The Relationships between Environmental Management and Sustainable Growth in Chinese Tourism Industry

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Abstract. Environmental management (EM) and corporate financial sustainable growth are currently hot topics in academic research. This paper examines the relationships among EM and financial sustainable growth (FSG) in Chinese tourism industry. The results show that EM has promoted the FSG. The analysis result shows that the presented policy proposals promote the development of tourism companies from the aspect of EM.

1. Introduction

Environmental issues are increasingly drawing attention from the international community. However, the phenomena of the “high consumption of energy”, “high consumption of materials”, and “high emissions” are quite common in the operation of the traditional tourism industry, which has already aroused the attention of industry and academia. The implementation of environmental management (EM) has become one of the most important methods of transforming and upgrading the tourism industry to achieve the transition from the high consumption of energy and materials and high emissions to green and low-carbon operations.

Sustainability is very important, especially during periods of economic turmoil (Zervas, et al., 2017) [1], and it will become more important in the future. From this paper point of view, sustainability means “using resources to meet the needs of the present without compromising the ability of future generations to meet their own needs” (Linton, et al., 2007) [2]. Then, the commitment to the sustainability of the environment can be reflected in EM. Early studies have shown that investments in environmental activities can help a company enhance its competitive advantages and improve its financial performance (Pagell and Gobeli, 2009) [3]. There are different opinions about the actual benefits of EM. Therefore, this critical aspect of sustainability must be further studied, especially in terms of the impact of EM on financial sustainable growth (FSG).

Although a number of studies have focused on the relationship between EM and financial performance, research on this relationship on a worldwide basis is still nascent. Considering the background differences resulting from the various levels of economic development, many aspects need to be further examined. The contribution of this article is to use the panel data model to verify the impact of EM to FSG in Chinese tourism industry, which further expanded the research field of FSG. This paper is organized as follows: the second part presents the literature review and research hypotheses, the third part describes the research methods, the fourth part provides the results, and the last part presents the conclusions and suggestions.
2. Literature Review and Proposed Hypotheses

2.1 EM, DF and Corporate FSG

By implementing pollution prevention activities, companies can reduce their control costs, decrease the consumption of inputs and energy, and achieve the reuse of recycling materials (Xu, et al., 2018) [4]. In addition, EM can also generate product differentiation. Via pollution prevention, EM can help companies achieve a win-win situation, which means that both companies and the environment can obtain benefits from the results (Baumgartner and Rauter, 2017) [5]. At present, studies on EM mainly focus on the relationship between EM and corporate financial performance, although their conclusions are quite different and a unified conclusion in the academic research field has not been formed.

Considerable attention has been focused on financial sustainable growth (FSG) in recent decades, which was confirmed by the literature review of Kleindorfer, et al. (2005) [6]. FSG is usually calculated through economic, environmental and social longevity and foresight, which has been referred to as the triple bottom line (Zhang and Chen, 2017) [7]. In this paper, we are focused on the environmental aspect, which constitutes a significant component of the production and operations strategy (Feng, et al., 2018) [8]. We examine the subject from the aspect of industrial ecology, in which environmentally sustainable companies can build production systems that are expected to reduce the negative impacts on the environment.

2.2 Proposed Hypotheses

Whether environmental investments can help companies achieve FSG is not conclusive in the academic field. This paper analyzes the relationship between EM and corporate FSG.

Scholars have found that corporate social reputation affects corporate value, potential earnings, and corporate FSG. Wang and Berens (2015) [9] demonstrated that the relationship between corporate social reputation and financial performance is stronger than the direct impact from social responsibility. Zhu and Zhang (2015) [10] concluded that a significant positive correlation occurs between corporate social responsibility and financial performance in China, and an interaction occurs between corporate social responsibility and financial performance in China. In summary, this article proposes the first hypothesis as follows:

H: EM can effectively promote corporate FSG.

3. Research Methodology

3.1 Data Source

This paper selected the annual reports and environmental reports of tourism companies publicly disclosed by the Chinese A-share market listed from 2008 to 2017 as the data samples. Those data were collected from the CSMAR database. Regarding to the data for environmental management, we collected them from 135 tourism companies through questionnaire surveys.

3.2 Variables

At present, two types of FSG models are available: accounting-based and cash flow-based sustainable growth models. We examine the growth of tourism companies using Colley’s cash flow-based sustainable growth model in this paper. The formula is as follows:

\[ SGR = \frac{[(EBIT-I)(1-t)(1+DER)(1-DPO)]}{[NA_0-(EBIT-I)(1-t)(1+DER)(1-DPO)]} \]

Where, SGR represents the financial sustainable growth rate of tourism companies; EBIT represents the earnings before interest and taxes; I represents the interest expenses on debt; t represents the income tax rate; DER represents the debt-to-equity ratio; DPO represents the dividend payout ratio; and NA_0 represents the net assets at the beginning of the period.

This paper follows the measurement scales for tourism company EM practices proposed by Gil, et al. (2001) [11]. We tried to use the seven items to get an overall indicator of the balanced integration of different aspects of EM. In Table 1, the seven items were in one group as a single
factor. The convergent validity of this factor has been ensured by the employment of a complementary measurement. This paper depended on researches that adopted the drawing up of an environmental plan as a proxy for EM, for the hotel companies (Buffa, et al., 2018) [12].

### Table 1. Factor Analysis Results for EM Item Subjective Scales.

| Scale and item                                                                 | Factor loading |
|-------------------------------------------------------------------------------|----------------|
|                                                                               | 1  | 2  | 3  |
| The company quantifies in its budget its environmental savings and costs      | 0.21 | 0.69 | 0.18 |
| The company gives the employees training on environmental issues              | 0.34 | 0.65 | 0.11 |
| The company gives priority to purchasing ecological products (biodegradable,   | 0.13 | 0.71 | 0.24 |
| reusable, recyclable, etc.)                                                   |                |    |    |
| The company uses ecological arguments in its marketing campaigns              | 0.08 | 0.75 | 0.31 |
| The company facilitates customer collaboration in environmental protection     | 0.11 | 0.66 | 0.34 |
| (voluntary changing of towels, etc.)                                         |                |    |    |
| The company applies energy and water saving practices                         | 0.10 | 0.65 | 0.33 |
| The company makes a selective collection of paper, oil, glass, etc.           | 0.16 | 0.69 | 0.13 |
| Eigenvalue                                                                   | /   | 3.69 | /   |
| Percentage of variance explained                                              | /   | 17.88 | /   |
| Alpha                                                                         | /   | 0.84 | /   |

Note: This scale is referenced from Alvarez Gil et al. (2001).

After referring to the existing literature, three control variables were included in our study. We select the size of company (Size), growth rate of the total output value (GTOV), and the net assets per share (Ass). For alternative variables, Size uses the natural logarithm of total assets; Ass uses the ratio of stockholders equity to total stock, which reflects the company’s profitability.

### 3.3 Modeling

The model of EM and SGR is established as follows:

$$SGR_{it} = \alpha_0 + \alpha_1 EM_{it} + \beta X_{it} + \epsilon_{it}$$  (2)

Where, i and t represent the company and the year, respectively; $SGR_{it}$ represents financial sustainability; $EM_{it}$ represents environmental management; $X_{it}$ represents control variables; $\epsilon_{it}$ is random errors. The definition of all variables is displayed in Table 2. In processing the data, the 2% tailing treatment was conducted on all continuous variables to minimize the impact of outliers on the estimation results. The statistical results of the description of related variables are shown in Table 3.

### Table 2. The Definition of Variables.

| Variables                        | Symbols | Definition                                      |
|----------------------------------|---------|------------------------------------------------|
| Size                             | $Size$  | $\ln$ (total assets)                           |
| Growth rate of the total output  | $GTOV$  | $(TOV_2 - TOV_1)/TOV_1$                        |
| value of industry                |         |                                                |
| Net assets value per share       | $Ass$   | The ratio of stockholders equity to total stock |
| Environmental management         | $Em$    | Calculated by factor analysis                   |
| Sustainable growth rate          | $SGR$   | Eqs.(1)                                         |

### Table 3. The Description Analysis.

| Variables | Mean | St. Dev. | Max.  | Min.  |
|-----------|------|----------|-------|-------|
| $SGR$     | 0.68 | 0.46     | 1.54  | 0.01  |
| $EM$      | 5.36 | 2.11     | 7.14  | 4.03  |
| $Size$    | 20.98| 1.34     | 23.51 | 19.23 |
| $GTOV$    | 0.101| 0.813    | 0.24  | 0.03  |
| $Ass$     | 2.87 | 1.49     | 6.23  | -0.54 |
4. Results and Discussion

Since the data used is short-term and the number of companies is relatively large, we firstly conduct the LSDV estimation on the relationship of EM and FSG. Results are shown in Table 4. It can be seen from Table 4 that the F statistics are large and all pass the 1% significance level test, indicating that overall coefficient of model is significant and the conclusion is reliable. Model 1 is the Equation (2) estimates without control variables, Model 2 is the Equation (2) estimates. The regression coefficients of EM are significantly positive, and all pass the 5% significance level, indicating that the EM of tourism companies has significantly improved the FSG. Thus, the Hypothesis has been verified.

Table 4. The Results of Baseline Regression.

| Variables | Model 1 | Model 2 |
|-----------|---------|---------|
| Cons.     | 8.76 (6.74) | 12.37 (9.45) |
| EM        | 1.94** (3.17) | 1.79** (2.35) |
| Size      | 0.87** (1.64) | 1.91* (3.88) |
| GTOV      | 1.91* (3.88) | 2.77* (5.72) |
| Ass       | Adjust R^2 0.502 | 0.534 |
| F value   | 22.97*** | 21.81*** |

Note: ***, **, *Significant at 1%, 5%, and 10% levels, respectively; () represents Z value.

5. Conclusions and Policy Implications

In the context of a flourishing tourism industry in China, companies are facing excessive consumption of environmental resources. This paper studies the impact of tourism companies’ investments in EM on financial sustainable development. The study found that the investments in EM can effectively help companies achieve sustainable growth. In the long run, with the favorable advantages of EM, the scale of the company can be expanded and large-scale tourism groups can be established.

The promotion of investments in EM for tourism companies can be carried out in several aspects. First, laws and regulations related to environmental protection can be improved, appropriate subsidies and rewards can be provided. Second, the government must create a green environment atmosphere and implement restrictions on tourism companies’ stakeholders to promote EM behaviors. Third, companies should emphasize the application of energy-saving and environmental protection technologies, promote the transformation and upgrading of tourism companies, and reduce their debt financing costs.

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