

2014

Empirical Archetypes for Strong Corporate Environmental Performance

Kent Walker Dr.
Odette School of Business

na ni
Hong Kong Polytechnic University

Bruno Dyck Dr.
University of Manitoba

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Recommended Citation

Walker, Kent Dr.; ni, na; and Dyck, Bruno Dr.. (2014). Empirical Archetypes for Strong Corporate Environmental Performance. *Business Strategy and the Environment*.
<http://scholar.uwindsor.ca/odettepub/73>

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Recipes for Successful Sustainability: Empirical Organizational Configurations for Strong Corporate Environmental Performance

ABSTRACT

We examine 45 existing case studies of firms with strong corporate environmental performance (CEP) to empirically identify four organizational configurations for successful sustainability. These four configurations represent different combinations of variables describing a firm's external environment, organizational structure, and its strategy-related activities. More specifically, these configurations vary in having a benign or challenging external environment, a mechanistic or organic structure, a low-cost or differentiation strategy, hands-on or hands-off participation by the top-management-team, high or low consideration given to stakeholders, and a short or long-term time orientation. Taken together the four organizational configurations introduce an understanding of equifinality for achieving CEP. In other words, given an adequate variety of ingredients, there are multiple recipes for successful sustainability. Implications for scholars, practitioners, and policy-makers and other stakeholders are discussed.

Keywords: case survey methodology; configuration theory; corporate environmental performance; equifinality; stakeholder engagement; sustainability.

Introduction

There is overwhelming evidence that we are destroying our planet in pursuit of financial growth (Gore, 2009; Pacala & Socolow, 2004). In the coming years research about corporate environmental performance (CEP) may become just as important as, if not more important than, research about corporate *financial* performance. Correspondingly, we focus on CEP, by which we mean the net effect a firm has on the natural environment. In particular, we investigate how high levels of CEP are determined by interactions between variables from an organization's external environment, its structure, and its strategy-related activities. This holistic examination into the interrelationships between key variables makes two key contributions to the growing literature examining business strategy and the environment.

First, we empirically corroborate the concept of equifinality in CEP. Equifinality is the presence of alternative solutions that organizations use to achieve an equivalent or similar final state (Drazin & Van de Ven, 1985: 515). To examine equifinality we combine qualitative and quantitative analyses (i.e., the use of case survey methodology and the set-theoretic approach) to identify recurring organizational configurations associated with firms who have strong CEP. Thus, rather than surveying many organizations to see how a particular factor, or set of factors, is related to environmental performance, we adopt an approach that seeks to find whether high CEP is characterized by specific combinations of key organizational variables from the external environment, organizational structure, and strategy. To paraphrase the famous poet John Donne, no organizational variable exists on its own island, but is constantly interacting and changing with the variables on its continent.

Using a recipe metaphor from the culinary arts, we examine not whether a specific ingredient is related to the outcome of tasty and nutritious meals (i.e., a reductionist approach that might find, for example, that tasty and nutritious meals tend to be associated with the use of fresh fruits). Rather, our goal is to examine whether there are recurring combinations of multiple ingredients that are associated with tasty and nutritious meals (e.g., some tasty and nutritious meals have a focus on vegetables and cheese products but not meats and are served on cold dishes, while other equally tasty and nutritious meals focus on grass-fed meats and vegetables, but not fruits or milk products, and are served on a hot dish).

Second, to our knowledge, this is the first study of CEP to examine the interrelationships between variables from the external environment, structure and strategy, including corporate and environmental variables, thus really combining business strategy and the environment. For example, while researchers have identified configurations related to the more general concept of corporate social responsibility, these configurations are related to the strategic approach toward stakeholders and not an empirical examination of key external and internal organizational variables (O'Higgins, 2010). Therefore, not only is our examination of the final meal itself unique, but also the range of ingredients we investigate.

These configurational recipes should be of particular importance to researchers, practicing managers, and policy-makers. For researchers, we present a novel combination of configuration theory with the case-survey methodology and a set-theoretic analysis. It is this unique combination of theory and methods that enables us to make our two key contributions outlined above. Practicing managers will welcome the fact that, unlike previous research that tends to offer a "one-size-fits-all" approach to CEP, our study explicitly recognizes that organizations and their contexts are unique and dynamic (Barnett, 2007). In terms of our metaphor, there is more than one way to make a tasty and nutritious meal; the most appropriate way is to use the ingredients and equipment you have at hand. Our empirically identified configurations essentially

represent recipes that can be used to properly produce strong CEP, but that can be modified by idiosyncratic cooks (managers) using the ingredients at hand to make it just the way they want. Finally, for policy makers, equifinality suggests that providing regulatory flexibility enhances the ability of firms to develop strong CEP in light of their particular organization and business environment.

In sum, the objective of this study is to identify common organizational configurations of key variables related to strong CEP. Researchers have identified a list of relevant variables relevant to our task (e.g., Fiss, 2007; Hambrick, 1984; Kabadayi, Eyuboglu & Thomas, 2007; Ketchen & Shook, 1996; Miller, 1987; 1990; Miller & Friesen, 1984; Mintzberg, 1979), and while the interrelationships between them are of great importance, paradoxically such interrelationships are not well understood. The identification of combinations of variables (configurations) permits stepping beyond the one-size-fits-all recommendations of the past, away from one-best-way universal prescriptions for generic corporations (Barnett, 2007). This will deepen and enrich existing knowledge of organizations and the natural environment, broaden knowledge and the applicability of configuration theory, and be of particular relevance to practicing managers.

The remainder of the paper will proceed as follows. First, we review the literature on CEP and discuss our theoretical approach. Second, we delineate our methodology including our data, coding, variables, and analysis. Third, we present our results and identify four organizational configurations associated with strong CEP. Fourth, we discuss our major findings including the implications for researchers, managers, policy-makers and other stakeholders. Finally, before concluding we describe the limitations of our study.

Theoretical Background

Research investigating CEP can be classified into two main streams (Bansal & Gao, 2006). The first seeks to contribute to organization theory and financial performance by viewing the natural environment as an important factor in financial organizational outcomes. Within our recipe analogy, this stream suggests that the natural environment is an important ingredient for achieving financial success. The second stream inverts this emphasis, suggesting instead that financial viability is an important ingredient for achieving environmental success. In other words, the second stream examines environmental performance and assumes that the natural environment is an important outcome in itself.

Overall, both research streams appear to have moved away from generalized research questions and findings—such as does CEP lead to increased financial performance?—to more specific and contingent questions such as how, why and when is CEP related to financial performance (Berchicci & King, 2007)? Therefore, research is increasingly recognizing the uniqueness in the characteristics of organizations and their larger environments. Accordingly, we view the next logical step as the examination of the interrelationships between key variables that allow for uniqueness and dynamism, yet also provide evidence of some recurring patterns or relationships permitting some level of generalizability. This study therefore represents a balance between a case study analysis that is organizational specific and thus very unique, and survey analyses that produce generalizable results. To allow for this type of investigation we apply a unique combination of theory and methods. We discuss our theory in this section and the methods in the subsequent section.

We draw on configuration theory, and in particular the identification of organizational configurations associated with strong CEP, to further develop our understanding of corporate and environmental uniqueness. Organizational configurations are defined as “any multidimensional constellation of conceptually distinct characteristics that commonly occur together” (Meyer, Tsui & Hinings, 1993: 1175). Classic examples of similar concepts include generic strategic organizational types (e.g., Miles & Snow, 1978), organizational archetypes (e.g., Greenwood & Hinings, 1993; Miller & Friesen, 1984), and organizational gestalts (Mintzberg, 1978). In other words, configurations represent recurring patterns of how key external and internal organizational variables “fit” together to form an identifiable “whole.” As described by Dyck (1997: 795):

Understanding and studying configurations demands adopting a holistic, non-partistic, approach to the study of organizations. Configurationists contend that organizational design elements are all interconnected and mutually dependent; rather than analysing a limited number of organizational variable in an essentially discrete fashion, individual organizational elements must be understood via reference to the organization as a whole.

Thus a key strength of configurational analysis is the ability to examine how multiple constructs interact with each other and influence organizational performance. As stated by Ketchen and Shook (1996: 441): “Configurations represent a way to meaningfully capture the complexity of organizational reality.” In particular, we seek to identify configurations for strong CEP by examining the interactions of variables related to an organization’s external environment, structure, and strategy. Such an approach provides a relevant and applicable analysis for scholars, practitioners, and policy makers who have to deal with multiple issues simultaneously.

In general, the identification of configurations has followed two general approaches: (1) typologies, which refer to conceptually derived configurations, and (2) taxonomies, which refer to empirically derived configurations (Meyer, Tsui & Hinings, 1993). In this study, a taxonomy will be developed at the firm level of analysis. We contribute to the development of configuration theory by demonstrating that it need not be limited to the identification of configurations to further *financial* performance, but can be applied more broadly to include all types of performance, and in particular CEP. Therefore, our application of configuration theory is unique in that we study environmental instead of financial performance, and we include strategic variables specifically related to the management of the natural environment.

The most common variables that have been examined from a configurational approach include the external business environment, organizational structure, and organizational strategy (Dess, Newport & Rasheed, 1993; Fiss, 2007; Hambrick, 1984; Kabadayi, Eyuboglu & Thomas, 2007; Ketchen & Shook, 1996; Miller, 1987; 1990; Miller & Friesen, 1984; Mintzberg, 1979; Walker & Ruekert, 1987; Ward, Bickford & Leong, 1996). Considering each of these simultaneously enables examinations of how internal and external organizational characteristics come together to influence organizational performance. In examining the interactions of these variables, configurational research seeks to identify archetypal fits between the various constructs. Configurations are described as the combination(s) of identified variables that lead to the best financial performance (or, in our case, the best environmental performance). While theoretically there might be an infinite number of configurations, past research suggests that “only a finite number of coherent configurations are prevalent in the social world” (Meyer, Tsui & Hinings, 1993: 1192). Furthermore, configurations have been shown to “unequivocally” predict performance (Ketchen , Thomas & Snow, 1993).

The configurations developed by Miles and Snow (1978) may be the most examined and enduring of numerous configurations introduced over the past three decades (Hambrick, 2003). Although their configurations are sometimes used to describe different *strategic* organizational types (e.g., their overlap with Porter's strategic types is well-accepted), the deeper value of Miles and Snow's configurations is their *comprehensive* nature, spanning organization environment, strategy, structure and technology (Ghoshal, 2003; Hambrick, 2003; Ketchen, 2003).

In sum, applying configuration theory to the CEP literature facilitates the ability to move beyond linear investigations of isolated variables, to the investigation of complex relationships. For practicing managers, a configurational approach is highly relevant as the variables they deal with on a daily basis never exist in isolation, but are constantly interacting with each other. Through an investigation into these interactions culminating in the identification of configurations managers, researchers and policy makers can all better understand the complexity of CEP.

Methodology

We use a case meta-analysis methodology, sometimes also referred to as case survey. It represents a combination of quantitative surveys and qualitative case studies, thereby permitting generalizability, statistical analyses of patterns, and in-depth processual analysis (Larsson, 1993; Larsson & Finkelstein, 1999). In particular, it involves the coding and analysis of reoccurring variables across multiple, existing case studies. Environmental performance involves a multi-stakeholder, longitudinal, processual approach, thus supporting the argument that the case survey methodology is particularly pertinent to its examination. In the sections that follow we describe our sample, coding, variables, and data analysis.

Sample

Our first task was to select a sample of cases describing organizations with strong CEP. Toward this end, we used the Harvard Business Publishing for Educators website to identify cases. Relevant cases were located using the following keywords: environmental sustainability, sustainable development, green, and pollution. The search was conducted in all disciplines (i.e., from accounting, general management, finance, IT, strategy, etc.) and included a variety of sources (Ivey, Harvard, Dartmouth, etc.). As a robustness check on the validity of our search we conducted the same search through Ivey Publishing where we found the same articles and no additional ones of relevance. Furthermore, the lead author twice met with a representative from Ivey Publishing to confirm that they did not have any additional environmental performance cases other than those found on the Harvard Publishing website.

Our search terms yielded a total of 800 case studies, which were ranked by the website in terms of relevance. Unfortunately, the vast majority of these cases could not be used for the present study because they either did not discuss CEP or the focal organization in enough detail to enable us to code our list of variables. For example, cases that did not have enough information to satisfactorily code the external environment of the focal corporation were not included in the final sample. This is consistent with Larsson's (1993) recommendation that cases with limited information relevant to the research question be excluded.

We also searched scholarly research journals for relevant case studies, but were unable to find any cases that had the extent of information required for us to code a satisfactory number of

variables for a particular organization. For example, academic cases would often include extensive discussion on theory that was not relevant to our coding scheme. With limited space in the academic articles, this attention to theory meant less code-able information on the organization itself.

In the end, we obtained a final useable sample of 45 cases exhibiting strong CEP (see Appendix A for a list of the companies). Our sample was impressively varied. The sample was nearly evenly split between those that were private (21 companies) and those that were public (23 companies), with one—Scandinavian Airlines—being 50 percent owned by investors and 50 percent owned by government. In addition, nine companies (20 percent) were family businesses. Companies ranged in age from 5 years old (Verne Global) to 163 (Pfizer Pharmaceuticals) with a mean age of approximately 11 and a standard deviation of 8. Company headquarters were located primarily in the U.S. (42 percent of the sample), with the second most frequent location in Brazil (13 percent). In total, company headquarters were located in 23 different countries. Using the industry classification as provided by Harvard Business Publishing, our sample contained 28 different industries, the most common of which was Food Supply/Food Industry (13 percent) and Retail Trade (11 percent). The remaining 26 industries had either one or two companies within them.

For the cases themselves, the year they were written ranged from 2001-11, with a mean value of having been written in 2008 and a standard deviation of 2.5 years. The time frame examined within the cases ranged from as early as 1925 (a case on Migros) to the latest date from which we gathered data, 2011, representing a span of 86 years.

Data Coding

We coded 23 variables for each of the cases in our sample. The variables were drawn from the larger literature in the area (Bansal & Clelland, 2004; Delmas, Hoffmann, & Kuss, 2011; Meyer, et al., 1993; Miller & Friesen, 1977; Russo & Fouts, 1997). In particular, we coded key control variables (eight items), measures of the external environment (two items), measures of organizational structure (two items), and measures of organizational strategy (ten items). In addition, we coded CEP as the dependent variable.

The lead author spent approximately three months training two research assistants to code the 45 cases, and coded over 25 percent (12 cases) himself to ensure proper coding. The use of multiple coders has specifically been recommended for the case survey methodology as it eliminates mistakes and “single-minded interpretations,” enabling majority votes to resolve discrepancies (Larsson, 1993: 1532).

The coding process involved a number of steps. First, a definition and description of each variable was provided and explained to the research assistants. Second, the lead author and the research assistants coded two cases together, discussing in detail each variable and reaching a consensus on the value of each. Each variable (with the exception of five control variables, described below) was coded on a Likert-type scale ranging from 1-7. After this training, the research assistants expressed confidence in their comprehension of the variables and ability to code them.

Third, the research assistants and the lead author coded five cases independently. Then the lead author and the research assistants met to discuss these five cases to resolve discrepancies and clarify any variables the research assistants were struggling with.

Fourth, five more cases were coded independently and step three was repeated. Again any discrepancies were resolved through a detailed discussion. In particular, for 19 variables the

coders had a .90 correlation in their coding. The remaining four variables were more problematic and the coders discussed them in detail each providing their opinion. After a detailed discussion the definition of each of these variables was refined and an agreed upon coding scheme was achieved.

Finally, the research assistants were then instructed to each independently code the remaining 33 cases. Once all cases were coded the inter-rater reliability between the two coders was .90. Any discrepancies were resolved through discussion.

Variables

To increase the reliability and validity of our findings we sought to form composite measures of our coded variables. In particular, we sought composite measures from each of our major categorizations of variables from the external environment, organizational structure, and organizational strategy. There were only two variables where we did not form composite measures; our CEP dependent variable, and one of our four final measures of strategy-related activities (our measure of competitive strategy). We discuss these and others below.

Dependent Variable

Our measure of *CEP* was a relative value as compared to other companies in the sample. It was measured based on information presented within the cases themselves in terms of emissions, pollution, environmental product innovation, industry and third-party certifications (e.g., responsible care program in the chemical industry, ISO 14001). CEP was measured as of the final date when the case was written. For example, if the case examined a particular company from 2000-2010, the CEP variable measured environmental performance in 2010. Using a seven-point Likert-type scale, *CEP* ranged from a low of four to a high of seven, with a mean value of 5.55 and a standard deviation of .76 (see Table 1).

Insert Table 1 about here

We used the Kinder Lydenberg Domini (KLD) database to check the robustness of our dependent variable (Turban & Greening, 1997). Due to reasons such as the study time period, ownership type, or the geographic location of sample firms, only 12 of the companies in our sample existed in the KLD database (26.7 percent of the sample). Following others (e.g., in Hillman & Keim, 2001) we calculated a KLD-CEP score for each of these 12 companies by subtracting their total KLD “concern” scores (poor environmental practices) from the total “strength” scores (strong environmental practices) associated with environment performance, while leaving the remaining 33 firms in our sample as missing values. We then ran a Pearson’s correlation between these KLD-CEP scores and the CEP score using our original case method. The correlation coefficient was 0.8018, which verifies high consistency of both CEP measures. Further QCA analysis using the KLD measures generated similar results.

Independent Variables

The most common variables that are generally examined in configurational research include (1) characteristics of the external environment the firm is competing in; (2) elements of organizational structure; and (3) factors related to organizational strategy-making (Dess, Newport

& Rasheed, 1993; Fiss, 2007; Hambrick, 1984; Kabadayi et al., 2007; Ketchen & Shook, 1996; Miller, 1987; 1990; Miller & Friesen, 1984; Mintzberg, 1979; Walker & Ruekert, 1987; Ward et al., 1996). Accordingly, we included all three types of measures in our model as independent variables.

First, our measure of the firm's *external environment* was based on two items: (a) *Environmental Dynamism*: The amount and unpredictability of change, which causes uncertainty for key organizational members, as it pertains to the natural environment in particular (the higher the score, the higher the dynamism); and (b) *Environmental Munificence*: How much the environment is characterized by intense competition, severe regulatory restrictions, resource shortages, and unfavourable demographic trends, as it pertains to the natural environment in particular (the lower the score, the greater the munificence). We combined the two items to form a single factor with a single eigen value above 1 and a Cronbach's Alpha of .64. A higher score means a more challenging or difficult external environment. Our emphasis on the natural environment in particular is not evident in other configurational studies, but was seen as appropriate and necessary for the present study given its focus on CEP.

Second, our measure of *organizational structure* (rigid versus flexible, or mechanistic versus organic) was based on two items: (a) *Standardization*: The degree to which organizational members are to follow uniform practices (the higher the score, the higher the standardization); and (b) *Departmentalization*: The degree to which organizational members are grouped together to achieve the work of the larger organization (the higher the score, the higher the departmentalization). We combined the two items to form a single factor with a single eigen value above 1 and a Cronbach's Alpha of .81. The higher the score, the more mechanistic or rigid the structure.

Third, we had four variables related to strategy. The first, *competitive strategy*, was a single-item measure based on Porter's classification of a low-cost provider or differentiator, using a continuum where the higher the score on the 1-7 scale, the greater the relative emphasis placed on a differentiator strategy. The three remaining variables associated with strategy were drawn from the general CEP literature related to the natural environment. Specifically, we coded the cases for three strategy-related factors that have been found to have a positive relationship with performance vis a vis the natural environment: (1) Top-Management-Team (TMT) participation (Berrone & Gomez-Mejia, 2009a; Berrone & Gomez-Mejia, 2009b; Scott & Ashwin, 2013; Turker, 2009; Walls, Berrone & Phan, 2012); (2) stakeholder considerations (Darnall, Henriques & Sadorsky, 2010; Haddock-Fraser & Tourelle, 2010; Rodriguez-Melo & Mansouri, 2011); and (3) temporal orientation (Slawinski & Bansal, 2012).

Our measure of *Top-Management-Team (TMT) participation* (hands-on versus hands-off) combined two items: (a) *Top management team involvement*: Are top managers highly involved in the day-to-day operations of the environmental strategy, or are they removed cognizant of only the bigger picture? (The higher the score, the greater the TMT involvement); and (b) *Top management team commitment*: Are top managers highly committed to the environmental strategy, or is it more of a ground-up approach? (The higher the score, the greater the TMT commitment). *TMT participation* combined both measures to form a single factor with a single eigen value above 1 and a Cronbach's Alpha of .84. The higher the score, the greater the TMT participation.

Our measure of *Stakeholder consideration* (high versus low consideration) combined four items: (a) *Stakeholder importance*: Organizational importance attached to various stakeholders (the higher the score, the more importance was attached to stakeholders); (b) *Stakeholder integration*: Are stakeholders included in organizational decisions? Includes both the

degree of integration (e.g., involved throughout the entire process) and the number of stakeholders included (the higher the score, the greater the level of stakeholder integration); (c) *Dignification*: Are stakeholders treated with dignity and respect? (The higher the score, the higher the dignity and respect given to stakeholders); and (d) *Participation*: Is stakeholders' input welcome and utilized? (The higher the score, the more welcome and utilized the input). We coded stakeholders to include both internal and external stakeholders. ***Stakeholder consideration*** combined all four items to form a single factor with a single eigen value above 1 and a Cronbach's Alpha of .80. The higher the score, the more consideration was shown to stakeholders.

And finally, our measure of ***Temporal orientation*** (temporal immediacy versus temporal distance) combined three measures: (1) *Time orientation*: Short-term versus long-term time orientation, indicating whether decisions are made based on immediate needs and results versus longer term goals (the higher the score, the more long-term the time orientation); (2) *Stepwise approach*: Was the environmental strategy developed step-by-step, growing with each success, or was the current strategy implemented all at once? (A value of 1 indicates it was implemented all at once, and 7 was a slow and deliberate step-wise approach); (3) *Timing*: Was the decision to increase environmental performance proactive or reactive? Reactive includes reacting to competitors, government regulation, suppliers, customers, media, and other stakeholders. Proactive includes being among the first organizations within their industry to try an advanced environmental approach (coded where 1 = very reactive, and 7 = very proactive). ***Temporal orientation*** combined all three measures to form a single factor with a single eigen value above 1 and a Cronbach's Alpha of .75. The higher the score the more long-term the temporal orientation.

Control Variables

We included eight control variables that may be associated with CEP. ***Past CEP*** was measured in the same way as our CEP measure, with the exception that it was measured five years prior to the final date analyzed in the case. For example, if the case examined a particular company from 2000-2010, the past CEP variable measured environmental performance in 2005. ***Past Corporate Financial Performance (CFP)*** was coded based on information provided within the cases on a seven-point Likert-type scale in terms of growth in profits and sales, profit fluctuations, ROA, ROE, ROI, market share, and any other financial measures available. Similar to past CEP it was measured five years prior to the final date analyzed in the specific case. Past CFP was included because research has found that profitable companies are better able to invest in CEP (Brammer & Millington, 2008). ***Size*** was measured as the total number of employees, and the logged value was used to control for skewness. It was included because research has found that larger firms are more likely both to pollute and to integrate environmental practices into their companies (Chen, Lai & Wen, 2006; Lopez-Gamero, Claver-Cortes & Molina-Azorin, 2008; Moore, 2001; Russo & Fouts, 1997), and that smaller firms perceive fewer benefits to CEP (Brammer, Hoejmose & Marchant, 2012). Further, whether the company was a ***family business*** or not was included as research has found that family businesses tend to have strong CEP (Berrone, Cruz, Gomez-Mejia, & Larraza-Kintana, 2010; Carmelo, Berrone, Cruz & Gomez-Mejia, 2012). This variable was simply dummy coded as being a family business or not. Lastly, we controlled for dummy coded ***ownership*** (public or private), ***country*** (location of the head office), and ***industry***, and we also controlled for ***age***. All four could potentially influence our results and were thus included as control variables.

Data Analysis

A set-theoretic data analysis was used to identify configurational types in our study (Ragin, 2000, 2008). The set-theoretic approach has been widely used in political science and sociology but has only recently been introduced to management research (see for example: Fiss, 2007, 2011; Greckhamer et al. 2008; Kogut, MacDuffie & Ragin, 2004). Using a set-theoretic approach allowed us to overcome the three major weaknesses of configurational analysis as identified by Doty, Glick and Huber (1993). First, the configurations we develop are holistic ideal-types, they are not merely collections of categories where the predictive ability of “marginal” and “central” members are in play (Doty et al., 1993: 1200). Second, our analysis of strong CEP includes “relevant contextual, structural, and strategic factors” (Doty et al., 1993: 1198); thus, it emphasizes the notion of configurations by integrating multiple dimensions of factors in a holistic manner. Third, our study permits equifinality. Research examining CEP in particular has found evidence of equifinality (Weinhofer & Busch, 2013).

We performed a two-step procedure (Jackson & Ni, forthcoming): first, we estimated CEP by controlling for eight organizational- and industry-level variables that may influence environmental performance. We did so because these factors may also contribute to CEP, so we first controlled for their effects before entering our explanatory variables. The baseline regression analysis was run using STATA software with the following formula:

$$\text{CEP} = \text{past CEP} + \text{past CFP} + \text{firm size} + \text{family business} + \text{ownership} + \text{country} + \text{industry} + \text{firm age}$$

Second, we then used the unexplained residual performance of the model as the outcome condition (i.e., high CEP) to be explained by the six variables (i.e., external environment, organizational structure, competitive strategy, TMT participation, stakeholder consideration, and temporal orientation) in our set-theoretic analyses. More specifically, we used the ‘direct method’ (Ragin, 2008) for calibrating variables into set membership scores. For the calibration of the z-transformed residuals of CEP, we used a z-score of 1 being ‘fully in’ with a set membership of 1, a z-score of 0 with a set membership of 0.5 (i.e., the cross-over point), and a z-score of -1 being ‘fully out’ with a set membership of 0. Further, for each of the explaining factors related to the external environment, structure and strategy we followed Fiss (2011) by deciding on major anchors using percentages. For example, the membership score of firms with *mechanistic structure* was coded 0 if a firm showed a low degree (3.5 out of 7-point, about the 25th percentile), or 0.5 if a firm showed an average degree (5.5 out of 7-point, about the 50th percentile), or 1 if a firm showed a high degree (6.5 out of 7-point, about the 75th percentile). We were aware that results may vary using different threshold and thus checked by changing threshold points; the results were consistent despite the various thresholds. These key anchor points were then used to transform each of the six variables into continuous set membership scores in the interval of [0,1] and entered into fs/QCA analysis.

Results

We used fs/QCA to examine configurations of the above environment, structure, and strategy variables for firms that achieve high CEP. Because the number of sample observations is small, we chose one case as the minimum frequency threshold for further assessing fuzzy subset relations. In other words, the configuration of explanatory factors would be entered into analysis,

as long as it was used by at least one firm. We reported parsimonious results where counterfactuals were treated as being true or “do not cares”.¹

Following others (e.g., Fiss, 2011; Ragin, 2008) the outcome was evaluated using two key statistics: *consistency* and *coverage*. *Consistency* indicates “the degree to which the empirical evidence is consistent with the set-theoretic relation in question” (Ragin 2006: 296). It measures the extent to which firms using specific configurations achieve high CEP when compared to all firms. We followed Ragin (2008) and used 0.80 as a minimum benchmark ratio. *Coverage* assesses the degree of empirical relevance of certain causes or causal combinations to explain the outcome in question (Ragin, 2006). It measures the proportion of high-performing firms whose CEP can be attributed to their high emphasis on a factor or a combination of factors. For example, results in Table 2 indicate that the first configuration, C1, had a unique coverage score of 0.06, meaning that six per cent of the total variance in high CEP could be explained by this configuration.

 Insert Table 2 about here

Since firms could exhibit high CEP due to a high emphasis on various factors or combinations thereof, the measure of coverage is similar to the proportion of variance explained (R^2) in regression models. The higher the values of consistency and coverage scores, the more powerful the model.

In Table 2, we report the four empirical configurations associated with firms with high CEP. Regarding composition of the configurations, we indicate whether the configuration had a high, low, or non-significant value per variable. A high emphasis represents a set membership higher than 0.5, the crossover point, whereas a low emphasis represents a set membership lower than 0.5. For example, the C1 configuration in Table 2 represents firms that achieve high CEP (set membership higher than 0.5) by having high emphasis on low-cost strategy, high TMT participation, high degree of structure, high stakeholder consideration, and who have a short-term time orientation and are in benign environments.

All the individual and overall solution consistency scores are over the minimum threshold value of 0.80 (Ragin, 2008). Specifically, the first configuration (C1) contributes the most; its unique coverage score is 0.06, which means 6 percent of total variance in high CEP is explained by this configuration. Similarly, C3 and C4 explained 5 percent of the total variance respectively. C2 accounts for only 1 percent of the total variance. All the solutions taken together explained 27 percent of the total residual CEP after controlling for the effects of our other organizational- and industry-level variables.

Hallmarks of Each of the Four Configurations

Table 3 presents each of the four configurational types, including what each has been called, how each is described by the six core measures in our study (external environment, organization

¹ The technique of dealing with counterfactuals (i.e., “non-observed” cases) is fully discussed in Ragin and Sonnett (2005). In addition to using the parsimonious test, we also ran complex tests, which produce more conservative results because counterfactual cases are treated as being false or inconsistent with the outcome. However, the data did not generate any results and we only reported parsimonious results in this paper.

strategy, competitive strategy, TMT participation, stakeholder consideration, and temporal orientation), and notes the specific characteristics unique to each type.

 Insert Table 3 about here

Examining each of the four configurations on their own helps to explain the names given to each. We begin by noting that C1, which operates in a benign environment, is the only configuration with a Cost Leader strategy. As might be anticipated, along with its Cost Leader strategy the C1 type also has a mechanistic organizational structure and strong support from the top management team. These are all consistent with what Miles and Snow (1978) would call a Defender type. Perhaps somewhat unexpectedly, C1 organizations have a short-term time orientation and are the only one of the four configurations that has high stakeholder involvement. We call the C1 type “*Interdependent Cost Leader*,” emphasizing the two features that make this type unique in our taxonomy.

The C2, along with having a differentiation strategy and operating in a relatively benign business environment, is the only one of the four types that has an organic structure, and is the only one of the four that does not depend on high levels of participation from the top management team in the day-to-day operations of the firm. In many ways, including its temporal immediacy, the C2 can be associated with the Prospector (Miles & Snow, 1978) organizational type. Where it differs from a traditional Prospector is in its low stakeholder involvement. We call C2 the “*Bottom-Up Organic Differentiator*,” again reflecting its unique characteristics, and in particular, its organic structure and lack of top management team involvement.

In contrast to C1 and C2 type firms, the C3 and C4 types operate in a more challenging environment. Each of C3 and C4 has a differentiation strategy, a very involved top management team, and a mechanistic structure. The C3 is different from the C4 because of its low consideration of stakeholders, and because of its indifferent temporal orientation. In particular, C3 is unique among all four types because it is the only type that is not associated with temporal immediacy. For this reason we call it the “*Timeless Differentiator*”.

The C4 is distinct from the C3 because the C4 is associated with temporal immediacy and because C4 is indifferent toward stakeholder involvement (indeed, this indifference makes C4 unique among all four types). For this reason we call it the “*Indifferent Differentiator*”.

Discussion

We identified four CEP organizational configurations based on analyzing 45 case studies of corporations that practice strong CEP. Our configurations varied in having a benign or challenging external environment, a mechanistic or organic structure, a low-cost or differentiation strategy, and variation in TMT participation, the consideration given to stakeholders, and temporal orientation. Taken together these configurations introduce an understanding of equifinality in achieving CEP that has not been evident in previous empirical research.

Examining the four empirical configurations together we note a number of interesting findings with regard to achieving high CEP. First, in a challenging external environment (as in C3 and C4) only a differentiation strategy is effective. That is, two of our configurations existed in a difficult external environment and both exhibited a differentiation strategy. In contrast, under

a benign or friendlier external environment (as in C1 and C2), firms are able to choose amongst two business-level strategies, low cost (as in C1) or differentiation (as in C2).

Second, consistent with past research (Berrone & Gomez-Mejia, 2009a; Berrone & Gomez-Mejia, 2009b; Scott & Ashwin, 2013; Turker, 2009; Walls et al., 2012) we note the importance of TMT participation. Specifically, TMT participation was evident in three of the four configurations (C1, C3, and C4), and was important regardless of a low-cost or differentiation strategy.

Third, in three of four configurations we found highly structured (mechanistic) organizations. The only exception occurred in C2, which combined a benign environment and a differentiation strategy. Thus while it is possible to achieve strong CEP with an organic structure, the majority of configurations in our sample made use of a mechanistic structure.

Fourth, firms with a differentiation strategy either placed low value on stakeholder consideration (C2 and C3), or stakeholder consideration was not significant in the model (C4). In contrast, in our only configuration with a low-cost strategy, stakeholder consideration was given a high value (C1). Given the recent academic focus on stakeholder expectations and pressures (e.g., Darnall et al., 2010; Delmas & Toffel, 2008; Haddock-Fraser & Tourelle, 2010; Murillo-Luna, Garcés-Ayerbe & Rivera-Torres, 2008; Rodriguez-Melo & Mansouri, 2011; Rueda-Manzanares, Aragon-Correa & Sharma, 2008), we were surprised to see that in only one configuration was a high stakeholder consideration value important (C1). Our finding is also consistent with recent research that has found a range of responses to CEP that were not related to stakeholder pressure, but to an organization's level of pollution (Sprengel & Busch, 2011). Future research might further explore the relationship between stakeholder consideration and a low-cost strategy.

Fifth, the C3 and C4 type firms operated in a relatively challenging environment (which is in contrast to C1 and C2), and each had a differentiation strategy, a very involved top management team, and a mechanistic structure. Taken together this suggests that achieving strong CEP in a demanding environment requires considerable commitment from the top management team, considerable investment in organizational standards and rigid departmentalization, and appears less likely to succeed with a cost leader strategy.

Sixth, temporal orientation was significant in three out of four configurations (C1, C2, C4). To our surprise, in each of the three configurations it was a short-term, sudden and reactive approach that was related to strong CEP. Thus environmental performance was highest for firms that moved quickly to react to current needs. It may be that firms with strong CEP became that way because of a sudden occurrence or need. For example, the carpet company Interface changed relatively suddenly to become an environmental leader based on the new beliefs of its CEO, Ray Anderson. Indeed, the finding that a long-term proactive approach was never associated with strong CEP seems counterintuitive to lionized corporations that from the start care deeply about the natural environment and make decisions based on a long-term outlook (think Patagonia and The Body Shop).

Implications

Configuration theory allows us to investigate the interrelationships between variables. Following the old adage, you are the company you keep, it is the interrelationships that help define CEP. Our application of configuration theory, the case-survey methodology and the set-theoretic method to CEP allowed us to investigate the interrelationships between key external and internal

variables as we sought to better understand CEP. Through the investigation of these interrelationships, we uncovered a number of implications for research, practice, and policy.

Research Implications

Perhaps the most important implication of this study is that equifinality in CEP does exist. Our study of exemplary CEP organizations demonstrates that strong environmental performance can be obtained in various ways. Indeed, among the most commonly used categorizations of variables in configurational analysis (the external environment, organizational structure, and strategy) we saw several variations within each. This points away from “one-size-fits-all” approaches to CEP (e.g., from the government imposing singular CEP standards and regulations, from corporations all taking the same path, and from stakeholders seeking similar means to influence all organizations). For researchers it suggests that the investigation of isolated linear relationships between a single dependent and independent variable may be organizational and context specific, and may inadvertently hide key interrelationships among additional variables. Some of the research published in this journal has already moved in this direction. For example, a study by Hall and Wagner (2012) used structural equation modeling to examine complex relationships between the integration of sustainability into firm processes and the role of business models and different types of innovation. Similarly, Rao et al., (2009) used structural equation modeling within a more narrowly defined sample—small and medium sized enterprises in the Philippines—to uncover a number of interrelationships between five key constructs. Lastly, Weinhofer and Busch (2013: 141) found differences in how electric utility companies managed risks associated with climate, yet ultimately the companies were perceived as being “well prepared for further climate changes and the required adaptation.” Thus equifinality is suggested as utility companies used different means to achieve a similar final state (Drazin & Van de Ven, 1985).

Through our examination of the relationships between various variables we uncovered some interesting combinations. For example, within our configurations, in a challenging external environment only a differentiation strategy was apparent, yet within a more benign external environment either a differentiation or low-cost strategy was related to strong CEP. Also, in three configurations a mechanistic structure was apparent. Lastly, only firms with a low-cost strategy gave consideration to stakeholders. Future research might dig deeper into these findings to further explain them and to test their generalizability.

In contrast to its popularity in academic research, stakeholder consideration was important in only one of the configurations. We found that factors such as TMT participation and temporal orientation played a greater role. While the investigation into stakeholder consideration is important, our findings suggest that other variables—including some that have received significantly less academic attention, like temporal orientation—may be even more important.

Our investigation into temporal orientation, a variable that has only recently come under inquiry (Slawinski & Bansal, 2012), produced some surprising results. It was significant in three configurations but in all cases it was a short-term, sudden and reactive approach that was related to strong CEP. It may be that organizations simply need to dive into CEP, and a slow approach is less likely to result in becoming an environmental leader. Or perhaps some of the best environmental performers became so through a negative environmental event that required a sudden and reactive approach. Either way, our results require further investigation and our study suggests that temporal orientation is an important variable related to strong CEP.

Lastly, despite being promoted in top academic journals (e.g., Larsson's 1993 piece in the *Academy of Management Journal*), the case survey methodology has not been utilized by many researchers. Our results demonstrate the usefulness of this approach to configuration theory and its ability to examine the interaction among variables. Furthermore, our study suggests that the methodology may be used with other emerging or "non-traditional" dependent variables such as those related to social issues (e.g., social, gender, and racial inequality), social entrepreneurship, positive psychology and spirituality.

Managerial Implications

Our most important practitioner implication is that managers interested in improving their firm's CEP can match their particular organization to a specific configuration. For example, in order to improve environmental performance for an organization that operates in a relatively benign external environment and has a cost-leader strategy with a mechanistic structure, managers should demonstrate high TMT participation, high consideration of stakeholders, and a short-term time orientation toward their environmental approach. This would be consistent with our first configuration, and given these particular organizational characteristics it is likely to lead to strong CEP.

A second managerial implication comes from the observation that even though our sample size consisted of 45 organizations and represented a relatively small portion of existing environmental leaders, we nevertheless empirically uncovered four configurations for successful CEP. Given this finding we may reasonably expect additional configurations for successful CEP when all environmental leaders are considered. For managers, this would tend to indicate that their environmental approach should be based more on the characteristics of their particular organization rather than trying to imitate specific, potentially very different, organizations. Furthermore, by tailoring the environmental approach to their organizational characteristics, managers are better able to capitalize on the strengths of their organization while minimizing or circumventing weaknesses.

In terms of our metaphor, our findings will make it easier to prepare tasty and nutritious meals using the ingredients already at hand and in the pantry; managers can utilize existing resources, rather than start from scratch with a long grocery list.

Policy Implications

There is a major debate in the literature about command-and-control versus flexible regulations. While the former forces all organizations to improve their CEP, the latter is believed to encourage innovation (Clemens & Papadakis, 2008; De Abreu, 2009; Gunningham, Phillipson & Grabosky, 1999; Martin & Rice, 2010; Poudyal, Siry & Bowker, 2012; Sharma, 2001). The identification of four configurations would tend to suggest that flexible regulations would permit organizations to tailor their environmental approach to their organizational context while still furthering CEP.

Policy makers (and other interested stakeholders) may also want to pay special attention to the findings about when stakeholders are most likely to contribute to strong CEP. Our findings suggest that stakeholders promoting specific sustainable organizational practices and initiatives that have *long-term* implications and benefits should either: (a) target "Timeless Differentiators" to implement such initiatives (this is the only CEP configuration that is not short-term oriented), or (b) re-double their commitment to identifying and promoting their initiative's *short-term*

benefits for organizations (because all other configurations had a short-term time orientation). In regards to policy implications, this points to the merit in developing short-term incentives and regulations.

More generally, external stakeholders keen on promoting specific CEP initiatives for firms to implement would be wise to (a) target their efforts on existing or potential “Interdependent Cost Leaders” (which was the only configuration that valued stakeholder input) and/or (b) target their efforts on convincing members of top management teams about the merits of their proposal (TMT Involvement was of high importance to C1, C2 and C4), and/or (c) convince employees in “Bottom-Up Organic Differentiator” organizations of the merits of their proposal. In other words, rather than using a one-size-fits-all approach to encouraging greater CEP, external stakeholders—including policy-makers—seeking to promote CEP should tailor their tactics and message based on the configuration of their target organization(s).

Limitations

Our study may have at least two limitations. First, we measured our dependent variable, CEP, within the cases included in our sample. Indeed, our purposeful sample represented paragon examples of CEP. While this poses some limitations, it is also defensible insofar as the authors of the cases selected these companies given their exemplary CEP and the lessons that can be learned from them. While it is generally not recommended to sample on the dependent variable, researchers have noted that it is justified for some study objectives and may even be recommended (Forgues, 2012; Starbuck, 2006). Furthermore, given that we identified reoccurring patterns (configurations) across our sample of companies it is unlikely that our results represent spurious relationships, a common critique against sampling on the dependent variable (Forgues, 2012).

In addition, our sample was nearly evenly split between public and private companies, and company headquarters were located in 23 different countries. No objective measure of CEP would have permitted such variety and would have greatly restricted our sample. Our sample was already restricted to companies that were written about in a business case study, thus we could not further restrict this already limited sample. In addition, the rich variety in our sample is in contrast to the majority of studies examining CEP that have been limited by the use of an objective measure of CEP. We felt that the variety in our sample was essential to the empirical identification of configurations of successful CEP. Lastly, we confirmed the robustness of our CEP measure by comparing it with the measurement of CEP from KLD for 27 percent of our sample.

Second, our sample was comprised of cases where researchers decided to conduct a detailed case study on a particular company. Researchers may select extreme cases for various reasons (specific lessons to be learned, to tell a good story, because the company is well-known, etc.). Accordingly, while our sample demonstrated considerable variety amongst our control variables, our identified configurations are unlikely to benefit all firms, particularly smaller firms, and thus the generalizability may be limited.

Conclusion

In conclusion, we empirically identified multiple recipes for successful CEP that included some reoccurring but not oft-studied ingredients. Our investigation into the interrelationships between key variables established that there are multiple paths to CEP. Given present-day environmental

destruction and our current consumption levels that are exceeding the capacity of the planet, at some point in the near future, all paths will need to lead to CEP. We hope our study can help many organizations find and walk these paths.

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