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Impact of Institutional Distance on Environmental and Social Practices in Host Countries: Evidence from International Construction Companies

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Abstract

Construction businesses expanding internationally often need to devise corporate social responsibility (CSR) as an indispensable component of their competitive strategies. Companies will customize their CSR programs in line with host countries' institutional environments, meanwhile, this customization will be unavoidably influenced by the institutions at home countries. This research aims to explore whether the institutional distance between home and host countries matters to CSR, in particular its related environmental and social practices. Data regarding the CSR practices in host countries are extracted from CSR/sustainability reports by using content analysis and text mining. Logistic regression models are then applied to test the roles of institutional distance and host country contexts on the two types of CSR practices. It is found that the institutional distance has no impact on environmental practices in host countries, but the embedded contexts of host countries positively affect the practices. It is also found that the institutional distance is positively correlated with social practices; however, the positive relationship is less pronounced when the host country's development level is higher. The novelty of this research lies in considering both host countries' contexts and the institutional distance. The findings offer companies new insights on how to engage in environmental and social practices and develop CSR strategies in international construction markets.

Keywords: Institutional distance, corporate social responsibility, environmental practice, social practice, legitimacy, host country context

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1. Introduction

In line with the Sustainable Development Goals (SDGs) increasingly promoted by the United Nations (2015), the Paris Climate Agreement, and the worldwide agreement on Carbon Neutrality, companies nowadays are expected to balance environmental, social, and economic sustainability (Mio et al. 2020). Nevertheless, construction companies are often criticized for their adverse environmental and societal effects (Lu et al. 2016). This is particularly true when construction companies are competing in the international arena with different environmental, social, and economic conditions. Without fully considering these different conditions, international construction companies (ICCs) may be faced with criticism, loss, and even project failure. For example, the media reported a big concern on the potential damage to the environment and communities from Chinese-backed hydropower projects along the Mekong River (Gokkon 2018), and the construction of the dam in Myanmar has been even suspended by the local government after nationwide protests due to their concerns on the loss of livelihoods, wide-scale environmental damage, and destruction of cultural heritage sites (HumanRightWatch 2019). ICCs are compelled to embrace environmental and social practices to respond to public concerns, build reputations, and attain legitimacy in the long term (Bondy et al. 2012; Zheng et al. 2015).

According to institutional theory, environmental and social practices are shaped, mediated, and channeled by the institutional environment faced by companies (Jackson and Rathert 2016). When operating in international markets outside their home countries (i.e., “host countries”), ICCs are sensitive to host-country attributes (Lee et al. 2016) because construction business is very much site-specific and cannot be disconnected with a local social, economic, environmental, and legal context. Local conditions and corresponding expectations from stakeholders and the general public in a particular context are the most crucial factors for construction companies (Jackson and Rathert 2016) to gain social acceptability and credibility in host countries (Scott 2008) and to survive and thrive in a competitive market.

Whilst the importance of local conditions for a construction business is constantly emphasized, scholars also stress the importance of capturing home-country institutional forces simultaneously. It is understandable that the powerful influence of a head office, as well as culture and norms along with the entire organization, will impact the overall strategies, capabilities, and core operations of the organization (Kolk 2005). Hence, researchers in international business emphasize the importance of institutional distance between a country pair to reflect the in-between tension of diverse institutional environments (Kostova and Zaheer 1999). Kostova (1997) defines institutional distance as "the extent of dissimilarity between regulatory, cognitive, and normative institutions of two countries", which has been used as a theoretical lens to examine corporate social responsibility (CSR) of multinational enterprises. Campbell et al. (2012) state that a greater distance from home countries may on the one hand strategically motivate companies to conduct host-country CSR to reduce the liability of foreignness, while they may have less willing or reduced ability to engage in CSR on the other. Jacqueminet (2017) argues that the relationship between the institutional distance and CSR relies on the subsidiaries' relative needs for internal versus external legitimacy. However, little research has considered construction companies' concerns on environmental and social practices, and whether institutional distance still matters to their CSR practices in host countries.

This research aims to explore whether the institutional distance has impacts on the environmental and social practices by focusing on the relationship in the international construction context. Firstly, the construction industry provides a particular context, where construction business is largely embedded in host countries. The host-country effects may be more significant due to the industry's project-based and field-oriented production characteristics. Secondly, the controversial feature of the construction industry leads to two diverse considerations of the practices: environmental practices are conducted to decrease the negative externality, compliance with regulative standards in specific countries; while social practices are to increase positive externality by responding to moral pressures or legitimate requirements arise from local communities (Bustamante 2011; Ye et al. 2020). This research seizes the opportunity to address the different kinds of practices and figure out the diverse effects on environmental and social practices rather than treating CSR as a whole. Thirdly, this research examines

specific practices in the environmental and social aspects in host countries. Rather than relying on the database, which can only provide CSR performance for the entire company, data with respect to environmental and social practices is extracted by using content analysis with the assistance of text mining.

The remainder of this paper is structured as follows. Section 2 provides a theoretical background for this research, based on which, hypotheses are developed and illustrated in a conceptual framework. Section 3 introduces the sample and the process of extracting environmental and social practices from CSR reports by using content analysis and text mining. It also elaborates the steps of using logistic regression models. Section 4 presents the results of the tests. Section 5 discusses the results and Section 6 draws the conclusion.

2. Theoretical background and hypotheses

2.1 Environmental and social practices

Environmental practices are responses to environmental issues, which loom large in the CSR agenda being addressed by construction companies (Jones et al. 2006; Lu et al. 2018). Construction activities have significant adverse impacts on the environment, including dust and greenhouse gas emissions, noise pollution, discharged water and waste, and land degradation (Lu et al. 2016). To this end, construction companies emphasize environmental practices attempting to minimize their negative impacts on the environment (Jiang and Wong 2016). For instance, ISO 14000 series environmental management systems are applied by many construction companies to guarantee their environmental practices. Some construction companies demonstrate their energy-intensive activities and operate in strict regulatory environments. Environmental practices are always treated under international standards such as UN Global Compact since environmental protection attracts global attention with a common set of values, core strategies, and policies across the company (Bustamante 2011).

From a social perspective, the construction industry is a critical component of the labor market and generates large numbers of jobs (Zhao et al. 2012). However, with regards to the controversial nature of the construction industry, construction companies are supposed to contribute extra efforts to improve social welfare (Jiang and Wong 2016). For example, they emphasize the commitments and responsibilities they have to the communities in which they work (Jones et al. 2006). Ye et al. (2020) also emphasize the on-site community engagement practices for the conduct of construction projects because they need to get the operating license. Construction businesses are helpful to deal with social issues, including the support for community construction (Jones et al. 2006), reconstruction for disaster relief (Ye et al. 2018), and building schools and providing electricity (Ye et al. 2020). These social issues are cultural grounds with culture-specific expectations (Bustamante 2011; Ye et al. 2020). Social practices are seldom regulated but conducted with local CSR strategy responsive to the local context and local stakeholders (Collinge 2020; Duran and Bajo 2014).

2.2 Institutional distance and business operations

Institutional distance, meaning "the extent of dissimilarity between host and home institution" (Kostova 1997), is derived from a strand of institutional theory where institutional environment influences firm structure and behavior (DiMaggio and Powell 1983). Organizational theorists have suggested that institutional environments comprise a variety of institutions, including regulations, educational systems, norms and cultures, and so on (Kostova and Zaheer 1999). Operating in both home and host countries, companies are faced with multiple institutional environments and thus with a divergence of institutional environments. The main explanation of why institution matters here is regarding legitimacy- countries have diverse institutions, and therefore, diverse ways of conducting certain functions to be viewed as "legitimate" (Kostova and Zaheer 1999).

Institutional distance has been used to explain multinational enterprise behaviors, such as location choice (Xu and Shenkar 2002), entry mode choice (Hernández and Nieto 2015), ownership strategy (Eden and Miller 2004), and staffing strategies (Ando and Paik 2013) mainly with a basic argument that institutional distance affects "the liability of foreignness operating in host countries" (Eden and

Miller 2004), which refers to the costs of doing business abroad (Quer et al. 2019) due to the lack of familiarity with the local environment. This largely affects the location choice and modes of entry strategies, and once they have entered the market, institutional distance impacts the "establishment of organizational legitimacy in host countries" (Kostova and Zaheer 1999). In other words, the larger degree of dissimilarity between the two countries referring to the larger institutional distance, the more possibilities that companies' activities are improper or impropriate in host countries, leading to greater pressures on companies for local responsiveness (Prahalad and Doz 1987).

CSR, environmental and social practices particularly, has been conceptualized as a set of legitimation strategies that multinational enterprises adopt to refine the role of business in society (Castelló and Lozano 2011) and to respond to different forms of normative and coercive stakeholder influence (Rathert 2016). Multinational enterprises at a greater distance from the home countries should therefore be strategically motivated to engage in host-country environmental and social practices (Campbell et al. 2012), but they may have less ability for these practices because they have fewer resources and the adaptation to local norms is too expensive (Jacqueminet 2017). Meanwhile, the influence of institutional distance is largely in line with CSR strategies drawn from the underlying global-local considerations (Bustamante 2011) and types of isomorphism pressure (Ye et al. 2020).

2.3 Host country context, institutional distance, and environmental practices

In line with the global sustainable development goals and mitigating climate changes, countries around the world have their own environmental concerns, regulations, or policies, which are formulated by governments or customer green demands (Qiu et al. 2020). Some of these regulations are not specific to the construction industry, but they inevitably regulate it owing to construction's roles. By exploring ICCs' environmental practices, Ye et al. (2020) state that environmental practices are conducted under compliance pressures with well-established regulations, rules, or laws. Institutional theory suggests firms conform to prevailing societal rules and beliefs regarding environmental protection in the operating context (Wang et al. 2019) to establish regulative legitimacy (Scott 2008) or normative legitimacy (Suddaby et al. 2016). Environmental practices are thus highly conditioned by the

institutional profiles of the different countries where firms operate. Babiak and Trendafilova (2011) echo that executives are motivated to address environmental issues to conform to external institutional pressures, such as acquiescence to government directives or facilitating compliance with environmental laws and regulations.

With regards to the specific environmental regulations in different host countries, Rasoulkhani et al. (2020) report that the whole process of capital projects in infrastructure sectors would be significantly affected. Chowdhury et al. (2020) try to propose a regulatory future-proofing process that includes instructions and guidance for regulated entities in construction and infrastructure sectors to proactively adapt to the outside environmental regulatory context. Lu et al. (2013) also report the reasons why construction companies conduct environmental practices, one of which is the government regulation motivations and the increasing pressure from large green companies on the supply chain. The context where construction companies operate with higher environmental performance provides them with either regulative or normative pressure to conduct environmental practices. Therefore, the first hypothesis is that:

H1: The environmental practice is positively correlated with the host country context where companies are embedded

Host country context sets a regulative baseline for international companies to conduct environmental practices, especially for ICCs, whose construction business is largely embedded in the contexts. The regulative baseline is strong enough that every company needs to follow. Aguilera-Caracuel et al. (2013) state that considering environmental regulations as coercive, companies exhibit different levels of environmental practices that correspond to each country's legal requirements. There are two distinct situations: 1) when the legal requirements are high in the host countries, ICCs intend to conduct environmental practices to achieve regulative and normative legitimacy in the context regardless of the existing institutional distance. For example, due to the high level of energy requirements in Germany, ICCs operating there mandate a certain percentage of energy to be obtained from renewable or alternative sources. When the compliance pressure in the host country is high, ICCs prefer to reach the

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188 regulative baseline but are restricted to conduct more for best practices. 2) When the requirements on
189 environmental issues in the host country are lower than those in the home country, ICCs would also
190 demonstrate their home-country environmental practices in the host countries, for example, Spanish
191 construction companies would like to conduct environmental practices, such as energy-efficient
192 equipment and waste management in Latin American markets even though these countries are with
193 lower environmental requirements (Ye 2018). However, institutional distance makes no sense in these
194 two situations. So, there comes the second hypothesis that:
195 *H2: The institutional distance between home and host countries does not matter to companies'*
196 *environmental practices in the host countries*
197

198 ***2.4 Host country context, institutional distance, and social practices***

199 Organizations need to conform to or be consistent with established cognitive structures in the society
200 to pursue legitimacy (Kostova and Zaheer 1999). Jackson and Apostolakou (2010) find that firms in
201 high-impact industries would respond to the pressures by adopting more extensive practices. Ye et al.
202 (2020) describe social practices as contextualized practices that are characterized by a strong cultural
203 grounding or societal needs in the context of the international construction business. For example,
204 disaster-relief initiatives are always conducted as the priority in disaster-prone countries, such as
205 donations and initiatives related to the construction business, i.e. structural assessments and
206 infrastructure evaluation.
207

208 When in a country with a lower development level, the country may be faced with higher societal needs,
209 various poverty issues, healthy issues, or education problems, it is easier for companies to seek
210 legitimacy by social practices. For example, ICCs can initiate activities called "answer to hunger" or
211 "relief for the poor" in some African countries and deal with the clean water problem to respond to
212 poverty issues; provide free medical care or suitable medical infrastructure to respond to health issues;
213 and build schools and provide electricity to deal with basic education problems. While in a country with
214 a higher quality of life, social practices are less implemented for companies for the purpose of

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establishing legitimacy with the most frequently mentioned social practices in the CSR reports being communication with local communities. The third hypothesis is:

H3: The social practice is negatively correlated with the development level of the host country where companies are embedded

When going abroad, a company often faces entry barriers (e.g. culture shock) in a host country market (Eden and Miller 2004). Institutional distance between home and host countries undoubtedly enhances the barriers. For example, it increases the liability of foreignness, which can be decomposed into unfamiliarity, relational and discriminatory hazards (Eden and Miller 2004; Salomon and Wu 2012). In other words, the institutional distance reduces the legitimacy of existing practices of companies from home countries and increases demands to establish cognitive legitimacy (Meyer and Scott 1983). For example, initiatives to deal with the basic education of children are not suitable for the developed countries.

The institutionally distant host country increases the salience of a given social issue, whereby stakeholders are seen as legitimate claimants to practices in the absence of regulation (Rathert 2016). For construction companies, social issues stand out due to the industry's controversial features. For example, construction projects always affect the living environment of local communities with their adverse impacts such as land occupation, noise and dust pollution, and even hazardous substances. Distinguished from the environmental practices, which are conducted with the compliance pressure, ICCs are expected to conduct more social practices to address the social issues and gain cognitive legitimacy from stakeholders in the institutional distant host country. Meanwhile, companies' operations are placed in a stricter examination context than domestic companies in the host countries, compared with which, construction companies are expected to undertake social practices to meet societal needs, to build their reputation, and to seek cognitive legitimacy. There thus comes the fourth hypothesis that:

H4: The social practice is positively correlated with the institutional distance between home and host countries

Based on the literature review and hypothesis formation, a conceptual framework of this research is developed, as shown in Fig.1.

<<Insert Fig.1. here>>

3. Research Methods

The research methods are devised to test the hypotheses as derived in the last section. They comprise three interconnected steps: (1) Data preparation, (2) Defining variables and measures, and (3) Hypothesis testing.

3.1 Data preparation

3.1.1 Sample and document collection

The sample of international construction companies (ICCs) is derived from two sources: one is the top international contractor lists compiled by *Engineering News Records (ENR)*, a construction, building, and engineering-oriented magazine, and the other is the Sustainability Disclosure Database of Global Reporting Initiative (GRI), which incorporates a detailed overview of CSR/sustainability reports of ICCs published from 1999 to 2018. By excluding some of the companies due to a lack of CSR/sustainability reports, 68 ICCs are chosen as the sample for the analysis.

CSR/sustainability reports of the sampled ICCs over seven years (2011-2017) are retrieved from their websites or the GRI's database. Either sustainability or CSR reports are collected as both disclose similar contents regarding environmental and social practices. Not all ICCs disclose reports every year and some 2017 CSR reports are not included as they are not yet released at the collection date (March 2018). In total, 369 CSR/sustainability reports are collected for the analysis (shown in Table 1).

<<Insert Table 1 here>>

3.1.2 Environmental and social practices extraction

Environmental and social practices of ICCs in specific host countries (as dependent variables) were extracted from CSR/sustainability reports by using a latent semantic analysis (LSA)-assisted content analysis. LSA is defined as "a theory and method for extracting and representing the contextual-usage meaning of words by statistical computations applied to a large corpus of text" (Landauer et al. 1998) and has been applied to analyze construction documents (Mahfouz and Kandil 2010; Yalcinkaya and Singh 2015). It can derive measures of the similarity of the word meanings from texts, assisting the content analysis by allocating words (i.e., input) or texts into categories (i.e. output). Particularly, it can automatically process a large volume of documents. Therefore, LSA is adopted in this study by allocating the texts in the CSR/sustainability reports into topics of environmental and social practices. The LSA-assisted content analysis process is presented in Fig. 2 and elaborated as follows.

<<Insert Fig.2 here>>

Firstly, topics related to environmental and social practices are identified based on the GRI's (2014) Construction and Real Estate Sector Supplement ("CRESS") Guidelines. They are illustrated in Table 2 to help decode CSR reports to different topics as interested.

<<Insert Table 2 here>>

Then, manual decoding is conducted to provide a reliable baseline for the subsequent text mining using machine. A total of 50 CSR/sustainability reports from 8 ICCs were chosen. Texts were first coded according to the country names using the qualitative data analysis software *NVivo Pro 11*. Coded texts were then manually classified into the 9 topics shown in Table 2. For example, if the text mentioned "biodiversity", this text was classified into the topic of biodiversity conservation (EN2) marked with "1". CSR reports were regarded as a group over the past seven years to identify environmental and social practices in host countries. Through this decoding method, the researchers care about which topic has been demonstrated over the years in each country regardless of the specific year. In total, there were 139 groups of extracted texts describing the ICCs' environmental and social practices in each country. This manual decoding process was conducted by 2 coders to ensure the reliability of the results.

Next, a pilot LSA text mining is then conducted using the 50 CSR reports chosen from the 8 ICCs as a sample. It is conducted by using genism (version 3.4, available at: https://github.com/RaRe-Technologies/gensim) in Python 3.6.5. Evaluation method (F_1 score) and cross-validation with the manual decoded results are then conducted to validate whether the LSA can be scaled up to the 369 CSR reports from all the 68 ICCs.

Finally, the LSA-assisted text mining process is applied to all the collected reports to extract the data of environmental and social practices for this study. The text mining process is quite useful and robust. However, it is too technical and lengthy to be presented in this paper. Therefore, it is added as supplementary material to keep the main storyline of this paper.

3.1.3 Extracted data of environmental and social practices

After the extraction process, the documents can be allocated to a specific topic with the doc-to-topic similarity score and the score can be further converted into a "0-1" binary score based on the threshold of the topic. "1" indicates ICCs have conducted the practice while "0" indicates not. Therefore, we can get "0-1" data for the environmental and social practices of each ICC in specific host countries. The data were further cleaned by removing items with the same home and host countries. As a result, 811 items describing environmental and social practices in 55 host countries for 66 ICCs are derived for this study.

3.2 Variables and measures

3.2.1 Dependent variables

The dependent variables would be environmental and social practices of ICCs in host countries, which are shown in the secion "Extracted data of environmental and social practices". There are only two possible values for the dependent variable, represented by a dichotomous variable "1" and "0". One assumption here is involved that the country names were mentioned in the reports only when ICCs conduct specific environmental or social practices.

326

327 *3.2.2 Independent and moderating variables*

328 Based on the hypothesis, independent and moderate variables are different for environmental and social
329 practices. Basically, institutional distance and host country contexts (including environmental
330 performance index and human development index) are the two variables, either as an independent or a
331 moderating variable.

332

333 *Institutional distance* is described as the degree of dissimilarity in institutions between two countries
334 (Gaur and Lu 2007). To measure institutional distance, the Worldwide Governance Indicators (WGI)
335 are selected, encompassing the broadest range of institutional issues (Ando and Paik 2013). WGI is a
336 research dataset summarizing the views on the quality of national governance, with six dimensions
337 "voice and accountability, political stability and absence of violence, government effectiveness,
338 regulatory quality, the rule of law, and control of corruption", describing a wide range of evaluation on
339 governance including "the capacity of a government to effectively formulate and implement sound
340 policies, the respect of citizens, and the state for the institutions that govern social and environmental
341 interactions among them" (WorldBank 2021). To operationalize institutional distance, this research
342 used the Euclidean distance measure following Gaur and Lu (2007) and Konara and Mohr (2019) (see
343 Equation 1).

344 $$DIS\_INS = \sqrt{\sum_{k=1}^{6}(I_{ki} - I_{kj})^2} \qquad \text{Equation 1}$$

345 Where, DIS_INS is the institutional distance between country i and country j, I_{ki} is country i's score
346 of the *k*th dimension in WGI, there are 6 dimensions involved in WGI.

347

348 *Environmental Performance Index (EPI)* is a method of quantifying and numerically marking the
349 environmental performance of a country's policies on the environment, which includes 32 indicators
350 organized into 11 issue categories in two policy objectives of environmental health (40%) and
351 ecosystem vitality (60%), such as air quality, sanitation, and drinking water, heavy metals, waste
352 management, biodiversity and habitat, ecosystem services, climate change, and water resources. This

index provides a data-driven summary of the state's sustainability around the world, which can reflect the operating context for environmental practices.

Human Development Index (HDI) is a concept developed by the United Nations, describing a comprehensive approach comprising health, education, and economic dimensions (UNDP 2016). Each country has scores ranging from 0 to 1 based on the three dimensions. The HDI considers national policy choices to measure economic growth and human development. It is thus regarded as a proxy to describe the development levels of countries, reflecting the health of the economy, the development of industries, the rise of non-profit organizations, and communication and education, thus describing the operating context for social practices.

3.2.3 Control variables

Two corporate-level control variables are chosen for the analysis: firm size and degree of internationalization. *Firm size*. With greater influence on society, ICCs with larger firm sizes are desired to conduct more environmental and social practices. They are also assumed to have the ability and financial support for the practices. Firm size is measured by using a natural logarithm of the average total revenue from 2011 to 2016, which reflects the average size during the period of collected CSR reports. *Degree of internationalization.* When their degree of internationalization is higher, ICCs may have more opportunities to implement environmental and social practices in overseas markets to establish their legitimacy. The degree of internationalization is measured by the average proportion of overseas revenue in total revenue during the period from 2011 to 2016.

Two variables are used to control the characteristics of the host markets. *Regions* indicate whether the host markets are in the same region as the country-of-origin of ICCs. It is assumed that host markets which are geographically close to the country of origin should have more transportation and communication links. The *degree of openness* of the host markets to foreign companies is controlled by using the prevalence of foreign ownership in the Global Competitiveness Index.

3.3 Estimation methods

Three steps are conducted for a logistic regression model. *Step 1* is to form a logistic regression model and to test the relationships between the dependent, independent, and moderating variables (described above). In this step, p-values for variables are calculated to indicate the goodness fit of the coefficients. *Step 2* is to carry out the odds ratio test to indicate the effects of independent variables. *An odds ratio* is a measure of association between the independent variable and the dependent variable. An odds ratio greater than 1 indicates that the independent variable is connected with higher odds of the dependent variable; while an odds ratio of less than 1 indicates the opposite situation (Menard 1995). *Step 3* is to carry out tests to indicate the goodness fit of a logistic regression model, such Wald test, and the Hosmer-Lemeshow test. *The Wald test* is a statistical test used for comparing the goodness of fit of two statistical models. If the p-value is less than 0.05, it indicates the model fits well. *Hosmer-Lemeshow test* is used to further indicate the goodness fit of the logistic regression model. A Hosmer-Lemeshow (H-L) statistic with a p-value greater than 0.05 is considered a good fit (Hilbe 2009).

4. Analyses and results

4.1 Correlation matrix and descriptive statistics

Table 3 shows the correlation matrix and descriptive statistics. The mean values indicate that, on average, 35% of the whole items (N=811) show engagement in environmental practices, and 53% in social practices. The correlation matrix in Table 3 shows that the institutional distance has correlations with the environmental and social practices ($r=-0.18$, $p<.01$ and $r=0.087$, $p<0.05$ respectively), the host country environmental performance index (Host_Envi) correlates with environmental practices ($r=0.217$, $p<0.01$) and the host country human development index (Host_HDI) correlates with social practices ($r=-0.146$, $p<0.01$). The host country environmental performance index and human development index are highly correlated ($r=0.896$, $p<0.01$). Whether the region of the host country is the same as the country of origin (the dummy variable) has negative correlations with the institutional distance, indicating that geographical distance can affect the institutional distance.

<<Insert Table 3 here>>

4.2 Results of hypotheses testing

The hypotheses testing was conducted by using *R programming*. Three parts of results following three steps of logistic regression models are presented in Table 4, including the regression results, the goodness of fit of coefficients, the results of odds ratios tests, and the Hosmer-Lemeshow tests to indicate the goodness fit of the model. Models 1 and 2 reflect the effects of institutional distance and environmental contexts of host countries on environmental practices; while Model 3 and Model 4 report the effects of institutional distance and social contexts of host countries on social practices.

<<Insert Table 4 here>>

Model 1 presents a significant positive effect of Host_EPI on environmental practices of ICCs with the coefficient of 0.033 ($p<.001$). The odds ratio for Host_EPI is 1.0337, indicating that the odds of a one-unit increase in Host_EPI would make the odds of environmental practices increase by 3.37% (calculated by 1.0337 minus 1). The p-value for the Wald test is below 0.001, indicating the addition of independent variables to the model is significantly better than the constant-only model. The Hosmer-Lemeshow statistic for Model 1 is 13.481, resulting in a p-value of 0.096, which provides statistical evidence of a well-fitted model. *H1* is thus supported that the host country environmental context has positive impacts on environmental practices. By adding the indicator of institutional distance, Model 2 presents the effects of Host_EPI and the interaction with institutional distance on environmental practices, but the results show a non-significant effect of institutional distance and the Host_EPI's effect is significant at the 10% level. Therefore, *H2* can be supported.

Model 3 concerns the social practices of ICCs. The coefficient of Host_HDI is -3.337, which is negative and significant ($p<.001$). The odds ratio for Host_HDI is 0.0356, indicating that the odds of a one-unit increase in Host_EPI would make the odds of social practices decrease by 96.44% (calculated by 0.0356 minus 1). The p-value for the Wald test is below 0.001, indicating the addition of independent variables to the model is significantly better than the constant-only model. The Hosmer-Lemeshow statistic for

Model 3 is 4.143 with a p-value of 0.844 presenting statistical evidence of the well-fitted model as well. *H3* is thus supported.

Model 4 presents an interesting result that Host_HDI's effects on social practices become not significant when considering the institutional distance. It shows that the institutional distance has a significant positive impact on social practices at the 10% level, and the positive impact would be negatively affected by the Host_HDI since the coefficient of the interaction term of Host_HDI and institutional distance is negative and significant at the 10% level. The odds ratio of the institutional distance is 0.7937, indicating that the odds of a one-unit increase in the institutional distance would make the odds of social practices decrease by 20.63% (calculated by 0.7937 minus 1). The p-value for the Walt test in Model 4 is below 0.001 and the Hosmer-Lemeshow statistic is 4.146 with a p-value of 0.844, indicating the good addition of the independent variables and a well-fitted model. The results can refine *H4* that social practices are positively correlated with the institutional distance and the host country social context would decrease the effects of the institutional distance.

The firm size is found to have no effects on both environmental and social practices, which means these practices are conducted regardless of their size influence on society. It is found that the degree of internationalization matters to the environmental and social practices at the 10% level, indicating that ICCs with a higher degree of internationalization have more possibilities to conduct environmental and social practices. Whether the host markets are in the same region as the country-of-origin of ICCs does not matter to the environmental and social practices. But the degree of openness of the host markets has positive impacts on social practices at the 1% level, indicating that when the host market is more open, ICCs are more likely to conduct social practices.

5. Discussions

The macro-institutional pressures from the companies' embedded environment have influences on their environmental and social practices (e.g. Campbell 2007; Jackson and Apostolakou 2010). The

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462 influences would be high for construction companies in particular, due to the industry's fixed final
463 product, long production cycle, and disruptive nature of construction projects to the environment and
464 society. Ye et al. (2020) emphasize the impacts of the local grounding on environmental and social
465 initiatives for ICCs. Our results confirm that the host country contexts where ICCs are embedded have
466 impacts on environmental and social practices (in line with *H1* and *H3*).
467
468 The results further show that these two kinds of practices on the environment and society present distinct
469 concerns. The higher environmental requirements of host countries lead to more environmental
470 practices (consistent with *H1*) since environmental practices are under formal power acting as the
471 standards-based practices to establish regulative and normative legitimacy (DiMaggio and Powell 1983).
472 For example, tougher regulations on green buildings and waste management for projects lead to better
473 practices on green buildings and waste management when comparing the green building projects of the
474 US and China (Chi et al. 2020). Social practices, on the contrary, are conducted in the absence of
475 regulation to meet societal needs and gain cognitive legitimacy. The societal needs are opposite to the
476 development levels of the host countries so that higher development levels lead to fewer social practices
477 (consistent with *H3*). This may be because social practices in less developed countries are easily
478 regarded as best practices to be reported for establishing legitimacy.
479
480 For construction companies, the influence of institutional distance cannot be investigated without regard
481 to the host country context due to the characteristics of the construction business as stated previously.
482 The results show that the institutional distance does not matter to ICCs' environmental practices
483 (consistent with *H2*) by considering the impacts of both institutional distance and host country contexts.
484 On the one hand, when the compliance pressure in host countries is strong, i.e. with strict regulations
485 or policies on the environment, ICCs have no choice but to follow the regulations to establish regulative
486 legitimacy (Scott 2005). Under this circumstance, ICCs from large institutional distant countries have
487 no need to practice more to establish legitimacy because the baseline is so high that they need abundant
488 investments to meet the requirement. On the other hand, when the compliance pressure is low in host
489 countries, ICCs may promote an integrated approach among the company in case of environmental

490 issues as these issues are globally concerned (Bustamante 2011; Ye et al. 2020). In this sense, ICCs
491 may not consider too much on the institutional distance which reflects the in-between tensions of the
492 countries.
493
494 Social practices, however, are with diverse considerations. There are usually no policies or regulations
495 for practices with regard to social issues. Social practices are conducted with positive externality to
496 establish legitimacy and are expected as one way to deal with the concerns caused by the institutional
497 distance (Campbell et al. 2012). ICCs prefer to conduct straightforward social practices, such as
498 donation, community volunteer work, or disaster relief, to address the needs in the host markets as well
499 as to avoid cultural conflicts when the institutional distance is large (consistent with *H4*). The results
500 also find that the development levels of host countries negatively affect the relationship between
501 institutional distance and social practices. It is argued that ICCs are more likely to "do the right thing"
502 to recede the impacts caused by the institutional distance, and this can be easily addressed when the
503 societal needs are obvious in host markets where the development levels are low.
504

505 **6. Concluding remarks**

506 This research reports on whether the institutional distance between home and host countries matters to
507 the environmental and social practices a construction company conducts in a particular country. Using
508 empirical data, it tested the effects of host country contexts and institutional distance, as well as their
509 interactive effects in the context of international construction. The results support the effects of host
510 country contexts measured by the environmental performance index on environmental practices to be
511 significantly positive, but the institutional distance does not matter to the environmental practices in the
512 host countries. However, strong evidence is presented that social practices of ICCs are positively
513 correlated with the institutional distance between home and host countries while the positive
514 relationship would be less pronounced when the development level of the host country is higher.
515

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This research makes three contributions to the knowledge of connecting institutional theory to environmental and social practices. First, by extracting environmental and social practices from ICCs' CSR/sustainability reports, this research emphasizes the specific practices instead of evaluating corporate social performance scores. Second, it is argued in this research that CSR is not a single practice, but involving different kinds of concerns and practices. Environmental and social practices are analyzed with distinct considerations. The effects of the institutional distance and host country contexts are reflected to be different in this research and we also call for independent discussions on different dimensions of CSR. Third, this research enriches the knowledge of the interactive effects of host country contexts and the institutional distance on environmental and social practices in the context of international construction responding to the characteristics of the industry, where host country contexts cannot be neglected.

One practical implication is that ICCs need to examine the host country contexts as well as the tensions of the home and host countries to engage in environmental and social practices and develop CSR strategies in international construction markets. Other recommendations to the companies are host country contexts are vital to the implementation of the construction projects and even the success of the projects. ICCs need to evaluate the contexts to determine whether and how to exploit environmental and social practices to establish legitimacy. Another implication is that ICCs are suggested to distinguish environmental and social practices- one is under regulations with a purpose to decrease negative externalities and the other is in the absence of regulation to increase positive externalities. While environmental practices are conducted to reach the baseline, social practices have the role to eliminate the negative effects caused by institutional distance and establish legitimacy.

This research is not immune from a shortcoming, therefore, requires future investigation. First, our sample and data on environmental and social practices are largely based on CSR/sustainability reports. Companies from developed countries with greater needs for CSR disclosure are more likely to be chosen as the sample for this research. Future studies are recommended to exploit multiple methods including interviews for collecting data. Second, to improve the accuracy of the logistic regression model applied

in the quantitative approach for hypotheses testing, future studies can use a more specific proxy for measuring institutional distance. Third, future studies can extend the research to further explore other CSR aspects such as practices regarding labor and human rights with considerations on the internal and external legitimacy establishment.

7. Acknowledgement

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8. Data Availability Statement

Some or all data, models, or code that support the findings of this study are available from the corresponding author upon reasonable request.

9. Supplemental Materials

Appendixes S1 and S2, Figs. S1 and S2, and Tables S1 and S2 are available online in the ASCE Library (www.ascelibrary.org).

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730 **Table 1**. The numbers of CSR/sustainability reports collected

Year	2011	2012	2013	2014	2015	2016	2017	Total
CSR/sustainability reports	45	57	61	60	59	63	24	**369**

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732 **Table 2**. Topics of environmental and social practices

Code	Category	Topic
EN	Environmental practice	EN1-Energy and carbon emission
		EN2-Biodiversity conservation
		EN3-Waste management
SO	Social practice	SO1- Local community communication
		SO2-Donation
		SO3-Disaster relief
		SO4-Poverty caring
		SO5-Medical caring
		SO6-Youth and education

733

Table 3. The correlation matrix and descriptive statistics (N=811)

		Mean	SD	Max	Min	1	2	3	4	5	6	7	8	9
1	**Prac_Envi**	0.35	0.016	1	0	1								
2	**Prac_Social**	0.53	0.017	1	0	0.036	1							
3	**DIS_Ins**	2.80	0.054	7.13	0.22	-0.180**	0.087*	1						
4	**Host_EPI**	72.08	0.457	88.91	41.77	0.217**	-0.127**	-0.597**	1					
5	**Host_HDI**	0.77	0.005	0.939	0.418	0.222**	-0.146**	-0.617**	0.896**	1				
6	**Comp_size**	9.10	0.041	11.62	3.39	-0.052	0.004	-0.034	-0.026	-0.019	1			
7	**Comp_inte**	0.48	0.010	1	0	0.079*	0.060`	0.013	0.076*	0.070*	-0.220**	1		
8	**Dummy_reg**	0.35	0.016	1	0	0.027	-0.009	-0.132**	0.088*	0.100**	0.043	-0.246**	1	
9	**Host_open**	4.77	0.029	6.13	2.92	0.161**	0.002	-0.538**	0.603**	0.558**	-0.075*	0.082*	0.053	1

Note: Prac_Envi= Environmental practice; Prac_Social= Social practice; DIS_INS= institutional distance; Host_Envi= host country environmental performance index; Host_HDI= host country human development index
`p < .1, *p < .05, **p<.01

Table 4. Testing results of logistic regression models

Variables	**DV= Prac_Envi (Odds Ratio)**		**DV= Prac_Social (Odds Ratio)**	
	Model 1	**Model 2**	**Model 3**	**Model 4**
Comp_size	-0.063 (0.9393)	-0.070 (0.9322)	0.042 (1.0430)	0.045 (1.0462)
Comp_inte	0.495` (1.6407)	0.508` (1.6618)	0.581* (1.7884)	0.490` (1.6327)
Dummy_reg	0.094 (1.0989)	0.066 (1.0686)	0.105 (1.1111)	0.084 (1.0875)
Host_open	0.107 (1.1131)	0.049 (1.0504)	0.305** (1.3568)	0.319** (1.3762)
Constant	-3.290*** (0.0372)	-2.345 (0.0959)	-0.527 (1.6938)	-2.131* (0.1187)
DIS_Ins	-	-0.070 (0.9323)	-	0.761** (0.7937)
Host_EPI	0.033*** (1.0337)	0.029` (1.0294)	-	-
DIS_Ins * Host_EPI	-	-0.001 (0.9995)	-	-
Host_HDI	-	-	-3.337*** (0.0356)	-0.231 (0.7937)
DIS_Ins * Host_HDI	-	-	-	-0.940** (0.3905)
N	811	811	811	811
Log-likelihood	-499.75 (df=6)	-498.32 (df=8)	-545.53 (df=6)	-541.78 (df=8)
Model fit	Wald χ^2 = 45.8 (p < 0.001)	Wald χ^2 =48.7 (p <0.001)	Wald χ^2 = 30.5 (p <0.001)	Wald χ^2 =38.0 (p <0.001)
Hosmer-Lemeshow C statistic#	13.481 p-value =0.096	8.501 p-value =0.3861	4.143 p-value =0.844	4.146 p-value =0.844

Note: `, *, **, and *** indicates significance at the 0.1, 0.05, 0.01 and 0.001 levels, respectively.
1. df refers to the degree of freedom; 2. A Hosmer-Lemeshow (H-L) statistic with a p-value greater than 0.05 is considered a good fit

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Figure captions:

Fig. 1 The conceptual framework

Fig. 2 A latent semantic analysis (LSA)-assisted content analysis for extracting environmental and social practices data

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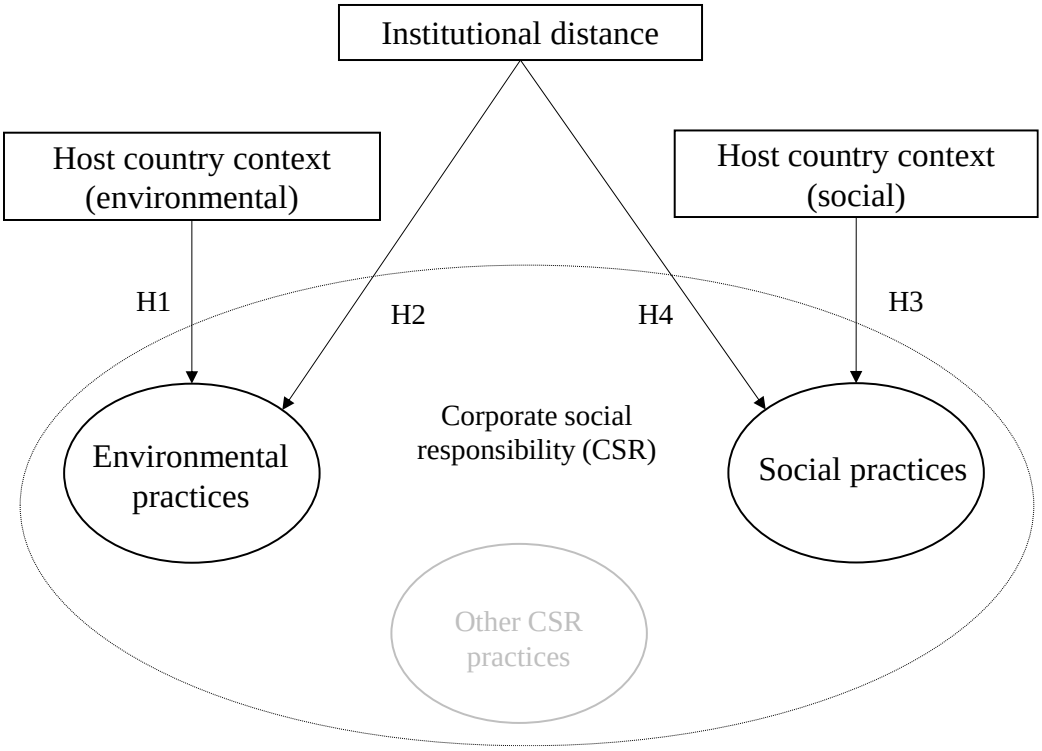

Fig.1. The conceptual framework

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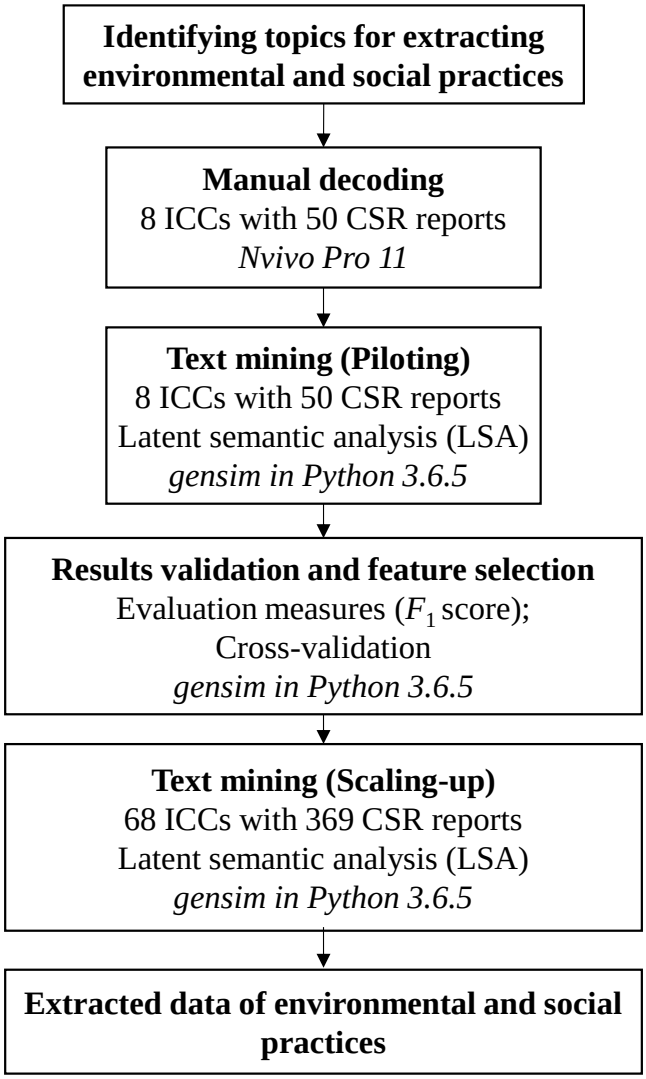

Fig.2. A latent semantic analysis (LSA)–assisted content analysis for extracting environmental and social practices data