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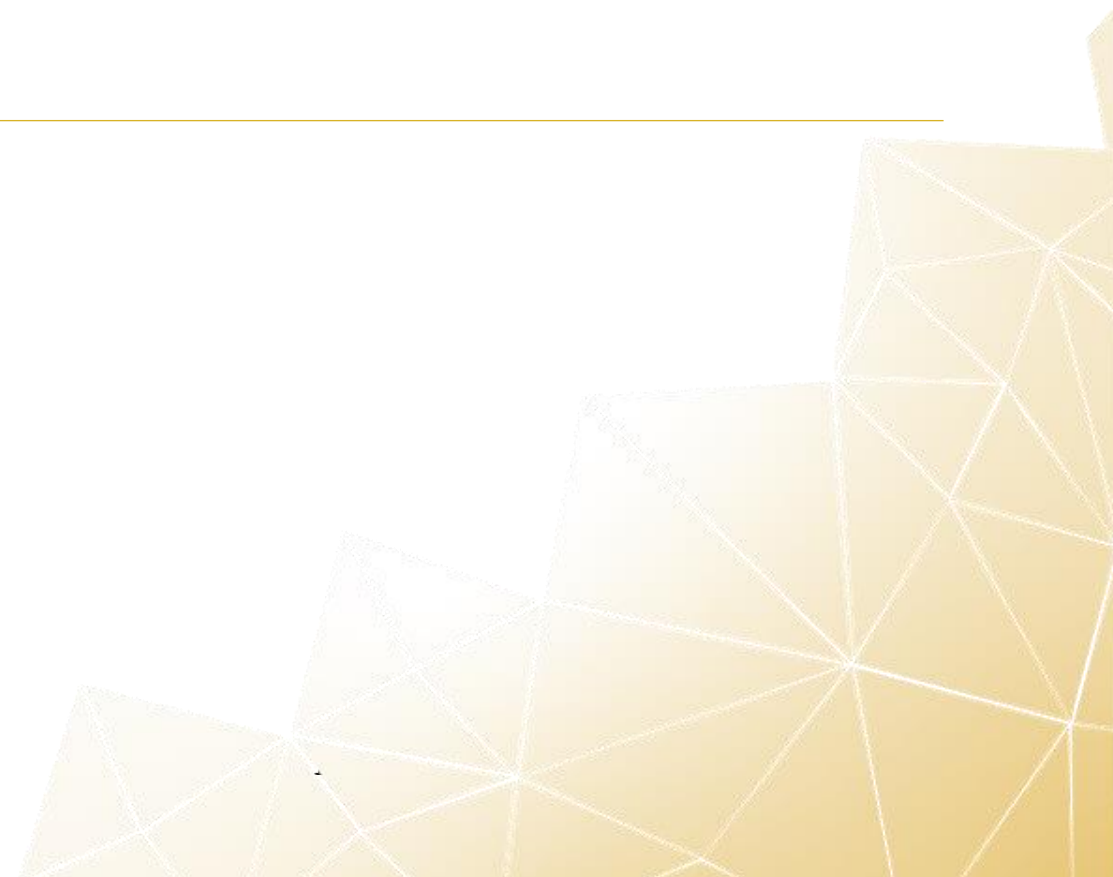
Grant Title: Establishing a research infrastructure for ESG intelligence: A multi-stakeholder perspective (UGC/IDS(R)14/21)

Survey Topic: A survey on measuring consumer satisfaction on ESG performance: US vs Hong Kong

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IDS Progress Report

Research Component (RC) 3: Measure consumer satisfaction on ESG performance



RGC IDS Grant (UGC/IDS(R)14/21) RC3 Progress Report

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1. Background and Methodology

RC3 examines the effectiveness of ESG efforts of corporations from the perspective of retail clients and consumers. The objective of this survey is to provide additional information to enhance the role of ESG efforts of listed firms in creating ESG intelligence from the consumers' perspective. We take an academic research framework in designing our survey in order to make our work more publishable. More specifically, we added the employees' perspective in 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 and retail clients 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. To this end, RC3 will integrate the value of consumer attitudes and behaviors towards firms' ESG activities in forming our overall ESG intelligence.

We engage an external expert (academic researcher) to team up with our HSU researchers to implement the survey. Their tasks include:

1. To design a survey related to employees' and consumers' opinion on ESG practices
2. To provide advice to our research team in results analysis
3. To provide advice on hypothesis development using the survey finding

The data collection was administered online by Dynata and resulted in valid responses from 315 US and 317 Hong Kong working adults.

1.2. Major constructs of interest

The literature review led to the identification of the following constructs for investigation:

- (1) Perceived corporate social responsibility (PCSR)
- (2) Perceived corporate environmental behavior (PCEB)
- (3) Employee's voluntary environmental behavior (EVEB)
- (4) Dialogic competency: Perceived mutuality (PM)
- (5) Dialogic competency: Perceived openness (PO)
- (6) Consumer's environmental purchasing behavior (CEPB)
- (7) Individual's environmental belief (IEB)

Items for these seven constructs were adapted from the relevant literature and incorporated into the survey questionnaire. All these items were measured using a seven-point semantic scale, anchored with 1 denoting 'strongly disagree/never true',

and 7 denoting ‘strongly agree/always true’. Details of these items are reproduced in Appendix I. Results from preliminary data analysis of the collected survey responses are further summarized below.

2. Findings

2.1. Sample profile

Major demographic characteristics of the respondents are summarized below:

Table 1. Demographic profile

	US (%)	HK (%)	Total (%)
<i>Gender:</i>			
Male	52.4	51.7	52.1
Female	47.6	48.3	47.9
<i>Age:</i>			
18-34	58.1	59.3	58.7
35-54	26.3	36.3	31.3
55 or above	15.6	4.4	10.0
<i>Education:</i>			
Primary school	0.0	0.3	0.2
High school	24.4	8.2	16.3
Undergraduate degree	49.8	70.3	60.1
Master’s degree	18.7	17.0	17.9
Doctoral degree	4.4	3.5	4.0
Other	2.5	0.6	1.6
<i>Position in the present organization:</i>			
Entry-level	23.2	21.5	22.3
Mid-level	48.6	53.0	50.8
Senior-level	28.3	25.6	26.9
<i>No. of years working in the current field of working:</i>			
Less than 3 years	5.9	7.9	11.9
3-5 years	21.9	25.6	23.7
6-10 years	30.8	38.8	34.8
11-15 years	13.0	13.2	13.1
More than 15 years	18.4	14.5	16.5
<i>Working mode:</i>			
Work in office	55.9	69.7	62.8
Work from home	18.7	4.7	11.7
Hybrid mode	25.4	25.6	25.5

2.2. Reliability of the measures

Cronbach's Alpha reliability test was performed to check the reliability of the measures for all seven constructs under study. Except for IEB, all the Alpha values were above the threshold of 0.7. After removing two reversely coded items, IEB's Alpha value also exceeded 0.7.

Table 2. Results of Cronbach's Alpha reliability test

Construct	Alpha
Perceived corporate social responsibility (PCSR)	0.93
Perceived corporate environmental behavior (PCEB)	0.96
Employee's voluntary environmental behavior (EVEB)	0.76
Dialogic competency: Perceived mutuality (PM)	0.88
Dialogic competency: Perceived openness (PO)	0.88
Consumer's environmental purchasing behavior (CEPB)	0.89
Individual's environmental belief (IEB) ^a	0.73

Note: ^a = Computed Alpha value after removing two reversely coded items.

2.3. Composite scores of the constructs

In view of the satisfactory reliability test results, composite scores of the seven constructs were computed to represent these constructs. Please note that the composite score for IEB was computed based on the remaining five instead of the original seven items. Summarized statistics of these constructs are presented below.

Based on t-test, the Table also reveals that the US and HK sub-samples exhibited significant differences in the mean scores for the first six constructs at $p < 0.05$.

Table 3. Summarized statistics of the constructs

	US Mean (SD)	HK Mean (SD)	Total Mean (SD)
Perceived corporate social responsibility (PCSR)*	5.53 (0.79)	5.35 (0.81)	5.44(0.80)
Perceived corporate environmental behavior (PCEB)*	5.07 (1.04)	5.23 (0.95)	5.15(0.99)
Employee's voluntary environmental behavior (EVEB)*	5.22 (0.89)	5.39 (0.80)	5.31(0.85)
Dialogic competency: Perceived mutuality (PM)*	5.45 (0.89)	5.15 (0.98)	5.30(0.95)
Dialogic competency: Perceived openness (PO)*	5.42 (0.87)	5.10 (0.93)	5.26(0.91)
Consumer's environmental purchasing behavior (CEPB)*	5.03 (0.96)	5.36 (0.85)	5.20(0.93)
Individual's environmental belief (IEB)	5.41 (0.90)	5.53 (0.74)	5.47(0.82)

Note:

SD = standard deviation

t-test significant at $p < 0.05$, indicating that the US and HK sub-samples were significantly different in their mean scores.

2.4. Correlations between constructs

Pearson correlation was performed to further explore the inter-relationships between the constructs, as shown in Table 4. The results show that all the computed correlations were significant, indicating all the constructs were highly related to one another.

Table 4. Pearson Correlations among constructs

	PCSR	PCEB	EVEB	PM	PO	CEPB	IEB
PCSR	1						
PCEB	.732**	1					
EVEB	.618**	.698**	1				
PM	.736**	.637**	.545**	1			
PO	.723**	.624**	.527**	.862**	1		
CEPB	.581**	.681**	.742**	.544**	.530**	1	
IEB	.422**	.381**	.516**	.375**	.356**	.541**	1

Note:

** = $p < 0.01$

2.5. Common methods bias test

To mitigate common method bias (CMB), *post-hoc* tests were used to using common latent factors method (CLF) (Meade et al., 2007; Podsakoff et al., 2003). Results suggest the total variance extracted by one factor was 44.9%, below the recommended threshold of 50% (Podsakoff et al., 2003).

2.6. Measurement invariance

Multi-group CFA measurement invariance test was used (Steenkamp and Baumgartner, 1998; Vandenberg and Lance, 2000) to measure configural metric and scalar invariance. Comparison between baseline model with other models in sequence is compared. Table 4 illustrates the multi-group CFA measurement invariance results based on the methodology recommended by Steenkamp and Baumgartner (1998) and Vandenberg and Lance, (2000) i.e., focusing on configural, metric and scalar invariance. Configural invariance was estimated by comparing the baseline model with the other models in sequence (see Table 5). The fit for Model 1 (configural invariance) is acceptable ($\chi^2(1230) = 1756.43$, RMSEA of 0.026, CFI of 0.094 and TLI of 0.961). Next, metric invariance was then tested by constraining the matrix of factor loadings to be invariant across the two groups (Model 2). The model fit (metric invariance) is also acceptable ($\chi^2(1260) = 1805.862$, RMSEA of 0.026, CFI of 0.962 and TLI of 0.960). Finally, scalar invariance (Model 3) was conducted whereby the factor loadings and item intercepts were constrained ($\chi^2(1281) = 1949.512$, RMSEA of 0.029, CFI of 0.954 and TLI of 0.952).

Table 5. Measurement equivalence tests

	χ^2 (df)	RMSEA	CFI	TLI
Model 1: Configural No equality constraints	1756.43 (1230)	0.026	0.964	0.961
Model 2: Metric Equal factor loadings	1805.862 (1260)	0.026	0.962	0.960
Model 3: Scalar Equal factor loadings and item intercepts	1949.512 (1281)	0.029	0.954	0.952

Notes:

χ^2 = Chi-squared; df = degrees of freedom; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index

Following Chen (2007) and Cheung and Lau (2012) invariance test recommendations, changes in goodness of fit indices (CFI) and RMSEA were used to assess measurement invariance instead of chi-square difference tests which is sensitive to sample size and normality violation. The cut-off point of -0.01 for CFI and 0.015 for RMSEA was therefore used. The results revealed that there was the change in CFI and RMSEA between the configural, metric and scalar models were less than -0.01 and 0.015 for RMESA. The outcome suggests measurement equivalence across the two groups.

2.7. Structural model

Structural equation modelling (SEM) is used to test the hypotheses (Anderson and Gerbing, 1988; Hair et al., 2007). We have the following hypotheses developed.

H1: Perceived Openness, Perceived Mutuality and Perceived Corporate Environmental Behavior serially mediate Perceived Corporate Social Responsibility and Consumer's Environmental Purchasing Behavior

H2: Perceived corporate environmental behavior mediates Perceived corporate social responsibility and Employee's voluntary environmental behavior.

H3: Perceived corporate environmental behavior mediates Perceived corporate Social Responsibility and Consumer's environmental purchasing behavior

H4: Perceived Openness moderates the relationship between Perceived Corporate Social Responsibility and Employee's Voluntary Environmental Behavior

H5: Perceived Mutuality moderates the relationship between Perceived Corporate Social Responsibility and Employee's Voluntary Environmental Behavior

H6: Perceived Openness moderates the relationship between Perceived Corporate Social Responsibility and Consumer's Environmental Purchasing Behavior

H7: Perceived Mutuality moderates the relationship between Perceived Corporate Social Responsibility and Consumer's Environmental Purchasing Behavior.

3. Conclusions and Implications

The survey covers respondents from the US and Hong Kong. We are interested in understanding the possible ESG values and expectations of employees and individuals. While this comparison goes beyond the basic requirements of RC3, a comparative analysis between East and West in terms of possible regional or cultural differences in ESG can be important to enhance our understanding for the ESG Intelligence which include users from international institutions and researchers.

Appendix I – Items used to measure the constructs

Perceived corporate social responsibility (PCSR)

(7-point scale: 1 = “most disagree”; 7 = “most agree”)

1. Our organization participates in activities which aim to protect and improve the quality of the natural environment.
2. Our organization makes investment to create a better life for future generations.
3. Our organization implements special programs to minimize its negative impact on the natural environment.
4. Our organization targets sustainable growth which considers future generations.
5. Our organization supports nongovernmental organizations working in problematic areas.
6. Our organization contributes to campaigns and projects that promote the well-being of society.
7. Our organization encourages its employees to participate in voluntarily activities.
8. Our organization emphasizes the importance of its social responsibilities to society.
9. Our organization policies encourage the employees to develop their skills and careers.
10. The management of our organization is primarily concerned with employees’ needs and wants.
11. Our organization implements flexible policies to provide a good work & life balance for its employees.
12. The managerial decisions related to the employees are usually fair.
13. Our organization supports employees who want to acquire additional education.
14. Our organization respects consumer rights beyond the legal requirements.
15. Our organization provides full and accurate information about its products to its customers.
16. Customer satisfaction is highly important for our organization.
17. Our organization always pays its taxes on a regular and continuing basis.
18. Our organization complies with legal regulations completely and promptly.

Perceived corporate environmental behavior (PCEB)

(7-point scale: 1 = “most disagree”; 7 = “most agree”)

Our organization stresses:

1. strategies to transfer to a clean industry,
2. clean product innovation.
3. the promotion of renewable energy development.
4. investment in the environmental protection industry.
5. output reduction.
6. cleaner input substitution.
7. raw material recycling.
8. end-of-pipe abatement.
9. energy-saving equipment.
10. new production processes.
11. improvements in technical innovation.
12. buying clean materials.
13. establishing environmental management system.
14. Improving internal management.
15. reducing pollutant emissions.
16. environmental education and training.
17. investment in the fields of environmental protection.

Employee’s voluntary environmental behavior (EVEB)

(7-point scale: 1 = “never true”; 7 = “always true”)

1. I print double sided whenever possible.
2. I put compostable items in the compost bin.
3. I put recyclable material (e.g., cans, paper, bottles, batteries) in the recycling bins.
4. I bring reusable eating utensils to work (e.g., travel coffee mug, water bottle, reusable containers, reusable cutlery).
5. I turn lights off when not in use.
6. I take part in environmentally friendly programs (e.g., bike/walk to work day, bring your own local lunch day).
7. I make suggestions about environmentally friendly practices to managers and/or environmental committees, in an effort to increase my organization’s environmental performance.

Dialogic Competency – Perceived mutuality (PM)

The organization I work for:

1. Asked for feedback from people like me about the quality of its information.
2. Involved people like me to help identify the information I need.
3. Provided detailed information to people like me.
4. Made it easy to find the information people like me need.
5. Asked the opinions of people like me before making decisions.
6. Took the time with people like me to understand what we need.

Dialogic Competency – Perceived Openness (PO)

The organization I work for:

1. Was timely in providing information to the employees.
2. Shared open access to information to all employees.
3. Was honest in communicating with the employees.
4. Was genuinely committed to the conversation with the employees.
5. Was transparent in communicating with the employees.
6. Was not deceptive in interpreting employee opinion.
7. Was forthcoming with information that might be damaging to the organization.
8. Was open to criticism by its employees.

Consumer’s environmental purchasing behavior (CEPB)

(7-point scale: 1 = “never true”; 7 = “always true”)

1. I try to buy energy-efficient products.
2. I avoid buying products that have excessive packaging.
3. When there is a choice, I choose the product that causes the least pollution.
4. I have switched products/brands for ecological reasons.
5. I make every effort to buy products made from recycled materials.
6. I have convinced members of my family or friends not to buy products that are harmful to the environment.
7. Whenever possible, I buy products packaged in reusable containers.
8. I try to buy products that can be recycled.
9. I use Light-Emitting Diode (LED) bulbs to save energy.

Individual’s environmental belief (IEB)

(7-point scale: 1 = “most disagree”; 7 = “most agree”)

1. The balance of nature is very delicate and easily upset.
2. Humans are severely abusing the environment.
3. Human must live in harmony with nature in order to survive.
4. Humans were created to rule over the rest of nature. (R) (D)
5. Plants and animals exist primarily to be used by humans. (R) (D)
6. We are approaching the limit of the number of people the Earth can support.
7. The Earth is like a spaceship with only limited room and resources.

Note:

R = reversely coded item; D = item deleted based on Cronbach’s Alpha reliability test.