ABSTRACT

Corporate social responsibility (CSR) has received the attention of many organizational decision makers. In this paper, we examine how an external factor such as industry concentration affects investments in CSR. We also combine the effect of industry concentration with that of R&D intensity, an internal resource, to examine the dual effect on CSR as well as on firm financial performance. It was found that CSR, when considered as a strategic asset for the firm, is positively related to firm performance. The study also showed that while industry concentration directly affects R&D intensity, it does not directly affect investments in CSR.

KEYWORDS: Industry Concentration, R&D, Corporate Social Responsibility, Firm Performance

INTRODUCTION

Corporate social responsibility (CSR) has received the attention of countless organizational decision makers. Such an attention has been compelled by the increased expectations of a wide range of stakeholders for firms to behave ethically. Broadly defined, corporate social responsibility refers to “company activities – voluntary by definition – demonstrating the inclusion of social and environmental concerns in business operations and in interactions with stakeholders.” Stakeholders have been increasingly pressuring organizations to engage in CSR activities. Consequently, organizations engage in CSR activities with the hope that customers will reward them.

As such, the topic of CSR has also attracted the attention of several scholars. Many studies have tried to determine the link between CSR and various outcomes such as overall firm
performance, brand performance, consumer behavior, and customer donations. A few studies have also explored antecedents of the level of investments in CSR by various organizations. However, researchers have not come to a consensus in terms of the actual effect of various factors affecting CSR as well as outcomes caused by CSR.

A firm’s level of investment in CSR activities as well as the sensitivity of stakeholders’ concerns over the ethical behavior of firms vary among industries. As such, industry factors (industry concentration, barriers to entry, etc.) may influence how organizations allocate investments related to CSR. In this paper, we focus on one important aspect of the industry structure that can have an effect on the level of investments by firms on corporate social responsibility. More specifically, we discuss how industry concentration affects such investments in CSR. The argument that links industry concentration with the degree of engagement in CSR by an organization is that CSR strategies could be undertaken by companies in order for them to gain a competitive advantage, and a less concentrated market, characterized by a high level of competition could allow the use of CSR as a differentiation strategy or even as a way to enter new markets. The motivation for doing this study is that the literature shows mixed results in the way industry concentration affects CSR. For example, Fernández-Kranz & Santaló (2010) found that a higher market concentration is associated with superior social responsibility levels. Beliveau et al. (1994) has also tested this relationship but found that the industry concentration level does not significantly predict CSR.

This paper provides additional insights into a few of these indeterminate findings. To better understand this relationship, we incorporate R&D intensity and combine its effect to that of industry concentration in order to examine this combined effect on CSR. As such, industry concentration will create a competitive environment in which firms will strive to gain competitive advantage. Therefore, such firms will be more willing to invest in R&D in order to develop products and process that will provide the firm with the tools needed to survive the competition. R&D intensity can act the fuel of the development of certain products and process with CSR properties that will give the firm a competitive advantage, which in turn will positively impact firm financial performance. We build upon the work of Amit and Schoemaker (1993) by combining external factors with internal resources and capabilities to create strategic assets. Therefore, CSR can become a strategic asset through the combination of both environmental factors, which in our case would the industry concentration, and internal resources and capabilities, which can be obtained from investments in R&D.

The remainder of the paper is organized as follows: The literature review, including the hypotheses development, is discussed in the next section. Then, the following section includes the methodology used to test the hypotheses. The results of the study are presented in the fourth section. The last section includes the discussion of the study’s results, managerial and research implications, limitations of the study, as well as areas for future research.

**LITERATURE REVIEW**

**Theoretical Background**

**Structure- Conduct-Performance Paradigm**

The model we develop in this paper is built upon two strategic theories. Part of the model builds upon the structure-conduct-performance (SCP) paradigm of the industrial organization (IO) view. The SCP paradigm states that firm performance is determined by a firm’s behavior or
conduct, which in turn is determined by the industry structure. Important elements of the industry structure that were deemed as vital to firm performance were entry barriers, industry concentration, and demand elasticity. In turn, firms would develop their strategies and allocate investments accordingly in order to improve their performance. The SCP paradigm, however, considers a vast number of factors. The model developed here examines one aspect from each of the three dimensions (structure, conduct and performance) of this paradigm. More specifically, we examine whether investments in CSR activities increase firm performance, and whether investment in CSR is determined by the number of firms in the industry.

An industry that is characterized by a high level of concentration is also characterized by a lack of competition. The concept of competition and investment on CSR takes two views. One of them is explained by the “rent dissipation” effect, in which, as market competition increases, profit margin decreases. Therefore firms cannot afford to invest in socially responsible activities as potential losses in highly competitive markets are more pronounced. However, this view does not consider the use of CSR as a strategic asset that would give the firm a competitive advantage. Strategic CSR is about “choosing a unique position – doing things differently from competitors in a way that lowers costs or better serves a particular set of customer needs.” Therefore, the concept of CSR as strategic assets fits better with the other view, the “escape competition” effect, which suggests that in highly competitive markets, a small increase in quality would greatly influence a firm’s competitive advantage, and investing in CSR might be one of the differentiation strategies that will allow the firm to achieve that lead over the competitors. Due to the growing interest of shareholders that want to determine how investments in CSR affect firm performance, we argue that firms would invest carefully and strategically in CSR activities, and therefore, industry concentration would influence the strategy of a firm in terms of such CSR investments. Thus, a less concentrated industry, which in turn is characterized by a more fierce competition, would push firms to develop as many strategic assets as they can to gain a competitive advantage, and products or processes with CSR properties can be part of these assets. Therefore,

Hypothesis 1: Industry concentration is inversely related to a firm’s engagement in CSR activities; such that, the more equally distributed the market share in a given industry, the higher the levels of investments in CSR by the firms in that industry.

Corporate social responsibility has been debated in terms of whether it is associated with higher performance. Such debates arise because it is very difficult to provide a clear measurement between this input-output link. Because shareholders are interested to know whether investing in CSR will eventually pay off, various researchers have studied this relationship. A study by Margolis and Walsh (2003) showed that from 109 studies that tested the link between investments in CSR and firm performance, about half of the studies found a positive relationship, while only 28 found a negative relationship, and 20 found no significant relationship. Also, Orlitzky et al. (2003) conducted a meta-analysis on the link between CSR and firm financial performance, and based on 52 studies, they concluded that being a socially responsible firm will likely pay off.

There is a wide range of definitions for corporate social responsibility. Dahlsrud (2008) examined and provided a list of 37 definitions, which include various aspects such as social, environmental, economic, stakeholders and voluntariness. The definition provided earlier in this paper is picked specifically to incorporate all of these aspects. Such a definition suggests that there is a wide range of reasons for which firms invest in CSR. Indeed, firms do not necessarily
focus on being simply good citizens, but they also engage strategic CSR. One example of how firms engage in strategic CSR is the hybrid car Toyota Prius. Such a car causes only 10% of the pollution caused by a traditional car. Additionally, this technology is paying off for Toyota. Therefore, the company has shown that it has taken steps to be environmentally responsible while also gaining a competitive advantage in the market. Therefore, engaging in CSR not only addresses the social and environmental concerns of a wide range of stakeholders, but such an investment can also be beneficial economically. Thus,

Hypothesis 2: Investments in CSR activities are positively related to firm financial performance.

Resource-Based View

The second theory in which this study builds upon to develop the conceptual model is the resource-based view (RBV) of the firm, which states that in order for firms to obtain a sustainable competitive advantage and abnormal returns, they need to have assets that are valuable, rare, as well as difficult to imitate and substitute. As mentioned in the previous section, firms can use CSR as a mechanism to differentiate their products or processes. These mechanisms can take the form of processes or they can directly affect products. McWilliams and Siegel (2001) provide a few examples to illustrate such mechanisms. They use the example of pesticide-free fruits to describe how firms can use CSR to improve products. Also, in the same industry, the example of insect inhibitors that occur naturally can describe how CSR is used as a resource that can improve processes. So, an investment in CSR, in order to be fruitful, needs to lead to competitive advantage, and this depends greatly on the levels of investment in R&D. Hitt, Hoskisson, Johnson, and Moesel (1996) found that the introduction of new and improved processes and products is positively related with R&D intensity. So, the higher R&D intensity could be the tool that will lead firms to achieve products or processes with CSR properties that can allow the firm to obtain a competitive advantage.

Hypothesis 3: A firm’s R&D intensity is positively related to its engagement in CSR activities; such that, the more a firm invests in research and development, the more would that firm engage in CSR activities.

For the development of hypothesis 4, a similar logic can be applied as in the development of hypothesis 1. The interpretation of the link between industry concentration and R&D intensity has been approached differently by scholars. On the one hand, a highly concentrated firm will lead to a higher investment in R&D. This view has been proposed by scholars such as Schumpeter (1943). The reasoning for this view is that the less competitive a market is, the more rents a firm collects, and therefore, it can afford to increase investments in R&D that would have otherwise been costly and risky investments. The other view states that competition pushes firms to invest in R&D in order to develop products and process that would give the firm the competitive advantage in the market. Scholars such as Teece (1992) and Nelson and Sidney (1982) have examined whether R&D intensity would increase or decrease depending on the industry concentration, but they do not take a side and argue that there are several factors that would affect such a relationship. In this study, R&D is considered as a strategic tool that firms use to develop produces or processes with which they would obtain competitive advantage. Therefore, as industry concentration decreases, competition increases, and in turn the pressure on the need to survive in the market also increases. As such, firms invest more in R&D with the hope that such investment would develop products and services with which firms would achieve the competitive advantage and stay on top of the competition. The more firms
invest in R&D, the higher the chances are that they will develop such products or process which will also impact firm performance. Thus,

**Hypothesis 4**: Industry concentration is inversely related to a firm’s R&D intensity; such that, the more equally distributed the market share in a given industry, the greater the R&D intensity of firms in that industry.

**Hypothesis 5**: R&D Intensity is positively related to firm financial performance; such that, the more a firm invests in research and development, the higher financial performance would that firm have.

**Figure 1**: Proposed Model

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**METHODOLOGY**

**Sample**

The model was tested through the use of secondary data. Initially, we collected the CSR data from the Kinder, Lydenberg, Domini & Co. (KLD) database. Data was collected for the year 2009. This year was appropriate because it was the most recent year that had the highest amount of available data. The number of firms generated by the database was 2,912. However, several firms did not have data for all the indicators used to measure CSR. Therefore, we removed those firms that did not have data for at least five indicators. After this step, the sample size was drastically reduced to 610 firms. The tickers of these firms were then used as identifiers to collect the data for the remaining variables from the COMPUSTAT database. This database generated data for only 562 of the 610 firms. After dropping firms with major missing data, we were left with a final sample size of 253 firms. The missing data for the sample size was 1.19%. We used the arithmetic mean imputation technique to treat the missing data.

**Measures**

**Dependent variable**

The ultimate dependent variable in the model is *firm financial performance*. Performance is measured through the combination of three indicators: return on assets (ROA), return on equity (ROE) and firm sales. The data was collected from the COMPUSTAT database for the year 2009.
There is a debate on whether accounting measures or market measures should be used to measure firm performance. The accounting measures were chosen over the market measures because market measures are based on the assumption that markets are efficient, but whether markets are efficient or not is still debatable in the literature. Also, even if the market efficiency assumption holds, there is still the risk that stock prices might not represent the fundamental value of the firm due to information that managers choose to not make publicly available. Accounting measures do not have such risks, and therefore they were deemed as more appropriate for this study.

Independent and control variables

The industry concentration variable was measured by combining three commonly used indicators: Herfindahl Index, 4-firm concentration and 8-firm concentration. R&D intensity was calculated as the ratio of R&D expenditures and total assets. CSR data was measured through six dimensions, and each dimension was composed of strengths and concerns. The dimensions we use are corporate governance (examples of strengths: limited compensation, strong reporting quality; examples of concerns: high compensation, accounting concerns) employee relations (examples of strengths: no-layoff policy, employee involvement, cash profit-sharing plans; examples of concerns: workforce reductions, health and safety concerns), community (examples of strengths: charitable contribution, housing or education support; examples of concerns: investment controversies, community impact, tax disputes), environment (examples of strengths: pollution prevention programs, recycling; examples of concerns: harmful waste, regulatory concerns, emissions above normal standards), diversity (examples of strengths: female CEO, promotion for minorities and females, work/life benefits; examples of concerns: controversies, non-representation), and product (examples of strengths: product quality, R&D/innovation; examples of concerns: product safety, antitrust violations).

Two control variables were also included in the model: firm size and industry. Firm size was measured by the number of employees, and industries were represented by SIC codes. The data to calculate industry concentration, R&D intensity, firm size and industry was collected from the COMPUSTAT database, while the data to measure CSR was collected from the KLD database. All variables were collected for the year 2009.

Validity and Reliability

The variables were analyzed to determine whether they pass convergent validity. For this test, factors should be kept in the study only if the loadings are equal to or greater than 0.5. By using this cut-off point, 6 CSR indicators and one performance indicator (ROE) were dropped. Results of the remaining factor loadings are showing in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Industry Concentration</th>
<th>R&amp;D</th>
<th>Performance</th>
<th>CSR</th>
<th>Size</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herfindahl Index</td>
<td>(0.846)</td>
<td>0.112</td>
<td>0.011</td>
<td>0.092</td>
<td>-0.192</td>
<td>0.089</td>
</tr>
<tr>
<td>8-firm Concentration</td>
<td>(0.932)</td>
<td>-0.064</td>
<td>-0.006</td>
<td>-0.037</td>
<td>0.107</td>
<td>-0.111</td>
</tr>
<tr>
<td>4-firm Concentration</td>
<td>(0.979)</td>
<td>-0.037</td>
<td>-0.003</td>
<td>-0.045</td>
<td>0.063</td>
<td>0.028</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>0.000</td>
<td>(1.000)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>ROA</td>
<td>0.044</td>
<td>0.067</td>
<td>(0.754)</td>
<td>-0.378</td>
<td>-0.081</td>
<td>-0.107</td>
</tr>
</tbody>
</table>
The variables were also tested for discriminant validity as well as reliability. A discriminant validity test is used to determine whether the variables are correlated with themselves more than with the other variables. Therefore, as shown in Table 2, the coefficients in the diagonal line are higher than any other coefficient in their respective rows.

### Table 2: Correlations among latent variables (Discriminant validity test)

<table>
<thead>
<tr>
<th></th>
<th>Concentration</th>
<th>R&amp;D</th>
<th>Performance</th>
<th>CSR</th>
<th>Size</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration</td>
<td>(0.920)</td>
<td>-0.203</td>
<td>0.015</td>
<td>0.085</td>
<td>0.239</td>
<td>-0.195</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>-0.203</td>
<td>(1.000)</td>
<td>0.405</td>
<td>0.540</td>
<td>0.424</td>
<td>0.134</td>
</tr>
<tr>
<td>Performance</td>
<td>0.015</td>
<td>0.405</td>
<td>(0.754)</td>
<td>0.489</td>
<td>0.522</td>
<td>-0.009</td>
</tr>
<tr>
<td>CSR</td>
<td>0.085</td>
<td>0.540</td>
<td>0.489</td>
<td>(0.603)</td>
<td>0.594</td>
<td>-0.084</td>
</tr>
<tr>
<td>Size</td>
<td>0.239</td>
<td>0.424</td>
<td>0.522</td>
<td>0.594</td>
<td>(1.000)</td>
<td>-0.032</td>
</tr>
<tr>
<td>Industry</td>
<td>-0.195</td>
<td>0.134</td>
<td>-0.009</td>
<td>-0.084</td>
<td>-0.032</td>
<td>(1.000)</td>
</tr>
</tbody>
</table>

Generally reliability is measured by the values of Cronbach’s alpha. However, in this case, since the CSR indicators are formative, composite reliability was more appropriate. The variables pass the reliability test if the composite reliability values for each indicator are equal to or greater than 0.6. In this study, all the variables pass the reliability test. The variables also did not show signs of multicollinearity.

### RESULTS

A structural equation modeling technique was used to test the developed model. The statistical software used was WarpPLS 5.0. The results are shown in Figure 2. Hypothesis 1 states that industry concentration is inversely related to investments in CSR. This relationship is indeed statistically significant ($\rho < 0.01$) with a coefficient of $\beta = 0.20$. However, when the effect size was examined for this hypothesis, its value was below 0.02. As Cohen (1988) has suggested, effect sizes with values below 0.02 are too small to be considered relevant for practical purposes. Therefore, hypothesis 1 was not supported. This was the only relationship that showed an effect size below 0.02.

Hypothesis 2 stated that firms with higher investments in CSR would also have higher firm financial performance. The coefficient of this relationship was $\beta = 0.21$ and this coefficient is statistically significant ($\rho < 0.01$). Therefore, hypothesis 2 was supported. Hypothesis 3 stated that as R&D intensity increases, investments in CSR will also increase. The study provided support for this hypothesis as well. The coefficient was $\beta = 0.58$ ($\rho < 0.01$), suggesting a strong relationship between these two variables. Hypothesis 4 stated that as industry concentration increases, a firm’s R&D intensity decreases. This study provided support for this hypothesis with...
a coefficient of $\beta = -0.20$ that was statistically significant ($p < 0.01$). However, it should be noted that the $R^2$ was very low ($R^2 = 0.04$), which suggests that R&D intensity, apart from industry concentration, is also determined by other variables not included in this study. The last hypothesis stated that firm performance would increase as R&D intensity increases. Measures such as the Tenenhaus goodness of fit ($= 0.434$) and average full collinearity ($= 1.353$) showed that the model had a good fit.

**Figure 2: Results of the path analysis**

**DISCUSSION**

The impact of CSR on firm performance remains to this day a debated topic in the literature. This study contributes to the literature by combining the effect of two previously suggested antecedents of CSR, industry concentration and R&D intensity. We build upon two research streams, the industrial organization and resource-based view, to develop our hypotheses. After reviewing the literature, we built a model that was tested through a structural equation modelling technique.

Based on the results of the path analysis, an investment in CSR is positively related to a firm’s financial performance, adding to the major stream of research which suggests a positive relationship between these two variables. The study also showed that while industry concentration determines the levels of R&D intensity, it does not directly affect investments in CSR. This finding perhaps shows that as industry concentration decreases, and competition increases, firms, although might want to invest in CSR activities to gain a competitive advantage, they are unable to do so without investing in R&D to develop such CSR products and processes that would provide the firm with the desired competitive advantage. Another interesting finding is the low coefficient linking R&D intensity and firm performance. This coefficient, when compared to the coefficient of the relationship between investments in CSR and firm performance, might suggest that simply investing in R&D might not yield maximum potential performance. Instead, firms should incorporate strategies to be able to invest in
specific products or processes with CSR properties that will allow firms to obtain a competitive advantage.

**Research and Managerial Implications**

Investments in CSR are quite difficult to measure in terms of their precise effect on firm performance. However, as suggested by this study, it is imperative that future studies, when examining CSR, should not only consider internal capabilities, but they should also incorporate external factors. Also, a key message to managers would be that CSR, when considered as a strategic asset of the firm, does indeed provide a higher firm performance. Therefore, managers need to facilitate the creation of CSR resources that allow the firm to obtain a competitive advantage, and this facilitation can be achieved by increasing R&D intensity. Also, by knowing the degree of industry concentration, managers can build their future strategic plans by giving importance to CSR accordingly.

**Limitations and Areas for Future Research**

This study has a few limitations. First, the study included firms located in the U.S., thus limiting the generalizability of the findings. Future studies can conduct a similar study in countries in a global setting to determine how the combined effect of industry concentration and R&D intensity affects investments in CSR and in turn firm performance. Differences might arise due to different country-specific regulations or different levels of consumer sensitivity in regards to social and environmental concerns. Second, this was a cross-sectional study. Therefore, we were limited in terms of supporting causality. Future studies could focus on longitudinal methods that would more accurately measure causality.

**REFERENCES**


