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# THE RELATIONSHIP BETWEEN ECOLOGICAL CORPORATE SOCIAL RESPONSIBILITY AND ORGANIZATIONAL PERFORMANCE IN CONSTRUCTION INDUSTRY

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**ABSTRACT:** Corporate Social Responsibility has become a hot issue for modern enterprises recently. Under this trend, companies have to focus on what they can do for society instead of on just making profits. This paper is to explore the relationship between ecological corporate social responsibility and organizational performance in the construction industry in Taiwan. 192 samples were collected from Taiwan's general contractors and analyzed using factor analysis, correlation analysis and path analysis. This study found: (1) in general, the contractors in Taiwan don't devote much to realizing ecological corporate social responsibility, and there is still much room for improvement; (2) the correlation analysis results indicated there are significant positive relationships between ecological corporate social responsibility and organizational performance; and (3) according to the path analysis results, a contractor can improve its business performance by improving its realization of corporate social responsibility.

*Keywords: Corporate Social Responsibility, Corporate Image, Organizational Performance, Factor Analysis, Path Analysis.*

## 1. INTRODUCTION

In the current era of globalization, Corporate Social Responsibility (CSR) has become the mainstream prescription for business and governments in dealing with social and environmental ills [1]. According to a significant number of existing CSR research, companies can improve their corporate images by implementing CSR-related strategies [2]. A company's corporate image is an extension of its service brand and a vital indicator of customer trust in this company. By improving its image, a company mainly aims to win recognition and loyalty from customers and ultimately to increase revenues and create profits. Even though earlier studies have identified benefits of CSR, there is still no comprehensive study on the ecological corporate social responsibility (ECSR) in the construction industry. In addition, there has been no industry-wide study on the CI and business performance of construction contractors. This lack of information regarding the benefits of CSR may have resulted in the construction industry's reluctance to implement CSR practices. The construction industry is a highly energy consuming and highly polluting industry. As the world attaches more importance to energy conservation and emission reduction, issues regarding the industry and its impact on the environment should also receive more attention.

Therefore, a study like this research on the relationship between ECSR and organizational performance (OP) is urgently needed. The purpose of this study is find out the current conditions of ECSR realization and OP among the construction contractors in Taiwan and then to explore the connections among ECSR, Corporate Image (CI), and OP by conducting a questionnaire survey and statistic analyses of the survey results. Based on the analysis results, this study hopes to offers some suggestions for the contractors and also helpful references for the promotion of ECSR in construction.

## 2. LITERATURE REVIEW

CSR reflects an increasing public demand for greater transparency from multinational companies. CSR can particularly constitute a strategy to cope with externalities and serve as insurance against reputation risks that harm profit prospects and corporate value [3][4]. Piercy and Lane [5] indicated that the impact of CSR initiatives on customer and other stakeholder relationships is key to performance improvement. Rhys [6] pointed out that CSR has become a major focus of interest for development practitioners in recent years. Lichtenstein et al. [7] contended CSR can be a viable promotional strategy that leads to broader company benefits than immediate purchase behavior. CSR can be the catalyst for long-term corporate profits and responsible social development [8].

The construction industry in general has a poor ethical reputation, being widely regarded by the public as a sector with corrupt practices, health and safety failures, and causing damage to the environment [9]. Sonja [10] stated that large construction companies in Australia

develop corporate social responsibility (CSR) in order to maintain an image of being a good corporate citizen.

The study by Jones et al. [11] indicated that even though construction companies report their recognition of the importance of CSR and their commitment to integrating it within their businesses, they make relatively limited use of key performance indicators and have low participation rates in general benchmarking exercises.

CI is described as the overall impression made on the minds of the public [12]. Moodley et al. [9] pointed out that building of CI is a lengthy process which can be improved rapidly with technological breakthrough and unexpected achievements.

OP is understood as the concentrated reflection of achievements of each organizational function, and reflects the realization of organizational objectives [13]. OP is an important area of study in business management, and it is also a key indicator to evaluate the operational efficiency of a business. The concept of OP has been operational in different ways in relevant empirical research. Both objective and subjective indicators have been used to measure the concept [14-15].

## 3. RESEARCH DESIGN

### 3.1 Research Model and Hypotheses

In this research, a questionnaire survey was conducted to measure the current ECSR, CI and OP of the surveyed Taiwanese contractors and the survey results were then statistically analyzed to explore the connections among the three dimensions. The questions were designed based on not only references from existing literature but also opinions from 10 managers with over ten years of experiences each in Taiwan's construction industry. All the questions were modified to better suit the measurement of Taiwan's construction industry. The following is a short description of the questions in the study's questionnaire:

1. ECSR dimension: totally 37 questions compiled and modified from the questionnaires of Holmes [16] and Abbott and Monsen [17] on corporate social responsibilities.
2. CI dimension: totally 12 questions compiled and modified from the questionnaires of Walters [18] and Aaker and Keller [19] on corporate image.
3. OP dimension: totally 10 questions compiled and modified from the questionnaire of Morck and Yeung [20] on organizational performance.

The questionnaires in this study were filled out anonymously by managers in the surveyed contractors each with over three years of experiences in the industry and clear knowledge of their companies. There were totally 192 valid samples at the end. A 6-point Likert-type scale was used (from 1= strongly disagree to 6= strongly agree) to measure the degrees of ECSR, CI and OP.

The questionnaire survey results were analyzed using SPSS for factor analysis, reliability analysis, correlation analysis and path analysis to examine the model in this study.

Full realization of CSR can have a positive effect on a company's CI. Zairi and Peters (2002) found CI has long been a priority for companies. Implementation of CSR practices is helpful for building positive corporate images and maintaining corporate competitiveness [21]. Some research found a positive correlation between CSR and OP [22-23]. The findings of some other studies indicate that a company can boost its OP by enhancing its CI [24-25].

However, the above-mentioned empirical research all focused only on the manufacturing or service industries. Based on the above-mentioned research, this study focused on the construction industry instead and proposed the following three hypotheses:

H1: ECSR of a contractor has a positive and direct influence on its CI.

H2: ECSR of a contractor has a positive and direct influence on its OP.

H3: CI of a contractor has a positive and direct influence on its OP.

### 3.2Analytical Methods And Research Findings

#### 3.2.1 Descriptive Statistics

1. The average score of the ECSR dimension was 4.12 (with a standard deviation of 0.87). Among the questions, "My firm respects the privacy of the proprietors and/or its clients and protects their personal information" had the highest average score (5.23) and the question "My firm deploys pollution inspectors at construction sites in response to the increasingly demanding anti-pollution standards" had an average score (3.08) lower than the average score of the dimension. This indicates the surveyed contractors pay more attention to the privacy of their customers and the protection of their personal information. However, they are less proactive in or enthusiastic about taking actions to protect the environment.
2. The average score of the CI dimension was 4.60 (with a standard deviation of 0.83). Among the questions, "My firm is professional" had the highest average score (5.10), followed by the question "My firm is trustworthy" (4.97). The question "My firm is well-known" had an average score (3.88) lower than the average score of the dimension. This indicates that most of the surveyed contractors have good confidence in their professional images and in gaining trust from their customers. However, they are less confident in their recognition levels. This is partially because there are too many contractors in Taiwan, which results in a low industry concentration ratio.

#### 3.2.2 Factor analysis

Table 1 shows the factor analysis results of the ECSR dimension. The KMO value was 0.819 (>0.5) and the results of Bartlett's sphericity test also reached the level of significance ($p<0.01$), indicating the ECSR dimension was suitable for factor analysis. Four factors could be

**Table 1.** Factor Analysis Results of the ECSR Dimension

| Question | Sub-dimension and Factor Loadings | | | |
|---|---|---|---|---|
| | Resource Conservation | Social Participation | Social Commitment | Pollution Prevention |
| My firm proactively uses green construction methods and recycled materials. | **0.785** | 0.203 | 0.253 | 0.250 |
| My firm plans to use or uses designs or facilities powered by alternative energies such as solar power under suitable circumstances. | **0.752** | 0.188 | 0.249 | 0.182 |
| My firm designs and uses water supply systems that store and reuse rainwater. | **0.719** | 0.228 | 0.110 | 0.076 |
| My firm designs and uses water-saving utilities, such as water-saving toilets, to reduce water consumption. | **0.681** | 0.142 | 0.255 | 0.098 |
| My firm adopts as much natural lighting in its buildings as permitted by the suitable rates of openings on the buildings' exterior. | **0.636** | 0.088 | 0.247 | 0.125 |
| My firm uses permeable pavements around building bases to ensure better soil water retention. | **0.628** | 0.224 | 0.208 | 0.224 |
| My firm proactively forges partnerships with R&D institutions to develop green methods and/or recycled materials. | **0.628** | 0.217 | 0.145 | 0.288 |
| My firm installs wastewater treatment facilities at construction sites to clean polluted water before releasing it. | **0.626** | 0.165 | 0.135 | 0.298 |
| My firm supports artistic and cultural activities (ex: folk art performances) | 0.262 | **0.829** | 0.140 | 0.142 |
| My firm supports charity organizations or holds philanthropic activities. | 0.230 | **0.740** | 0.209 | 0.084 |
| My firm supports educational affairs (ex: providing scholarships or offering internships and student visits to the firm). | 0.278 | **0.713** | 0.216 | 0.095 |
| My firm values the development of the community where it is located and offers something in return for the support of residents in the neighborhood (ex: holding activities for community residents). | 0.108 | **0.693** | 0.143 | 0.258 |
| My firm takes part in improving the environments of the city or the community (ex: adoption of a park or roadside trees). | 0.135 | **0.680** | 0.146 | 0.256 |
| My firm never engages in anything that violates fair trade with the proprietors or its customers for the sake of its own interests. | 0.244 | 0.203 | **0.770** | 0.255 |
| My firm respects the privacy of the proprietors and/or its customers and protects their personal information. | 0.322 | 0.141 | **0.712** | 0.124 |
| My firm never lies to, misleads, or has any unfair conduct with regard to its customers or the proprietors. | 0.162 | 0.195 | **0.692** | 0.141 |
| My firm follows all the taxation regulations and declares taxes honestly. | 0.217 | 0.167 | **0.677** | 0.193 |
| My firm's efforts in reducing pollution and emission have yielded visible results. | 0.359 | 0.270 | 0.186 | **0.789** |
| My firm renews and updates its pollution prevention facilities in accordance with the governing laws of environmental protection. | 0.365 | 0.240 | 0.134 | **0.731** |
| My firm deploys pollution inspectors at construction sites in response to the increasingly demanding anti-pollution standards. | 0.292 | 0.307 | 0.069 | **0.677** |
| Eigen value | 4.573 | 3.324 | 2.741 | 2.282 |
| Variance explained (%) | 21.77 | 15.82 | 13.05 | 10.86 |
| Cronbach's α | 0.916 | 0.891 | 0.817 | 0.898 |

Extraction Method: Principal Axis Factoring; Rotation Method: Varimax with Kaiser Normalization; KMO=0.819 and Bartlett's Test Chi-Square= 3646.486, df=210, p=0.000<0.05

extracted from the dimension, i.e., the dimension could be divided into four sub-dimensions. The cumulative variance explained of the factor analysis was good (61.5%). Based on the attributes of the corresponding questions, the four sub-dimensions were named Resource Conservation, Social Participation, Social Commitment, and Pollution Prevention. The Cronbach's α value of each sub-dimension reached over 0.8, indicating good reliability of each sub-dimension.

In the factor analysis of the CI dimension, the KMO value was 0.971 (>0.5) and the results of Bartlett's sphericity test also reached the level of significance ($p<0.01$), indicating the CI dimension was suitable for factor analysis. The cumulative variance explained for the factor analysis was good (59.48%). After the factor analysis, only one sub-dimension was extracted from the CI dimension. In addition, the Cronbach's α value was 0.921, indicating good reliability of the dimension.

In the factor analysis of the OP dimension, the KMO value was 0.834 (>0.5) and the results of Bartlett's sphericity test reached the level of significance, ($p<0.01$), indicating the OP dimension was suitable for the factor analysis. Two sub-dimensions were extracted and the cumulative variance explained was good (67.58%). The two sub-dimensions were named Financial Performance and Non-financial Performance. The Cronbach's α values of both sub-dimensions reached over 0.7, indicating good reliability of the dimension.

### 3.2.3 Correlation Analysis

Correlation analysis was adopted to explore the correlation among the variables of the ECSR, CI and OP dimensions in this research. The average scores of the dimensions and sub-dimensions variables were used in the correlation analysis. As indicated by Table 2 that lists the analysis results, the variables of the three dimensions were all modestly positively correlated and their correlations all reached the level of significance.

Among the variables of the CI and ECSR dimensions, Resource Conservation ($r=0.636$, $p<0.01$), Social Participation ($r=0.665$, $p<0.01$), Social Commitment ($r=0.658$, $p<0.01$) and Pollution Prevention ($r=0.600$, $p<0.01$) were modestly positively correlated. The two sub-dimensions of OP, Financial Performance and Non-financial Performance, were significantly positively correlated with the CI dimension (respectively at 0.446 and 0.698). The sub-dimensions of ECSR and OP were all significantly positively correlated with each other. The two sub-dimensions of OP were also significantly positively correlated with the CI dimension.

As shown by the above-mentioned analysis results, there are significant positive correlations among the ECSR, CI and OP dimensions, indicating the three dimensions are closely connected.

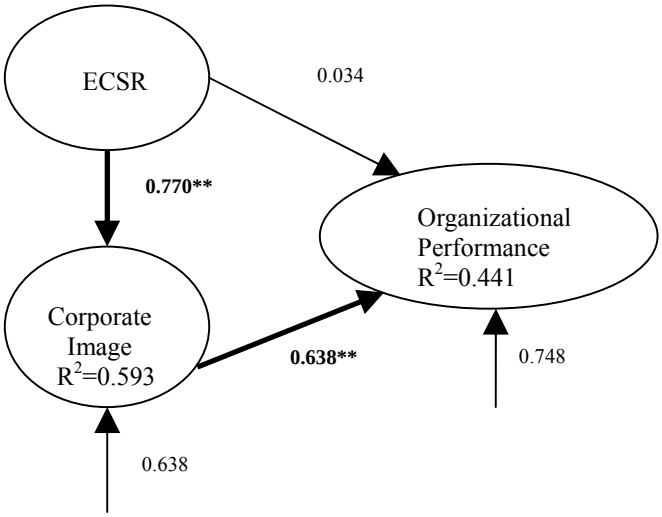
### 3.2.4 Path Analysis

The correlation analysis was also used to check linear relationship between the variables, which constituted the basic assumptions of path analysis. In this section, path analysis was employed to verify the theoretical model [26-27] and the cause-effect relationships among the three dimensions. A two-stage regression model was used in the analysis. In the first stage, the interactions between the ECSR and CI dimensions were explored, using the CI variables as dependent variables and the CSR variables as independent variables. The second stage explored the influence of ECSR and CI on OP, using the OP variables as dependent variables and the ECSR and CI variables as independent variables. Figure 1 shows the path diagram and the path coefficients in the model.

**Table 2.** Correlation between the sub-dimensions

| Variable | Resource Conservation | Social Participation | Social Commitment | Pollution Prevention | Corporate Image | Financial Performance | Non-financial Performance |
|---|---|---|---|---|---|---|---|
| Resource Conservation | 1 | | | | | | |
| Social Participation | 0.509** | 1 | | | | | |
| Social Commitment | 0.532** | 0.434** | 1 | | | | |
| Pollution Prevention | 0.629** | 0.542** | 0.408** | 1 | | | |
| Corporate Image | 0.636** | 0.665** | 0.658** | 0.600** | 1 | | |
| Financial Performance | 0.316** | 0.271** | 0.341** | 0.260** | 0.466* | 1 | |
| Non-financial Performance | 0.508** | 0.439** | 0.550** | 0.431** | 0.698** | 0.520** | 1 |

*significant at the 0.05 level; **significant at the 0.01 level




**significant at the 0.05 level; **significant at the 0.01 level

**Figure 1.** Path diagram

According to the analysis results in the first stage, the $R^2$ value of ECSR to CI ($\beta$=0.770, $p<0.01$) was 0.593, which means CSR has a significant and direct influence on CI for the construction industry and also verifies the first hypothesis of this study. According to the analysis results in the second stage, the $R^2$ value of the model was 0.441 and only CI ($\beta$=0.638, $p<0.01$) had a significant influence on the OP path, which indicates there is a direct cause-effect relationship between CI and OP for the construction industry but ECSR does not have a significant influence on OP. This finding falsifies the second hypothesis but verifies the third hypothesis in this study.

The remaining causal paths suggest that increases in ECSR tend to improve the degrees of CI for the construction industry. Even though ECSR does not have a direct influence on OP, the findings also indicate that ECSR may influence indirectly the performance of construction industry via CI. The coefficient between ECSR and OP was 0.491 (=0.770*0.638), indicating the influence of CSR on OP is not negligible.

## 4. CONCLUSIONS

ECSR has become a global trend. For companies, ECSR realization would inevitably increase costs and, therefore, many are hesitant about it. Maybe better understanding of the long-term benefits of ECSR can be helpful in encouraging them to implement ECSR practices. Empirical research on CSR or ECSR of the construction industry remains rather insufficient in number. Given the fact that the construction industry consume relatively more resources than the other industries and hence has a larger impact on the environment, there should be more future research on the CSR or ECSR of construction contractors.

This research is an empirical study and analysis of the ECSR in Taiwan's construction industry. It found only a very few of the surveyed contractors are thoroughly implementing ECSR. Most of the surveyed contractors lack awareness of and enthusiasm about environment protection. There is still a lot of room for improvement in ECSR realization for the contractors in Taiwan. This research also found ECSR, CI and OP are significantly positively correlated. From its path analysis, this research also found ECSR may influence the performance of construction industry via CI. The possible contribution of this study is to help promote the awareness that, if a contractor invests more in its ECSR realization, it will be helpful for the improvement of its CI and ultimately boost its profits. Hopefully, construction contractors in both Taiwan and around the world will be more dedicated to ECSR to not only make profits but also save the environment.

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