teams lies in the **lack of experience and the ability to acquire enough information from the supply chain for disclosure**.

b) The **mature firms**, compared with the early-stage firms, their IR teams are able to acquire the ESG intelligence to **support the firm from the risk management perspective**.

c) Results indicate that environmental issues such as carbon emissions and pollutions are key communication area for the IR team and ESG sentiment in public media is a major concern for risk management.

6.ESG Intelligence Infrastructure and Conclusion

6.1 ESG Intelligence Infrastructure

We apply an advanced machine learning algorithm, the Artificial Neural Network (ANN), to examine both linear and nonlinear effects between firm-level characteristics and ESG performance of all firms listed on the Hong Kong Stock Exchange (HKEX) with ESG scores during 2019–2021. To mitigate the problem of data-specific findings due to rating bias from a single rating agency, we employ novel i-score (divergence-adjusted ESG measure). The documented findings indicate the unsuitability of traditional linear regression models to capture the nonlinear effects and to detect some linear relationships. Furthermore, the results show the superiority of the self-organizing map (SOM) ANN framework in explaining the impact of firm-level factors on ESG performance.

Based on the conclusion of our research findings for each RC, we propose the relevant ESG data intelligence for academic and industry research.

For RC1, based on the Investor Survey, Mainland China firms and Hong Kong firms can receive better support to pursue ESG performance as Mainland Chinese investors are more willing to sacrifice a larger return to support firm-level ESG effort. Therefore, researchers should consider some overall ESG measures that control divergence (i.e., i-score) and sentiment effects (i.e., i-Composite).

For RC2, our research suggests that listed firms' ESG reporting should adjust for greenwashing issue. Severe greenwashing will have strong negative consequences on stock valuation. As greenwashing is related to environmental measures, researchers and industry professionals should pay attention to the E-Pillar of i-score to examine the greenwashing issues.

For RC3, our survey findings give confidence to Hong Kong firms to strengthen Green and Social Pillar strategies as they have a strong positive influence on their employees compared to the US. The researchers and senior executives should employ E and S Pillars i-score to strengthen the ESG performance of the firms to provide a stronger influence on the employees in pursuing green behaviors.

For RC4, our survey findings imply that carbon and greenhouse gases are the most common topics related to IR job duties. In addition, today's strong influence from public media may obviously affect companies' image. IR and corporate communication professionals should consider applying E-Pillar of i-score and ESG sentiment indicators to closely monitor the environmental performance and the public perceptions of the ESG issues.

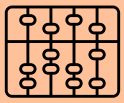
To further elaborate on the data recommended for the RCs, Table 2 below provides a concise summary of the research output discussed. First, i-score serves as a divergence-adjusted rating system for approximately 500 Hong Kong listed firms that are covered by at least two

commercial ESG data providers. It adjusts for industry variations using GICS1 for peer comparison to generate i-score ranking. Based on the i-score framework, we construct an E-Pillar i-score and an S-Pillar i-score. In addition, derived from media coverage of ESG/sustainability topics, we measure ESG sentiment through a professional AI engine using Natural Language Processing (NLP) algorithms. Covering all publicly available news and media information, we construct positive and negative sentiments for Hong Kong listed firms over a given time period. While i-Composite is constructed as a weighted average of i-score and ESG sentiment ratings of publicly available information at firm-level produced by two commercial data providers based on NLP and AI engine. The selected sample data of i-score and i-Composite are exhibited on the website https://www.bigdata-esg.com/the-top-500 . It may be moved to the website of the Research Centre for ESG when appropriate.

6.2 Conclusion

Using one year to set up various data platforms and employ research personnel to execute research projects, we have spent the next two years testing two major research directions proposed in the IDS project. First, we developed a tailor-made ESG intelligence for each of the stakeholders of the 4 RCs. Second, we empirically designed an ESG data infrastructure that can be useful for academic researchers and industry practitioners to measure ESG performance of listed firms. In other words, for this second research objective, we aim to create a methodology to construct a new composite ESG performance indicator for both academic world and businesses.

Table 2.
ESG Data Intelligence Infrastructure

	Based on the conclusion of our research findings for each RC, we propose the relevant ESG data intelligence for academic and industry research	**Data to Apply**
	**RC1:** Researchers should consider some overall ESG measures that control divergence (i.e., i-score) and sentiment effects (i.e., i-Composite).	• i-Composite • i-score
	**RC2:** As greenwashing is related to environmental measures, researchers and industry professionals should pay attention to the E-Pillar of i-score to examine the greenwashing issues.	• E-Pillar i-score
	**RC3:** The researchers and senior executives should employ E and S Pillars i-score to strengthen the ESG performance of the firms to provide a stronger influence on the employees in pursuing green behaviors.	• E and S Pillars i-score
	**RC4:** IR and corporate communication professionals should consider applying E-Pillar of i-score and ESG sentiment indicators to closely monitor the environmental performance and the public perceptions of the ESG issues.	• E-Pillar i-score • ESG news sentiment

- End of Report -

The Research Centre for ESG at the Hang Seng University of Hong Kong was established in 2022

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