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Social Determinants on Carbon Disclosure in Corporate Real Estate

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ABSTRACT

Information is power is an effective quote in the public space, as the level of information and awareness of the society determine the degree of influence they exercise. This study investigates the effect of economic, financial-market, institutional and social factors on corporate carbon disclosure. This study determines the influence social factors have on corporate voluntary carbon disclosure in the real estate sector of Malaysia. Data was collected from 2013 annual reports of 126 listed companies in the real estate sector, comprising sixteen (16) property investment companies, seventy-six (76) property companies and thirty-four (34) construction companies in Malaysia. The analysis was conducted with Partial Least Square-Structural Equation Modeling, and bootstrapping. The result shows that social factor has a significant influence in determining voluntary carbon disclosure, among other factors. The constructs that have the strongest influence on voluntary carbon disclosure are firm size and political visibility. The implication is that the size and visibility of a company is significantly increases social pressure on a company hence it voluntarily participates in carbon disclosure.

Keywords: *Social Factor, Legitimacy, Carbon Disclosure, Real Estate, Malaysia*

INTRODUCTION

There is a connection between climate change and carbon emission. Climate change with its effect on the environment has become a great challenge to live and business; hence, corporations are becoming more responsible on their carbon footprint. This is due to the prospective risks associated with the effect of climate change, with a change in the physical characteristics of the environment, coupled with possible changes in policies which are

also a source of concern for businesses. Other risk factors include variations in the demand patterns, changes in business terms including insurance policies; so businesses are acknowledging the effect of global warning to the business sector (Busch & Hoffmann, 2007). The global pursuit for climate change mitigation through the management of greenhouse gasses, especially carbon emission led to the adoption of the Kyoto protocol. Consequently, stakeholders are demanding for the reporting of carbon information, to enable them in investment assessment and decision making (King, 2009), and for corporations to measure and target reduction programs. But in developing countries such disclosure is not mandatory, but voluntary. As a result, this studies aims to investigate the effect of social factor determinants on carbon information disclosure in the real estate sector in Malaysia. Previous literatures argue that legitimacy theory is the underpinning theory explaining social factor influence on voluntary disclosure of environmental information.

There are many studies on environmental disclosure, few focused on carbon information reporting while some studies investigated motivating factors in developed countries, fewer studied determinant for disclosure in companies in developing countries. Luo, Tang, and Lan (2013) in a study of carbon disclosure between developed and developing countries, argued that the propensity to disclose varies between developing countries and developed, suggesting a shortage of resource as one factor that affects variation in the willingness and capacity to disclose in developed and developing nation. The study looks at the variant effect of the economic factor on the propensity to make voluntary carbon disclosure; it did not look at the effect of social factor constructs on carbon disclosure. Similarly, Luo, Lan, and Tang (2012) the study maintained that firms undertake climate change activities and disclosure in response to social pressure, the study used data from CDP survey and was limited to global 500 companies. Likewise, (Dwyer et al., 2009) investigating factors influencing corporate reporting on greenhouse gas emissions, using content analysis and a multiple linear regression dependency models. The result shows a positive association between information disclosure and the size of the corporation, but the study did not investigate the variation in application of the determinant factors between developed and developing countries; it also established a significant positive effect between social factor and corporate disclosure. Also, the effect of company size is significantly associated with GHG disclosures was established in Musa Mangena, Jia Liu, Chithambo, and Tauringana (2014), but Liu & Anbumozhi, (2009) argues that company size and environmental sensitivity of its operation influence corporate carbon reporting. Therefore, it is imperative to understand how the social factor determinants motivate voluntary carbon information disclosure among companies in the real estate sector in developing countries. The study attempts to identify the major social construct that motivates the corporate climate change information disclosure in company's annual reports.

LITERATURE REVIEW

The effect of climate change on the society and businesses can be seen through the rise in temperature and sea levels, also in changes in demand patterns in business. Due to the adverse consequences of climate change, there is a public expectation for businesses to play an active role in climate change mitigation for the creation of a low carbon society and a conducive atmosphere for all. This public expectation varies with the size of the companies because of its political visibility. The legitimacy theory reasons that corporations are motivated to disclose information because of social factors so as to legitimize their existence in business with the host community and to discharge their social pact voluntarily (Cho & Patten, 2007; Clarkson, Li, Richardson, & Vasvari, 2008; Cormier, Magnan, & Van Velthoven, 2005; Mobus, 2005; Solomon & Lewis, 2002). A corporation that is not responsive to emission reduction and mitigation policies conveys a view to the society that they are not aware or does not consider the risk of global warming, or does not have the know-how to mitigate the risk of carbon emissions. The society may respond by limiting the supply of resources and patronage to such company, as a punishment measure to non-disclosing businesses. The influence of the community or the public is considered as social factor pressure.

FIRM SIZE

Firm size is one of the constructs used to measure social factor in prior studies on information disclosure (Gray, Javad, Power, & Sinclair, 2001; Patten, 1992). Large-size businesses are expected to receive more attention from the society, hence, disclose more carbon and environmental information, with the intention of legitimizing their company (Archel, 2003). Participation in carbon disclosure demands significant expenses in capitals and technicalities, which are directly related to the size of the company, the greater the size of a company it is expected the greater their capacity to undertake the expense for disclosure (Larrán Jorge & Giner, 2002). The future advantage for disclosure is also higher for large-size companies, as there is a link between expenditure on disclosure and privilege drawn from it (Freedman & Jaggi, 2005). The overall rationale is that information disclosure capacity of a company is directly proportional to the size of the company (Berthelot & Robert, 2011; Rankin, Windsor, & Wahyuni, 2011; Stanny, 2013). Other studies that show that size is an influence to greenhouse gas disclosure include the Cormier et al. (2005) for German economies; Liu and Anbumozhi (2009) studied Chinese companies; and Clarkson et al. (2008) for US businesses. In a study of 120 large size firms in a country that has ratified the Kyoto Protocol and those that have not, Freedman and Jaggi (2005) claim that carbon disclosures

are related to company size. Roberts (1992) is also of the opinion that once a company starts making disclosure of environmental and social issues it considers it counter-productive to stop at a time, in view of the of the negative publicity it may get from the public and its impact in relation to stakeholders. While others contend that time-honored companies have the advantage of the time to create a network of stakeholders, which aids its disclosure program (Alsaeed, 2006; Kang & Gray, 2011). Previous studies used total assets, sales and market capitalization as constructs for corporate size. This study uses natural log of the total asset.

COMPANY VISIBILITY

There are companies that attract more public attention than others; they are considered to be more visible than others. The level of public visibility may be a function of media coverage that the company attracts due to the quantity or type of business the company undertakes. A firm that is more exposed to media coverage are more visible to the public, hence, attract more attention from stakeholders than others (Deegan & Carroll, 1993). Stakeholders are interested in knowing what these companies are doing, and how they can influence them. As a result, social factor influence and checks are more on visible companies than on less visible ones (Belkaoui & Karpik, 1989; Brammer & Millington, 2006; Holthausen & Leftwich, 1983). This means, the visible firm are more exposed to civil and public cost as a result of the level of visibility. So, the level of visibility is directly proportional to the level of disclosure a company makes, so as to reduce potential political costs (Belkaoui & Karpik, 1989).

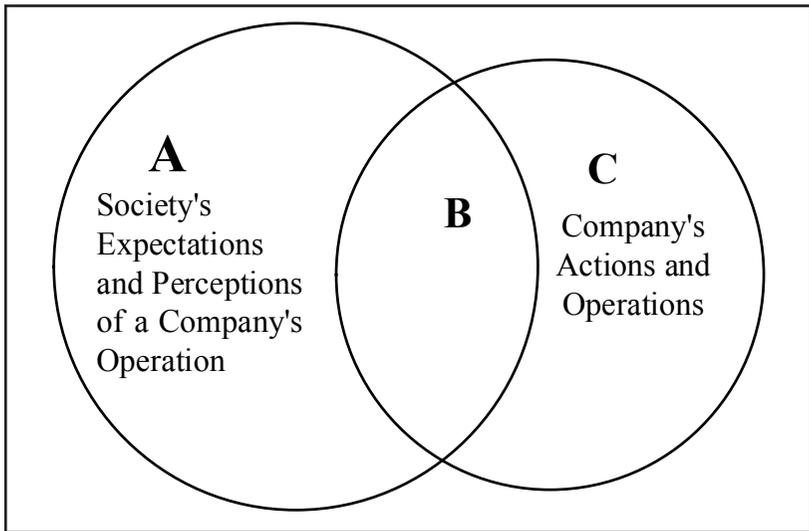
THEORETICAL FRAMEWORK

The popular definition of legitimacy theory is from Suchman (1995) and refers to a general view or notion that the activities of a company are appropriate, suitable or fitting within a communally built system of rules, tenets, and opinions. Legitimacy theory describes a major resource for the existence of companies, as it denotes the level of social sustenance received from the community (Meyer & Scott, 1983). This means businesses needs legitimacy to have their decisions accepted by the community so as to develop their projects and get necessary social support and supplies (Deegan, 2002). Moreover, legitimacy changes with time, so corporations need to develop a dynamic scheme for sustaining their legitimacy with the society (Suchman, 1995). The views and perception of the people determine on the state of legitimacy (Breton & Côté, 2006), so information disclosure is an important tool in legitimacy plans (Bebbington, Larrinaga-González, & Moneva-Abadía, 2008; Magness, 2006). This means company executive can

use information disclosure to control the views of the public and stakeholders toward the company (Deegan, 2002). It is important that companies increase their disclosure level if they are experiencing legitimacy gap, as reported in a study of environmental information disclosure and legitimacy of corporations (Cho, Freedman, & Patten, 2012; Deegan & Rankin, 1996; Patten, 1992). The social expectation on environmental issues including carbon emission reduction and climate change mitigation can threaten a company's legitimacy, and if such companies do not respond to information disclosure (De Villiers & Van Staden, 2006; Deegan, 2007; Newson & Deegan, 2002). In figure 1 A denotes the expectations of the public, and C represents the level of performance of the company, with B signifying the difference and the subject for legitimacy gap.

Figure 1

Legitimacy theory adopted from O'Donoran 2002



Climate change mitigation through carbon information disclosure could be a social expectation and how companies respond to this social demand will affect its legitimacy with the community (Borghei-Ghomi & Leung, 2013; Wittneben, Okereke, Banerjee, & Levy, 2012). Within the limits of legitimacy theory; information disclosure is considered an acceptable management reaction in the face of legitimacy gap (Cho et al., 2012; Dwyer et al., 2009; Reverte, 2009). In particular, carbon information disclosure is a veritable means for management to show compliance to social demands with respect to climate change mitigation and to evade threat to legitimacy (Borghei-

Ghomi & Leung, 2013; Luo et al., 2012). Legitimacy and stakeholder theories describe environmental information disclosure (Reverte, 2009), and they are corresponding (Gray, Kouhy, & Lavers, 1995; Milne & Patten, 2002). But as shown in Deegan (2002), legitimacy theory deals with social demands in general.

METHODS

The data used are from annual reports of the listed real estate sector companies in Kuala Lumpur Stock Exchange (KLSE), a sample of 2013 reports for companies selected for the study. Three industry-types selected within the sector are Property companies, Real Estate Investment companies, and the Construction companies. A total of 126 annual reports were selected, comprising sixteen (16) property investment companies, seventy six (76) property companies and thirty-four (34) construction companies. To measure the theoretical model the data was analyzed using Smart-PLS, which is Partial Least Square-Structural Equation Modeling (PLS-SEM) software for data analysis. Validity and reliability measures were applied. With the aim of theory development, PLS-SEM assesses the path relationships (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014).

The PLS path model is a two-stage analysis. The initial stage involves the estimation of latent variables scores through an iterative process for each latent construct. This is the measurement model analysis. The second stage involves the exogenous and endogenous variable is imputed to an ordinary least squares regression equation (Henseler & Fassott, 2010). This is the structural model. The aim is to reduce the error in the residual variance of the endogenous variables (Hair et al., 2014). The PLS-SEM assesses the path model associations (coefficients) where the R² is maximized for the endogenous variables hence attain the prediction requirement for theory development (Hair et al., 2014). In this study Smart PLS 2.0 has been used, it is an individually specified software developed for PLS path modeling.

The bootstrapping method that randomly draws from the initial data set with replacement to create a subsamples. The PLS path model is estimated from the subsample. A large number of subsamples are generated randomly through this process which is repeated about 5,000 times (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014).

MEASURES

Carbon disclosure was measured through a content analysis of each firm's annual reports. Clarkson et al. (2008), Freedman and Jaggi (2011), and

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Dwyer et al. (2009) have used content analysis in their studies to quantify information disclosure. Financial ratios were used to measure each factor social factor, institutional factor, economic factor, and financial market factor.

RESULTS VALIDITY AND RELIABILITY TESTS

Table 1

Reliability and Validity Results

Factors	AVE	CR	Cronbachs Alpha
Economic Factor	0.8317	0.9368	0.8996
Financial Market factor	0.8199	0.9316	0.8919
Institutional Factor	0.7934	0.8848	0.7397
Voluntary Carbon Disclosure	0.7944	0.9203	0.868
Social Factor	0.919	0.9578	0.9119

Construct reliability assessed by the composite reliability (CR) which estimates construct's internal consistency. For exploratory studies, this value needs to be a minimum of 0.70 (Hair, Ringle, & Sarstedt, 2011).

Cronbach's alpha and composite reliability results were used to measure the strength and adequacy of the measurement model (Jin, Doloi, & Gao, 2007). A target of 0.70 is used for Cronbach's alpha coefficient and composite reliability to indicate the acceptable level of internal consistency. The factors in Table 1 that were found to have values above 0.70 resulting in a high degree of reliability and are proved to be sufficiently reliable for analysis.

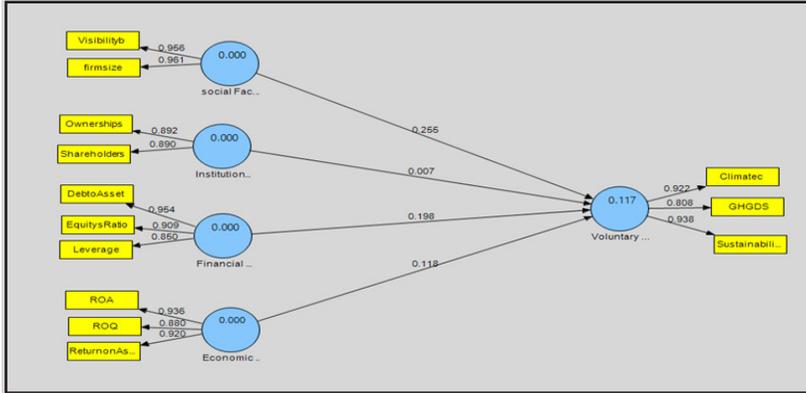
The convergent validity was measured with the average variance extracted (AVE) of latent constructs exceeds the recommended threshold value of 0.50 (Hair, 2010), and the results signify that variances observed in the items were accounted for by the constructs. Therefore, the current data have good convergent validity.

STRUCTURAL EQUATION MODEL TEST

PLS-SEM analysis does not assume multivariate normality, and to test for significance a non-parametric test is used on path coefficients and loadings. A path coefficient bootstrapping is conducted to check for the significance of each path. Figure 2 represents the result of the path analysis sequel to significance test.

Figure 2

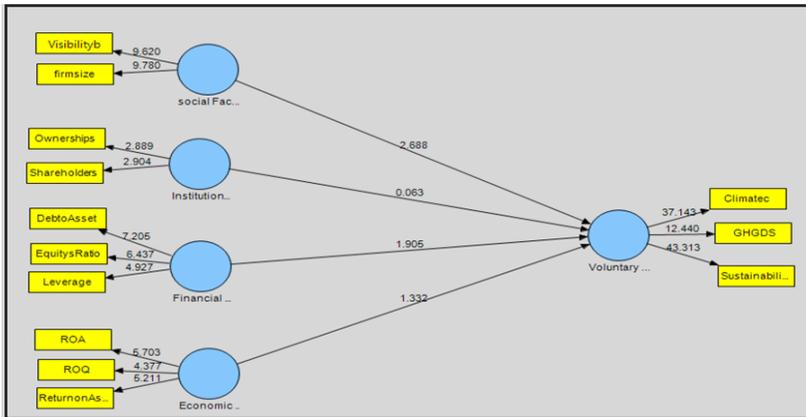
Path analysis Result



The bootstrapping method is used to test for significance in PLS-SEM (Hair et al., 2011). A higher number to the sample size of the data is recommended for the bootstrap, and in this study, a sample of 500 was used. The significant of the path model analysis was determined through a t-test from the bootstrap of the samples (Hair et al., 2011). The result aids research hypotheses development for supporting or not supporting propositions for each path in the structural model, depicting direct association between latent constructs.

Figure 3

SEM-PLS Bootstrap Results for Significance



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In test for the significance the variables were subjected to the PLS-bootstrap test at a threshold mark of 1.96, variables which are greater than the threshold are significant and constructs which are below are the benchmark are considered not to have significant relationship with the dependent variable of voluntary carbon disclosure (Figure 3).

Table 2

Path Analysis

Paths	T Statistics	Remarks
Economic factor -> Voluntary Carbon Disclosure	1.3322	Not supported
Financial Market factor -> Voluntary Carbon Disclosure	1.9049	Not supported
Institutional factor -> Voluntary Carbon Disclosure	0.0628	Not supported
Social Factor -> Voluntary Carbon Disclosure	2.6882	Supported

The table 2 summarizes the outcome of the T statistics test, which shows social factor to be significantly deterministic in the determination of voluntary carbon disclosure. Other variables of economic, financial market variable and the Organizational Institutional factor were seen as not supported in determining the dependent variable in the model.

DISCUSSION

The study investigated the influence of social factor on voluntary carbon disclosure in listed property sector companies in Malaysia. The industries within the sector include the real estate investment companies, the property management companies, and construction companies. The study used the PLS-SEM to model the determinant effect of social factors on Carbon disclosure, and a path model bootstrap to test for significance. The results of the study show that social factor has significantly deterministic influence on voluntary carbon disclosure in the property sector of a developing economy. In the analysis, the social pressure factor had a loading of 0.266, and the bootstrap analysis a shown a result of 2.688 which is higher than the t-test threshold mark of 1.96, hence we can statistically infer that social factor significantly influences voluntary carbon disclosure in the property sector companies. The result agrees with the finding of Luo et al. (2012), which was located with Global 500 companies.

The results of the study agree with the propositions of legitimacy theory that the size of a company and the media coverage a company attracts due its nature of business is directly proportional to carbon disclosure. This means that large-size companies attracts more media coverage and gets more public and social attention, hence are motivated to disclose more carbon information so as to bridge legitimacy gap.

The social factor was measured with firm size constructs and political visibility constructs, the results show a loading of 0.961 and 0.966 respectively for the constructs, this statistics is in accordance with the study in (Dwyer et al., 2009; Musa Mangena et al. (2014)), and while both loadings are significantly high, it can be observed that visibility has a higher loading, therefore, have a greater influence on the influence of social factor.

CONCLUSION

The study aims to determine the influence of social factors on voluntary carbon disclosure in the property sector; the result shows that social factor has a significant influence on motivating company executives to disclose carbon information in their annual reports. The social factors are represented by two indicators firm size and visibility; the effectiveness of visibility was found to be greater.

The implication of this result is that with an increase in the level of education and awareness of the public the social expectation will increase hence the public pressure and, therefore, an increase in the disclosure and the more companies will participate in carbon reduction and climate change mitigation. It also implies that public recognition for companies that contributions in the areas of environmental protection, emission reduction, and green projects; will motivate companies to disclosure to attract such positive recognition.

The study is limited to developing countries, which are not obligated under the Kyoto protocol to impose mandatory carbon disclosure regime; also, it restricted to the built environment companies, it may be necessary for further studies to be done on other sectors of the economy.

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