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THE CROSSFIRE OF CORPORATE REAL ESTATE SUSTAINABLE MANAGEMENT (CRESM) WITH CORPORATE TRIPLE BOTTOM LINE OBJECTIVES FOR OFFICE BUILDING

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Abstract

The emergence of corporations dabbling in sustainable real estate investment has caused a shift in the corporate real estate management (CRESM) field from the conventional way of managing a property to a more systematic approach involving high technology. The evolution is due to the need for sustainable buildings to comply with specific requirements to maintain their green certification while at the same time, ensure the success of the whole business operation. Many discussions mentioned that sustainable buildings give a positive impact to the business. However, most of these discussions did not specify which element of sustainable buildings significantly contributed to business performance and business goals. This research attempts to discover the relationship between CRESM and corporate sustainability (CS) objectives to determine the most significant element of CRESM that influences the overall business performance. A sustainable triple bottom line theory (TBL) has been used as a guide. A survey questionnaire was carried out involving 100 combinations of corporate real estate (CRE) managers, property managers, facility managers, operation managers, building managers, and financial managers that are directly involved in managing sustainable CRE. Data was then analysed using SPSS for descriptive statistics and Smart PLS for SEM. Results indicated six elements of CRESM are significantly affecting business performance. They are workspace management, energy management, innovation management, internal green management, workplace management and human satisfaction management.

Keywords: *corporate real estate sustainable management, corporate sustainable objective, relationship, structural equation modeling*

1.0 INTRODUCTION

The revolution of the corporations toward sustainability started when the global concern on the issue of global warming and climate change that has been revealed to contribute a negative impact to world life. The growing numbers of sustainable buildings, especially office buildings in Malaysia since 2009 viewed as a severe issue to the CRE sustainable manager because CRESM concept in Malaysia is still a new trend and not fully adopted by the corporation. Besides, a sustainable office building is very complex to manage compared to conventional buildings. Not only of that, the manager needs to make sure while maintaining CRE, they also need to be concerned and maintains the specified green criteria required by the green certification. However, previous research has revealed, CRESM practices are still lacking particularly on the elements that are directly related to TBL theory and the relationship as well as the contribution of CRESM towards the corporation. Furthermore, numerous components have identified conferred on sustainable, but unfortunately, they were found outside Malaysia. Despondently, the data collected was recorded highly heterogeneous (Fauzi,

Zainuddin, Noraini, Mohd Ali, & Nawawi, 2016) that needs to focus on specific areas of CRESM to make it more relevant. Furthermore, different types of property and business industries involved bring different opinions and provide different views and findings. These cause some information to be left out and sometimes not directly related to the specific CRESM and have redundancy or opposing opinions. Appel–Meulenbroek & Haynes (2014) mentioned that many different corporate strategies adopted by the companies had produced a variety of models. Approaches were also developed by the companies but they were too difficult to apply. Concerning these issues, this research aims to investigate the relationship between CRESM and CS objectives for the sustainable office building and to identify the significant CRESM element that will influence the success of the whole corporation business performance. The research focused on sustainable office buildings that are certified with GBI to ensure the relevance of the practice to be shared by the same sector in the future. The sustainable office buildings were selected as it comprises the highest number recorded referring to the GBI database and TBL theory of environment, social and economic elements was integrated for the whole research.

2.0 RESEARCH METHODOLOGY

The survey questionnaire was distributed to 117 CRE managers, property managers, facility managers, operation managers, building managers, and financial managers that are directly involved in managing sustainable office buildings which have been certified with green building index (GBI). From 117 sets of questionnaire distributed, 100 were returned. The purposive sampling adopted fulfilled the required minimum numbers projected by Raosoft (90 samples) and G*Power (98 samples). The instrument covers three parts which include respondents" background, CS objectives and CRESM elements. The descriptive analysis was conducted to analyse the background of the respondent while SEM-PLS to analyse the relationship between CRESM and CS objectives.

3.0 RESULTS AND DISCUSSIONS

The result in Table 1 indicates 53% of the respondents are from the PM department while 38% are from the FM department and another 9% are from other departments like building management, operation and technical, maintenance , operations , property investment , building control system and energy. It can be concluded that many departments are involved in managing the sustainability of buildings, with the most common ones being the PM department and FM department.

Table 1: Working department

Department	Percentage
Other	9.0
Facility Management Department (FM)	38.0
Property Management Department (PM)	53.0
Total	100.0

According to Table 2, engineering shows the highest background involvement in CRESM (54%) followed by real estate (20%), FM (10%), BS (8%), others (4%), energy (2%) and 1% of QS and architects, respectively. Others include persons with the SPM qualification but have gone through several building management courses with many years of experience in this field.

Table 2: Background of the respondents

Background	Percentage
Architect	1.0
Quantity Survey (QS)	1.0
Energy	2.0
Others	4.0

Building Survey (BS)	8.0
Facilities Management (FM)	10.0
Real estate	20.0
Engineering	54.0
Total	100.0

Based on Table 3, 51% of them have <5 years' experience in managing sustainable building, while 49% have more than 5 years of experience. Less years of experience were recorded as Malaysia is still at the early stage and there are less number of sustainable office available in the market. Furthermore, the T-test was carried out in order to determine statistically significant differences between these two categories. The T-test result portrays the difference in experience varies considerably, but no clear pattern can be seen. Overall, the differences between less than 5 years and more than 5 years towards corporate goals and elements which involved CRESM are relatively small and explain the non- significance difference.

Table 3: Years of experience managing sustainable building

Years_Experience	Percentage
>5 years	49.0
< 5 years	51.0
Total	100.0

Next, the research used SmartPLS 3.2 to estimate the measurement model of the relationship. Moreover, the bootstrapping method with 5000 samples (Ibrahim, Mahmud, Ramayah, & Alfarraj, 2017) was conducted to assess the loadings and path coefficients significance. Two types of validity were examined, which is convergent validity and discriminant validity. According to (Gholami, Binti, Ramayah, & Molla, 2013; Kunasegaran, Ismail, Rasdi, Ismail, & T.Ramayah, 2016) the convergent validity of the measurement is usually ascertained by examining the indicator loadings, Average Variance Extracted (AVE), composite reliability (CR) and Heterotrait-monotrait (HTMT) Ratio of Correlation. Thus, this research reveals that the loading value generated is more than 0.4which isbetween 0.49 to 0.93. Factor loading 0.4 is still accepted mostly in social sciences research and exploratory research as long as the AVE achieves results more than 0.5 (Hulland, 1999; Ramayah, Cheah, Chuah, Ting, & Memon, 2018; Scholtz, Mahmud, & Ramayah, 2016). Furthermore, for fundamental research, a lower value is acceptable (Hair, Black, Babin, & Anderson, 2016). From that, eight elements which are equivalent to 9.5 percent have been rejected. It was due to a lower factor loading that also contributed to an AVE score below 5.0. It includes ENV_INNOVATION, SOC_SAFETY, ECO_OCCUPANCY, ECO_GOOD_GOVERNANCE, ECO_RENOVATION, ENM_SELL, WSM_OPEN, and WAS_EWASTE. It is still an acceptable result because the rejected percentage was not more than ten percent, as stated by Ramayah et al., (2018).

Further, the results for the AVE value recorded more than 0.5 which meets the criteria of AVE acceptance where AVE value should be higher than 0.50 (Akter, Wamba, & Dewan, 2017; Al Mamun, Mohiuddin, Ahmad, Ramayah, & Fazal, 2018). Recorded in many researches, the acceptable threshold for AVE is 0.50 or higher (Bagozzi & Yi, 2012; Fornell & Larcker, 1981; Sarstedt, Ringle, & Hair, 2017). AVE of 0.50 shows that the construct explains more than half of the variance of its indicators (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). Therefore, in the measurement model, all constructs have good reliability.

Next, Cronbach alpha and CR were used to measure the internal reliability of the constructs. Bangwal & Tiwari (2018) stated that CR presents the overall reliability, and it determines the consistency of the construct itself compared to Cronbach alpha. However, this research takes into consideration both results. Cronbach alpha recorded more than 0.6 while CR recorded more than 0.7. The Cronbach alpha and CR with a value less than 0.6 indicates as weak, more than 0.7 as satisfied and more than 0.8 as good (Ahmad, 2019). Similarly shared by Bangwal & Tiwari (2018) that mentionedthe value of Cronbach's alpha between 0.6 to 0.7 is considered reliable. Furthermore, values of CR between 0.60 and 0.70 are acceptable especially in exploratory research (Ramayah et al., 2018). Lastly is HTMT result that indicates

a good result when it is more than 0.9 or close to 1. Some of the researchers suggest the cut value of HTMT is 0.85, but the most popular key criterion suggests it as 0.85 and 0.90 (Dijkstra & Henseler, 2015; Ringle, Sarstedt, Mitchell, & Siegfried, 2018). Gold, Malhotra, & Segars (2001); Ramayah et al., (2018) stated that HTMT 0.90 is a conservative criterion while any value close to 1.0 is interpreted as a discriminant validity violation. Hence, the measurement model assessment revealed nine elements of CRESM and four elements of CS.

After completing the measurement model assessment and model fit assessment, analysis proceeds to the structural model assessment. The structural model, also known as an inner model (Monecke & Leisch, 2012). According to Ramayah et al., (2018), there are several steps to access the structural model using SEM-PLS which includes assessment of structural model for collinearity issues, assessment of the significance and relevance of the structural model relationship, assessment the level of R^2, Assessment on the effect size (f^2) and Assessment of predictive relevance (Q2). The VIF test is gathered from a SEM-PLS report on latent during the structural model assessment. The result showed less than 5.0 where the highest result is 4.77 that indicates no multicollinearity exists for the data as mentioned by Ahmad, (2019); Hair et al., (2017) the results accepted must be less than 5.0. Then, the model was tested by running a bootstrapping procedure with a resample of 5000, as suggested by Hair et al., (2017) in (Ibrahim et al., 2017). The result is presented in Table 4.

The model's predictive accuracy was evaluated via the coefficient of determination score R2. According to (Cheah, Memon, Chuah, Ting, & Ramayah, 2018), R2 represents the amount of variance in the endogenous construct explained by all of the exogenous constructs linked to it. The R2 recorded are Environment (0.49), Social (0.55), Economic Value Maximizing (0.51) and Economic Cost Minimizing (0.24), which were all acceptable referring to the effect ranges from 0-1 with higher values indicating higher levels of predictive accuracy. In line with Ramayah et al., (2018), that recorded Falk and Miller (1992) recommend that R2 values should be equal to or lesser than 0.10 in order for the variance explained of a particular endogenous construct to be deemed adequate.

Referring to the path coefficient assessment, the results $p < 0.05$ are accepted (Hair et al., 2017). Therefore, eleven results are accepted and nine of that were positively related includes Energy Management -> Environment ($b = 0.380$, $p < 0.05$), Innovation -> Environment ($b = 0.280$, $p < 0.05$),Human Satisfaction Management -> Social ($b = 0.430$, $p < 0.05$),Innovation -> Social ($b = 0.320$, $p < 0.05$),Workplace Management -> Social ($b = 0.270$, $p < 0.05$),Human Satisfaction Management -> Economic Value Maximization ($b = 0.310$, $p < 0.05$), Innovation -> Economic Value Maximization ($b = 0.150$, $p < 0.05$),Workplace Management -> Economic Value Maximization ($b = 0.430$, $p < 0.05$), Internal Green Management -> Economic Cost Minimization ($b = 0.660$, $p < 0.05$). While another two were negatively related which includes Workspace Management -> Social ($b = -0.470$, $p < 0.05$), Energy Management -> Economic Cost Minimization ($b = -0.350$, $p < 0.05$).

Then, T-value was accessed and indicated results more than 1.645 as recommended by Hair et al. (2017). In line with the requirement, eleven results were accepted which included Energy Management -> Environment (3.750), Innovation -> Environment (1.652), Human Satisfaction Management -> Social (2.560), Innovation -> Social (2.660), Workplace Management -> Social (2.090), Workspace Management -> Social (3.640), Human Satisfaction Management -> Economic Value Maximization (2.120), Innovation -> Economic Value Maximization (1.650), Workplace Management -> Economic Value Maximization (3.240), Energy Management -> Economic Cost Minimization (1.790) and Internal Green Management -> Economic Cost Minimization (4.130).

Next, the effect size of the model was accessed to measure how strong the exogenous construct contributes to the endogenous construct. According to Cohen (1988), f2 values of 0.35, 0.15, and 0.02 are considered large, medium and small effect sizes, respectively. Therefore, the results of more than 0.02 are acceptable with the assumption to fulfil the small effect size required. Results below 0.02 are not accepted. From the three results which are below 0.02 that are the relationship between Internal Green Management -> Environment (0.00), Waste Management -> Environment (0.00) and Workplace Management -> Environment (0.00). After that, the model has accessed the predictive relevance through blindfolding procedure Ramayah et al., (2018). He added that this procedure is a resampling technique that systematically deleted and predicted every data point of the indicators. According to Fornell and Cha (1994), if the results of Q2 value is larger than 0, then the result is accepted. The results of this research are accepted as all are more than 0. In conclusion,

eleven out of nineteen results fulfilled the above requirement and have been accepted for further process of developing a model in the future. However, eight of the results are rejected due to numerous reasons that did not fulfil the requirement of the model. The accepted results are highlighted in Table 4. that are denoted with YES marks, while, the rejected results are denoted with NO marks

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Table 3: Summary result of structural model assessment

	Stand-Beta	T-Value >1.645	P-Value <0.05	Bcill	Bciul	F^2	VIF <5	Adj R^2 =>0.10	Q^2 >0	Result
Energy Management -> Environment	0.380	3.750	0.000	0.210	0.540	0.100	2.890	0.49	0.25	YES
Innovation -> Environment	0.280	1.652	0.050	0.030	0.530	0.180	2.620			YES
Internal Green Management -> Environment	0.090	0.420	0.340	-0.330	0.360	0.000	4.210			NO
Waste Management -> Environment	-0.030	0.180	0.430	-0.260	0.330	0.000	3.780			NO
Water Management -> Environment	0.140	1.350	0.090	-0.030	0.300	0.020	2.330			NO
Workplace Management -> Environment	-0.020	0.130	0.450	-0.260	0.260	0.000	2.060			NO
Human Satisfaction Management -> Social	0.430	2.560	0.010	0.080	0.650	0.120	3.520	0.55	0.32	YES
Innovation -> Social	0.320	2.660	0.000	0.100	0.480	0.100	2.400			YES
Internal Green Management -> Social	0.230	1.490	0.070	-0.030	0.440	0.030	4.660			NO
Workplace Management -> Social	0.270	2.090	0.020	0.080	0.480	0.070	2.390			YES
Workspace Management -> Social	-0.470	3.640	0.000	-0.740	-0.300	0.120	4.300			YES
Human Satisfaction Management -> Economic Value Maximization	0.310	2.120	0.020	0.080	0.530	0.060	3.120	0.51	0.23	YES
Innovation -> Economic Value Maximization	0.150	1.650	0.050	0.000	0.320	0.020	2.330			YES
Organization Management -> Economic Value Maximization	-0.120	1.430	0.080	-0.310	-0.020	0.020	2.060			NO
Workplace Management -> Economic Value Maximization	0.430	3.240	0.000	0.200	0.630	0.190	2.060			YES
Energy Management -> Economic Cost Minimization	-0.350	1.790	0.040	-0.580	-0.040	0.070	2.490	0.24	0.12	YES
Innovation -> Economic Cost Minimization	0.160	1.090	0.140	-0.080	0.390	0.020	2.210			NO
Internal Green Management -> Economic Cost Minimization	0.660	4.130	0.000	0.360	0.880	0.180	3.240			YES
Water Management -> Economic Cost Minimization	-0.170	1.040	0.150	-0.450	0.090	0.020	2.240			NO

4.0 CONCLUSION

The research identified nine elements of CRESM, which includes energy management, water management, human satisfaction management, workplace management, workspace management, internal green management, waste management, innovation management and organization management. While four elements of CS objectives are obtained which include environment, social and economic. The economic element was divided into two series of value maximization and cost minimization. In conclusion, eleven relationships between CRESM and CS objectives were found covering both positive and negative relationships as discussed above.

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