CSR活動と財務諸表の関連性に関する定量分析

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Quantitative Research on the Effect of CSR Activities on Financial Performances

CSR 活動と財務諸表の関連性に関する定量分析

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【Abstract】

CSR (Corporate Social Responsibility) is gaining increasing attention domestically in Japan, and more firms are starting to disclose their CSR data. At the same time, there has been a shift from a narrow view of CSR to a broader one, encompassing responsibilities towards various stakeholders related to the companies. Domestic studies in this field have just begun, and there is a lack of understanding as to which types of CSR activities are necessary in the Japanese market, or how they contribute to the improvement of corporate values.

The purpose of this paper is to analyze the level of impact CSR data has on financial performances, using a quarter of all Japanese firms listed on the equity market, using financial and non-financial data in fiscal years 2011-2019. Prior research has shown that non-financial information including CSR does have impact on financial performances, but the degree of its impact widely differs depending on the extracted data contents, as well as the number of years for the effect to come into play. This paper analyzed whether the selected 3 non-financial data had an effect on any of the financial performances. The analysis has shown that the level of impact was not strong. No strong correlation was observed between financials and non-financials, at least among the listed companies under analysis. Extracting only the firms which consistently disclosed CSR or grouping firms by the most recent sales categories

resulted in the similar results. Only when analyzing the companies by specific industries, was there a weak correlation between non-financials and some of the financial elements within the energy sector. Conducting partition analysis for non-financial elements within some of the specific sectors, we have found that the rates of women in managerial posts can be most effectively explained by some independent variables of financial factors.

Overall, the fact that a strong correlation was not found between CSR data and financial indicators re-confirmed prior research findings, but further analysis is necessary to see if correlations can be found by using other non-financial elements or by taking a longer time span into consideration. In the post-coronavirus world, we should see an increasing trend for greater attention on non-financial performances of the companies including CSR in the near future.

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1. Introduction

Corporate Social Responsibilities (CSR) are receiving increased attention in Japan. There are as many ways to handle CSR as there are companies; some increase CSR-related terminologies on their websites, and others create a section within the company which deals with CSR. However, many of these are done to simply follow what their competitors do, or to start CSR as it is a "trend", or as part of their promotion. Their motives and purposes may not be as focused as they should be, resulting in not many companies being interested in CSR itself. The lack of such enthusiasm is the consequence of a lack of domestic research on CSR, not shedding light on the type of CSR disclosure demanded in Japan's market and how it renders positive effects on companies in return. In Japan, therefore, the term "CSR" has taken on a life of its own, without sufficient discussion on what the real CSR should be.

Defining CSR as a means to raise corporate values through quantifying and disclosing it to the market, this paper aims to quantify the relationship between CSR and corporate performance (measured through share prices return and financial terms). The purpose of this paper is to discuss the significance of CSR with the hypothesis that "companies reap higher profitability increases through active CSR." Increases in CSR numeric data will be analyzed to see whether they have positive impact on corporate profitability.

Not much time has elapsed since the idea of corporate social responsibility has been imported from Western nations, and the number of companies disclosing non-financial data still remains only a few. This lack of abundant CSR data to be used for research results in limited data availability, leading to inconsistent findings in research. Consequently, although some analysis has been made on CSR impact on corporate values, conclusions have still not been reached on the degree of their relationship, and opinions are still divided on the relationship between disclosures of CSR activities and financial performances. In that way, the maturity level of CSR discussion in Japan is still at a primitive stage.

There may be no room at present for the argument that, as a member of a society to which it belongs, a company should actively participate in CSR activities. If so, there must be clear-cut evidence to show that active participation in and disclosure of such CSR lead to enhancement of corporate values from the investors' perspective. However, there has been little concrete evidence to date on the positive impact of CSR participation on corporate values as of now. If the evidence on the relationship between the two is apparent, it will definitely lead to domestic companies making more CSR disclosures and taking further initiatives in CSR activities, which in turn will open up the possibility of revamping the Japanese economy.

So far, as explained in the previous paragraphs, domestic analysis which conducted studies using Japanese companies do not show a consistently positive relationship between the two. Suto, et al. (2006) was able to generate a positive correlation between those with high financial performances and active CSR participation, as well as between high CSR data disclosure and outstanding performances in the stock market. Hibi, et al. (2017) was also able to come up with a similarly positive conclusion. However, results of studies conducted by Oura (2017) and Tonosaki (2013), which both involve CSR data in *CSR Kigyo Sokan*, remain uncertain as to the level of CSR on financial performances, as both positive and negative relationships were found between financial and non-financial data.

This is in contrast with foreign situations; unlike in Japan, active research has been conducted overseas for some time. The term CSR has been defined by global organizations, and many academic papers on CSR are present as well. The most seminal ones are those in the Harvard Business Review published by Porter and Kramer, which focused on the impact of CSR on corporate financial performances. This drew increased attention to corporate social responsibilities not only as members of the society, but as profit-maximizing entities.

Moreover, many studies point to the fact that CSR is being reflected positively on their financial statements. Among many types of research conducted overseas, one study by Orlitzky, et al. (2003) has been selected for its comprehensive coverage on CSR and its positive effect on financial performances. The areas it covers are exhaustive, and the positive relationship between CSR and financial performances may seem realistic and not a far-fetched idea.

In this paper, research will be conducted to see if CSR and financial numbers are correlated using the most recent 2011-19 data available for domestic listed companies, i.e., if the hypothesis "companies reap higher profitability increases through active CSR" is verifiable.

Chapter 2 initially provides the overall historical background and concrete definition of the term CSR. It discusses how the concept has gradually changed to embrace broader CSR, as the definition of the terminology has been refined globally. After discussing the series of the representative academic research on CSR by Porter, the chapter focuses its attention on various overseas and domestic studies on the relationship between CSR and financial data. One Japanese professor, Takashi Nawa (2015), introduced the concept of 'Japanese CSR' which is tailor made by leveraging Japanese corporate cultures. His unique interpretation of how CSR should be incorporated in Japanese corporate culture will be introduced.

Chapter 3 provides underlying assumptions of the research conducted in this paper. It bases the analysis on companies listed on Japanese stock market, and all the financial and non-financial data were extracted from the Nikkei Value Search database. For consistency of data among the samples investigated, companies which underwent irregular corporate changes such as reorganizations, M&A activities, or fiscal year changes, were excluded. Those that did not have financial performances less than 10 years were also excluded from the sample list. After the characteristics of these companies in the sample are discussed, the methodology for conducting this research is introduced.

Based on this methodology, Chapter 4 investigates whether specific correlations can be found using the most recent financial data, making use of 2010-19 CSR and financial data among companies listed on stock markets as of 2020 March-end. Using the spreads between monthly returns of individual stocks and those of Nikkei 225 performances for the past 10 years, analysis is conducted whether CSR disclosures have any impact on share performances. Analysis is made to see if there is any correlation among the samples between financial and non-financial performances overall, those that disclose CSR, by sales size, and by industry type. Partition spreads are investigated for the Materials & Chemicals sector to see if analysis on a specific industry provides a stronger indication of relationship.

Finally, Chapter 5 discusses the findings of analysis in this research and makes conclusions on the reasons why CSR now needs further attention, in the context of contemporary world, and why it has important implications in the midst of the current COVID-19 pandemic.

2. Corporate Social Responsibility – History and Overview of Literature

2.1 Historical background

The way the term "Corporate Social Responsibility (CSR)" is perceived varies from company to company. Without definite terminology, many related words are being used independently, including, but not limited to, Environment, Social and Governance (ESG), Sustainability, and Socially Responsible Environment (SRI). Before examining how it can be defined, some historical background is necessary.

The concept of CSR itself has existed for a long time, but the word itself was first used by Sheldon [1] in his paper. The concept gradually became widespread, as modern cities were becoming developed globally, through increased industrialization, concentration of population in urban areas, and the establishment of labor and management divisions. Thus, back then, usage of the term CSR was rather limited to the context of workers and improvement of working environment, and a strong focus on the degradation of living environment, hygiene issues, and pollution among urban cities highlighted the importance of CSR. It later gained further attention after the experiences of two world wars. In the beginning, the trend was negative screening, i.e., excluding companies that do not have positive reputations in their businesses. Examples include, but are not limited to, air pollution arising from photochemical smog derived from vehicular emission since the end of World War II, and criticism of the thriving munitions industry following anti-war campaigns in the 1970s. It gradually shifted to positive screening, a way to invest in companies actively making contributions to welfare organizations and participating in charities, as a means of contributing to their local communities. As it evolved the concept attracted many similar ideas, such as "Socially responsible investment (SRI)".

Despite the emergence of many calls for all the organizations to shoulder social responsibilities, there has not been any enactment of laws on CSR. This failure has resulted in companies taking their own stances on the issue. These social issues were put in written format publicly for the first time by GRI (Global Reporting Initiative), a non-governmental organization that aims to create international standards on sustainability. With its headquarters located in Amsterdam, Netherlands, the organization announced the international standard "SRG (Sustainability Reporting Guideline)" in June 2000, proposing to visualize measures of abstract concept of sustainability, using specific indicators. It has made revisions to its guideline every few years since then. In October 2016, the currently-used GRI Standard has taken place of SRG. The Japanese translation of the standard was published subsequently, and many companies conducting business worldwide are following this standard as of now. In Japan, many companies refer to GRI standards when disclosing their CSR data.

Since then, one after another, many other institutions have announced policies and guidance on measuring CSR. In June 2004, UNGC (United Nations' Global Compact) proposed 10 basic principles in the areas of human rights, labor, environment, and anti-corruption. Its Japanese version, Global Compact Network Japan, has 362 participants as of 8th of May 2020 [2]. In 2006, the 7th Secretary-General of the United Nations, Kofi Atta Annan, announced the inception of the Principles for Responsible Investment (PRI) comprising 6 components. Financial industry was required to consider Environmental, Social, and Governance factors in conducting their investment, not to succumb to investors' and shareholders' adamant demand for return.

This ESG investment eventually became a major investment strategy, seeking to a sophisticated corporate CSR philosophy [3] (UNEP FI website).

In 2010, the International Organization for Standardization (ISO) published a written principle of social responsibilities to be observed by organizations, which was more detailed than the aforementioned Global Compact, namely, ISO26000. It highlights the importance of caring for stakeholders of an organization. It was compiled as a guideline for various kinds of organizations and institutions to conduct effective social responsibilities as the international standard, which was discussed and developed by multiple stakeholders (including consumers, governments, industry leaders, laborers, NGOs, and academic research institutes) in an international setting inclusive of developed and developing nations. It places a focus on stakeholder engagement is as the "activity to create dialogue opportunities among organizations and stakeholders" [4] (ISO/SR domestic committee website).

Through its history, CSR has been made concrete gradually through various definitions and guidelines published by organizations around the world. No matter how much understanding corporations gain on social responsibilities, it will be meaningless without any action or disclosure on such action. Corporations have attempted to compile these activities in a written format. However, just as various institutions established various guidelines, the formats of these reports varied and these have never been unified so far. Their names too are varied including CSR reports, Sustainability reports, and Social and environment reports. Some disclose summarized information on their websites, and these formats and amounts are all left to the companies to decide on their own. It is not easy to define what should be disclosed and in what amounts, so this leaves room for much improvement.

One certainty is that the most important mission of CSR is to check whether all the elements required by stakeholders for disclosure are present, because CSR by its nature needs to report the organization's social responsibilities. There is also a need for proactive dialogues and discussions which allow for lively debate on stakeholders' requirements and the degree of organizations' sufficient response to them. Whether it be in the form of meetings, workshops, opinions in writing, or briefings, there is no end to it until all stakeholders are sufficiently in agreement on the final outcome. The success of CSR depends on the accumulation of professional knowledge on the process of feedback and assessment, as well as development of such professionals [5] (Kokubu). The nature of going concern will necessarily continue to accommodate the continuous improvement towards active discussion of CSR.

2.2 Terminology

Based on the previous section on its history, the definition of CSR is now re-visited. For the first time in the history of governmental institutions, the European Union discussed CSR, despite admitting the lack of a unified definition of CSR:

> "Most definitions of corporate social responsibility describe it as a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis…It opens a way of managing change and of reconciling social development with improved competitiveness. " [6]

(Excerpts from "Green Paper – Promoting a European framework for Corporate Social Responsibility." Brussels, 18.8.2001 COM (2001) 366 final)

The European Union used the term "stakeholder" instead of shareholders, thus becoming a pioneer in involving all related parties in CSR definition. In addition, by adopting the term "on a voluntary basis", it implies a need for regulation in situations where companies are left to choose their own CSR policies. It was valuable that the EU worked on materializing such policies in the public arena.

Since this EU adoption of "stakeholder" involvement, CSR has started to include the notion of something that involves the whole surrounding communities, not only employees, shareholders, and suppliers who are directly involved with the corporate business. Okamoto [7] has pointed that CSR is gradually starting to shift its focus from CSR in a narrow sense to CSR in a broader sense (Table 1).

Table 1: Differences between Narrow CSR and Broad CSR

Stakeholders	Narrow CSR	Broad CSR
Employees	Maintaining employment	(+) Life improvement
Shareholders, suppliers	(Stable dividends and transactions)	(+) Disclosure of governance information
Local community	Pollution, tax, reputation	(+) Contribution to local community
Consumers	Supplying high-quality products	(+) Long-term life improvement, social contribution, cultural support
Ecological environment	N/A	Environmental protection, Environmentally-friendly management, sustainability

Notes: (+) indicates elements required in addition to narrow CSR.
Source: Compiled based on materials in Okamoto [7].

All the events which took place in the early 20th Century, which were discussed in the previous section, were all centered around this narrow CSR, but recent events encompass CSR in a broader sense. In other words, CSR that increases corporate values requires not just growth elements but also social elements.

2.3 Academic research – Porter's CSR

One of the most representative academic research areas in CSR would be on the concept of corporate social contribution activities as the new "philanthropy", proposed by Porter and Kramer [8]. Porter and Kramer understood philanthropy strategically, i.e., not as a small-scale support that makes contributions to local communities through the management's personal preferences or policies, but as the field in which "unity between social and economic goals improves long-term outlook of the business". The competitive context which determines the company's success is comprised of the following 4 areas:

1. Professional and high-quality inputs of production available
2. Demand for the company's products or services (which can be measured through market size and level of maturity)
3. Healthy competition
4. Related and supporting industries

Porter and Kramer hypothesized that dealing with philanthropy strategically in each of these contexts would create a virtuous cycle of maximizing social and corporate values. Their theory was that social goals do not have to be segregated from economic goals, because these together will bring about far bigger social benefits than contributions made by individuals and governments. The idea that social expenditures do not come at the expense of economic performances caused much commotion to the economic world.

A few years later, Porter and Kramer [9] brushed up the previous philanthropy theory, coming up with the theory on "CSR strategy with the competitive advantage". They put social issues that have an effect on corporations into 3 categories:

1. General social issues
2. Value chain social impacts whenever the company's business operations have a certain degree of impact
3. Social dimensions of competitive context, which have a tremendous impact on corporate competitiveness

These are further broken down into 2 CSR activity types, namely, Receptive CSR and Strategic CSR, according to business units and areas in which they operate (Table 2).

Table 2: Receptive vs. Strategic CSR

	General social issues	Value chain social impacts	Social dimensions of competitive context
Receptive CSR	Benevolent corporate social activities	Improvement of vicious cycle from value chain activities	Strategic philosophy: Improvement of areas essential to competitive environment, leveraging corporate capabilities
Strategic CSR		Conversion of value chain activities to something of value to both society and strategy	

Source: Compiled based on materials in Porter [9].

Receptive CSR, which cares for general social issues and value chain social impacts, involves two types of activities – benevolent corporate social activities and improvement of vicious cycles from value chain activities. Examples of benevolent corporate social activities include making monetary contributions, and its effect in improving the relationship with local communities by gaining its trust is only limited to a certain extent. This is because these activities do not have as much correlation to corporate business activities, and their overall positive effect on corporations remains minimal. Improvement of the cycle from value chain activities is also expected to bring positive impacts to a certain degree by highlighting CSR problems in global reporting initiatives reports, et al., but its effect is again minimal, as it does not lead to solutions to all business issues and it is extremely challenging to foresee the level of these effects.

Strategic CSR is said to influence both areas of value chain social impact and social dimensions of the competitive context, thus generating far more substantial impacts than receptive CSR and maximizing corporate benefits. This also involves 2 dimensions. One is conversion of value chain activities to something of value to both society and strategy. In other words, the improvement of the corporate value chain itself will also bring additional benefits to societies. The second aspect is strategic philosophy, i.e., improvement of areas essential to competitive environment, leveraging corporate

capabilities. Corporate products and value chains may create innovations that realize increased corporate competitiveness and societal benefits at the same time. This can be observed in Toyota's hybrid engine cars which minimized gas emissions. Companies should aggressively seek innovations which may bring these results. To summarize, Porter and Kramer [9] stated that this strategic CSR should be advocated more vigorously than receptive CSR. Strategic CSR necessitates strong relationship between "effect from outside to inside" and "effect from inside to outside", and corporate activities have an impact on societies and vice versa. Corporations and societies, in other words, realize common values, leading to maximum corporate competitiveness. This is the origin of the paper's title "competitive advantage CSR strategy".

Based on the previous two papers, Porter and Kramer [10] eventually developed a new concept of CSV (Creating Shared Value). CSV is defined as "policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates". It may seem similar to CSR, but it is fundamentally different in the sense that CSV regards activities that raise social values as corporate investment activities rather than responsibility. In other words, corporations are able to create "shared value" and meet society's needs simultaneously by producing economic values. Companies have the ability to create economic values by creating social values. In other words, their competitiveness is a concept inseparable from their local community's sustainability. Thus, a corporation and its society would need to work hand in hand to their mutual benefit, creating a "win-win" relationship. Their statement that economic benefits cannot be achieved without social values firmly stood against traditional ideas that there is a trade-off between economic efficiencies and progress of the society.

2.4 CSR debate in Japan

There have been active discussions on CSR and SCV but the level of discussion is far from being in a maturity phase. Many studies are confined to simply listing and explaining CSR definitions and history.
However, one scholar Nawa goes beyond the simple interpretation of the term, extending it to application of the terminology to Japanize the concept in the country's commercial arena [11]. He has admitted that Japanese companies, as a whole, are not proficient at creating economic values. Some refer to old phrases in Japan that carry notions similar to CSV, such as *Sanpo yoshi* ("three-way satisfaction" in Japanese; it means what benefits the purchaser should ultimately also bring benefit to the buyer and society at large) and *Rongo to soroban* (literally "analects and abacus" in Japanese; proposed by Japanese industrialist Eiichi Shibusawa, the phrase implies one needs to balance *Rongo* (morality) and *Soroban* (economic benefits)). Nevertheless, Nawa agrees with Porter that CSV is fundamentally different from the concepts that have been passed down from Japanese ancestors. CSV believes in the compatibility between social and economic values, but economic values stand out as the ultimate goal. As opposed to CSV, these traditional Japanese concepts cherish the single purpose of finding solutions to societal issues, and achieving this purpose will be followed by economic values in the end. Thus, the order of the purpose and means are reversed. Porter, upon his visit to Japan, was furious to receive comments from experts that CSV had existed in Japan for a long time.

Nawa proposes a new Japan-initiated "J-CSV". He believes the learning and development cycle at the production site should drive the revival of Japanese economy. According to Nawa, this should be realized by utilizing essential concepts shared among

Japanese management and CSV, Japanese companies' ability to incorporate seemingly contradictory ideas in their innovations, intricate combinations of Japanese spirit with Western learning passed down for generations, and actual workplace skills to create new knowledge. He states that taking full advantage of what can actually be observed at the company onsite, workers, and policies behind which these businesses are run, will lead to co-creation instead of competition in a real sense, surpassing the CSV idea of contributing to society for economic motivations.

Perhaps because the discussion on CSR has not matured yet, the domestic CSR discussion is centering around how companies become more positive in participating in CSR activities and what motivates companies to start disclosing CSR data, rather than how they lead into enhanced corporate values. In 2015, the Financial Services Agency and the Tokyo Stock Exchange together came up with Japan's Corporate Governance Code, a guideline to show a code of conduct for listed companies to comply with. Revised in 2018, this Code expects companies to "make information disclosure in compliance with the relevant laws and regulations" and to "actively provide information beyond that required by law" [12]. The Japan Stock Exchange focused on ESG data in particular, publishing a Practical Handbook for ESG Disclosure in Mar 2020 [13]. Sad to say, these codes and guidelines published by the Japan Stock Exchange are still yet to result in ample data disclosure by listed companies in Japan.

2.5 Academic research on CSR quantitative analysis

While the number of companies that disclose CSR data disclosures are still limited in Japan (as discussed in the next chapter), an increasing number of companies are disclosing CSR data overseas. As a result, overseas studies show extensive data on the impact of CSR on financial performances. Especially in late 20th and early 21st Centuries, the positive relationship between social and financial performances was accepted as a sensational idea, so this relationship was highlighted in many studies outside Japan. A study conducted by Orlitzky, et al. [14] was one of such examples. Orlitzky, et al. conducted analysis of studies proving the positive impact of CSR activities on corporate financial performances. Conducting meta-analysis of 52 studies, they found a positive relationship between CSP (Corporate social performance) and CFP (Corporate financial performance). In the paper, 30 years of financial data were used to prove that CSP and CFP affect each other interchangeably, proving corporate social performances are likely to pay off, not just as a method to take responsibility as a member of the society, but also in the form of financial performance.

In contrast, not enough research has been conducted in Japan. Domestically, there are some data that indicate positive participation in CSR results in positive financial performance, but the conclusion as to the degree of their relationship is still divided. Here are some of the recently-conducted studies and their findings. Suto, et al. [15] is an example of a recently conducted study showing that those with concrete policies on CSR have high financial performances, active participation in CSR does contribute to risk management, and CSR is positively accounted for in stock market. In another, Hibi, et al. [16] focused on environmental elements and observed that those who maintain a certain level of environment-related CSR involvement enjoy positive financial performances.

On the other hand, there were studies which showed mixed results. Oura [17] used 4 years of panel data encompassing more than 1,000 corporations to conduct further

research. In the panel data, the 4-year CSR data in *CSR Kigyo Soran* ("Directory of CSR Corporations") 2007-2010 published by Toyo Keizai were rated on a scale of 1-5. The CSR data used for analysis were 24 elements of human resources utilization, 21 elements of environment, 21 elements of corporate governance, and 19 elements of sociability. Using ROA and ROE, financial performances were found to have positive relationship with human resource utilization, but sociability was found to have positive relationship only when 4 full years of data set were present. Environment and corporate governance were found no positive relationship.

Tonosaki [18] conducted interviews based on 1,062 listed and 55 unlisted companies, and conducted analysis based on the result of these hearings and data from *CSR Kigyo Sokan* (30 elements of human resource utilization, 25 elements of environment, 25 elements of corporate governance, 23 elements of sociability). The financial performances considered were 3 years of data (2010-2012) in the areas of sales and operating income margin growth rates, asset turnover rates, recurring profit rates, retained earnings, cash deposits ratios, sales per employee, and EPS (consolidated and parent). As a result, the level of aggressiveness in CSR participation was correlated to retained earnings and cash deposits ratios, but growth rates of operating income ratios and EPS were not impacting CSR.

The aforementioned studies by Hibi [16] involved multi-regression analysis of CSR and financial performances based on 492 companies which were rated A or higher in the environment CSR element in 2011, out of all the 700 listed stocks in the CSR Corporate Ranking published by Toyo Keizai. If analyzed solely based on environment-related elements, environment ranked A or higher was said to have positive correlation with financial performances. However, none of the other CSR elements were impacting financial numbers.

There were other studies which attempted to find out reasons for the lack of consistency as to the relationship between the two. The study conducted by Araki [19] showed that the variabilities of the way companies conducted CSR activities (human resource utilization, environment, corporate governance, and sociability) do not impact financial performances; what affects them is the type of business companies conduct. Furthermore, even among those who showed strong relationship between CSR evaluation and financial performances, there was no indication whether CSR impacted financials or vice versa. It was the mega-size companies which initially reported environmental reports and CSR reports, so it may be possible that financial results have a strong impact on the way CSR activities are completed. However, the degree of their mutual effect on each other needs further study with more data. This was conducted in 2009, which is now more than a decade ago; whether the same result comes out currently is worth a consideration. In addition, Endo [20] concluded environmental factors do not have any relationship with financial performance, either positive or negative.

Thus, from multiple studies, there has not been a definite answer on which CSR elements impact financial performances, and which financial indicators should be looked upon for CSR analysis. Moreover, CSR activities and its reporting incur certain costs, so some say CSR activities dampen financial performance.

2.6 Summary

From CSR's historical background and terminology defined by many organizations, the level of progress on CSR varies from period to period depending on region and nations, and they are far from being unified. In the area of its academic research on CSR, in Japan's market in particular, many are not showing consistent results, due to a variety of types of companies and data elements, range of years, despite much analysis conducted.

In both English and Japanese references, the effect of domestic CSR data on financial performances in Japan are still sporadic. This paper attempts to further CSR data provided by Japanese companies, and this should add valuable insight to an area that yet requires further research.

3. Quantitative research for listed companies in Japan

3.1 Number of listed stocks

As of 31 March 2020, there were 3,712 listed stocks in Japan [21](Japan Stock Exchange website). Excluding 4 foreigners leaves 3,708 domestic companies (Table 3).

Table 3: Companies Listed on Japan's Stock Exchange (as of 31 March 2020)

	First Section	Second Section	Mothers	JASDAQ Standard	JASDAQ Growth	Tokyo Pro Market	Total
Num. of Companies	2,165	483	325	665	37	33	3,708
Ratio	58%	13%	9%	18%	1%	1%	100%

Source: Compiled based on Japan Stock Exchange's website data.

Out of the listed companies, 71% are listed in either first or second section, around 10% on Mothers, and 19% on JASDAQ. The following series of analysis were conducted using these 3,708 stocks.

3.2 Overview of the listed companies

Below is an overview of these listed companies.

Except for three which were de-listed in April, there were 3,705 companies. Of these, there were 2,926 companies which were listed for more than 10 years as of January 2020 (2,926/3,705=79%), and 391 of them had disclosed some kind of CSR data for 9 consecutive years (391/3,705=11%).

These data are summarized in Table 4:

Table 4: 3,705 Exchange-listed Companies – Matrix of Exchange Listing Years and CSR Disclosure

CSR Disclosure Years	Years of Listing				
	>10 yrs	6-10 years	2-5 years	<2 years	Total
9 years	385	6			391
8 years	31				31
7 years	49	4			53
6 years	24	1			25
5 years	117	4	3		124
4 years	144	17	5		166
3 years	97	10	7		114
2 years	110	7	11		128
1 years	88	7	8		103
0 years	1,881	204	365	120	2,570
Total	2,926	260	399	120	3,705

Notes: The 3 tickers which were delisted in April 2010 were excluded from this matrix.
- JEUGIA (Ticker code 9826)
- Showa Aircraft (Ticker code 7404)
- Sogo Medical Holdings (Ticker code 9277)

Source: Compiled based on Japan Stock Exchange's website data.

There are only 385 companies which have been consistently disclosing CSR data for the past 10 years, which are 10% of total listed stocks. This indicates the immature level of Japan market in the field of CSR disclosure.

Next, the company size using the 12-month sales data were plotted in a matrix against listing years and CSR disclosure years (Tables 5, 6). The companies were divided into 4 categories based on the size of the most recent fiscal year' sales data (Category A: Lower than 100 billion yen; Category B: 100 billion to 1 trillion yen; Category C: 1-2 trillion yen; and D: More than 2 trillion yen). As these sales data were compiled based on JGAAP, 375 that reported sales in IFRS or US GAAP accounting principles were excluded from this analysis. Please refer to the subsequent section of explanatory notes for a full list of these excluded companies.

Table 5: 3,329 Listed Companies – Listing Years and Last 12-month Sales

Listing Years	Most Recent Annual Sales				
	D	C	B	A	Total
>10 years	34	48	631	1,918	2,631
6-10 years			27	200	227
2-5 years	2	1	16	336	355
<2 years			1	115	116
Total	36	49	675	2,569	3,329

Source: Compiled based on Japan Stock Exchange's website data.

Table 6: 3,329 Listed Companies – CSR Disclosure Years and Last 12-month Sales

CSR Disclosure Years	Most Recent Annual Sales				
	D	C	B	A	Total
9 years	25	31	175	47	278
8 years	1	1	13	7	22
7 years		4	32	11	47
6 years	2	1	10	3	16
5 years	2	4	52	43	101
4 years	1	1	51	77	130
3 years	1	1	37	50	89
2 years	2	3	36	71	112
1 year		2	41	51	94
0 year	2	1	228	2,209	2,440
Total	36	49	675	2,569	3,329

Source: Compiled based on Japan Stock Exchange's website data.

From Table 5, only 34 companies (or 1.0% of totals) produced sales more than 2 trillion yen and have been listed on an exchange for +10 years. Table 6 shows that only 25 (or 0.8% of totals) have been consistently disclosing CSR for 9 consecutive years. What is worth noting is that these 25 were all +10 year-listed. One piece of good news is that 278 (or 8% of totals) have been consistently disclosing CSR data for 9 years, and 222 or 80% of them were making lower than 100 billion-yen annual sales, meaning that those with a variety of business types and size are striving towards CSR disclosure. Furthermore, there are 2,440 (73% of totals) who did not disclose any CSR data at all during the last 10 years. In other words, almost three-quarters of all the companies are not even compiling any CSR data, which requires further improvement. Those which have disclosed CSR for at least 1 year are all listed on the first section of the stock exchange

(Table 7). A number of requirements need to be met in order to be listed on the first section, such as number of shareholders, shares outstanding, and market capitalization. There may need to be additional requirement as regards to CSR data disclosure in the future.

Table 7: 3,329 Exchange-listed Companies – CSR Disclosure Years and Marketplace Sections

CSR Disclosure Years	Marketplace Section		
	First Section	Other	Total
9 years	278		278
8 years	22		22
7 years	47		47
6 years	16		16
5 years	101		101
4 years	130		130
3 years	89		89
2 years	112		112
1 year	94		94
0 year	958	1,482	2,440
Total	1,847	1,482	3,329

Source: Compiled based on Japan Stock Exchange's website data.

3.3 Data Source

All financial data and CSR data came from data in Nikkei Value Search provided by Nihon Keizai Shimbun, which is an information platform for corporations and industries. Nikkei Value Search is a database for all exchange-listed companies domestically, providing financial and nonfinancial data in a downloadable format. It enables real-time analysis of companies and industries, encompassing quantitative and qualitative information for more than 1 million domestic and 37,000 overseas companies including listed companies, covering around 550 industry classifications.

3.4 Explanatory notes on extracted data

The following are some explanatory notes on the companies included in the extracted data.

The most recent fiscal year refers to the sales data for the full 12-month period which ended by December 2019. If there was no 12-month data during the year of 2019 due to fiscal year change, the previous year's 12-month data were used. For example, Yamaha Motor Robotics Holdings (Ticker code 6274) changed the end of its fiscal year period from March 31st to December 31st from the period ending December 2019. Thus, the full 12-month period data that was available and used for analysis was for the period during April 2018 and March 2019. Table 8 shows a full list of 21 companies that underwent fiscal year changes in 2019.

Table 8: Companies with fiscal year changes in 2019 and their data used in analysis

| Ticker | | Fiscal Year Month | | Sales data used |
Code	Name	Before	After	for analysis
2206	Ezaki Glico Foods	3	12	18/4〜19/3
1605	INPEX Corporation	3	12	18/4〜19/3
3606 a)	Renown	2	12	18/3〜19/2
8011	Sanyo Shokai	12	2	18/1〜18/12
6274 b)	Yamaha Motor Robotics Holdings	3	12	18/4〜19/3
4696	Watabe Wedding	3	12	18/4〜19/3
6090	Human Metabolome Technologies	3	6	17/4〜18/3
7808	C.S. Lumber	11	5	17/12〜18/11
7956	Pigeon	1	12	18/2〜19/1
2345 c)	Istudy	12	10	18/1〜18/12
3688	CARTA HOLDINGS	9	12	17/10〜18/9
3917	iRidge	7	3	17/8〜18/7
4764	SAMURAI&J PARTNERS	1	12	18/2〜19/1
9519	Renova	5	3	17/6〜18/5
2669	Kanemi Foods	3	2	17/4〜18/3
3192	Shirohato	8	2	17/9〜18/8
3223	SLD Entertainment	3	2	17/4〜18/3
3344	WonderCorporation	2	3	17/3〜18/2
3548	Baroque Japan Limited	1	2	17/2〜18/1
7604	Umenohana	9	4	17/10〜18/9
8186	Otsuka Kagu	12	4	18/1〜18/12

a) Renown (Ticker code 3606) was de-listed from Japan Stock Exchange on June 16th, 2020.

b) Yamaha Motor Robotics Holdings (Ticker code 6274) was de-listed from Japan Stock Exchange on May 25th, 2020.

c) Istudy (Ticker code 2345) has changed its name to Kushim in May 2020.

Source: Compiled based on Japan Stock Exchange's website data.

212 companies whose financial statements were disclosed based on accounting principles other than JGAAP (i.e., IFRS or US GAAP) were excluded from this analysis.

SI Holdings (Ticker code 7070; listed on October 1st, 2019) and Yakuodo Holdings (Ticker code 7679; Listed on September 2nd, 2019), which will start disclosing financial statements from 2020, were excluded from this analysis.

Out of 33 industry classifications defined by the Securities Identification Code Committee (SICC), Banks, Insurance, Other financial services, and Security & commodity futures industries were excluded from this analysis, as their topline figures (i.e., Gross Profits) are compiled using different report formats specific to their industry types (total of 162).

Summing up these numbers above, the number of companies which were used in this analysis were 3,329 [3,705 − 212 (different accounting principles) − 2 (newly listed stocks) − 162 (Banks and other financial industries)].

Announcements of FY19 financials for J Holdings (Ticker code 2721) and FHT Holdings (Ticker code 3777) were delayed as of 27th of May due to the effect of COVID-19. Thus, FY18 earnings were used for these tickers.

Disclosing years of CSR indicate the number of years CSR information has consistently been disclosed on a consecutive basis as of FY19. If, for instance, there was no CSR disclosure in FY19, the disclosure years was counted as 0 even if it disclosed until FY18.

3.5 Prerequisites for analytical data

In this analysis, only the companies which have been listed for more than 10 years in the 6 industry types (as of December 2019) were used (Table 3-7). For those which have been listed for a certain number of years, analyses were conducted to see if consistent disclosure of CSR information will result in positive effects on financial statements and share price performances. In order to be able to compare companies of different sizes, the following process was adopted in calculating share price performances. This process was chosen: 1) to evaluate corporate performances based on average share prices in the past 12 months, since corporate earnings are announced as a compilation of activities conducted during the period; and 2) to highlight individual stock performances by calculating the variances from the overall market returns.

i.   Calculate the monthly log returns of individual stocks and Nikkei 225 separately
ii.   Change #1 into 12-month moving average figures
iii. Calculate the variances between Nikkei 225 and individual stocks returns in #2
iv.   Calculate the 12-month moving average for each of the stocks in #3

As for Nikkei 225 index, data of the last date of each month was used with the basis date of 30th of December 2010. In the case of individual stocks data, some lacked prices in some months as deals were not made. In such cases, the previous-month data was applied. For this analysis, stock prices were used as one measure of performance indicators. If the price was not existent for a certain period of time because of M&A or corporate integration, these stocks were excluded from analysis. For example, Nippon Paper Industries consolidated Nippon Paper Group in March 2013, so there was no price available during the period of March 2001 and April 2013. Thus, the ticker was excluded from analysis due to lack of its prices for an extensive period of time.

Table 9: 6 Industry Types for Analysis (925 totals)

Sector	Number of Companies
Foods (Fishery, Agriculture & Forestry)	133
Energy (Mining, Oil & Coal Products)	17
Construction (Construction, Glass & Ceramics Products, Metal Products)	309
Materials & Chemicals (Pulp & Paper, Chemicals, Textiles & Apparels)	288
Pharma (Pharmaceuticals)	67
Transportation (Rubber Products, Transportation Equipment)	111

Notes: These 6 industry groups are groupings of the 33 TSE Industry Classifications (indicated in the parentheses).
Source: Compiled based on Japan Stock Exchange's website data.

As for financial data extracted from Nikkei Value Search, the representative items were used for companies which reported earnings in FY11-19 (Table 3-8).

Table 10: Financial Data – Items for Analysis

Items for Analysis	Units
Sales	Yen, Annual growth rate
Operating Profit	Yen, % to Sales
Net Income	Yen, % to Sales
ROE	%, Annual growth rate
ROA	%, Annual growth rate
Capital to Gross Capital	%, Annual growth rate
Debt Ratio	%, Annual growth rate
Current Ratio	%, Annual growth rate
Interest Coverage	Times, Annual growth rate
Dividend Payout	%, Annual growth rate

Source: Compiled based on Nikkei Value Search's data.

CSR data was said to be "Yes" for disclosure, if some form of CSR data is available on the company website, as indicated in Nikkei Value Search database which records all domestic listed companies. Table 3-9 lists types of report names and homepage that displayed CSR data. This list is not exhaustive, but most companies disclose CSR data in reports in these names.

Table 11: List of CSR Disclosure Report Types

Report Title	Report Type
Company Information	Website
CSR Announcement	Website, PDF
CSR Report	PDF
Annual Report	PDF
CSR Information	Website
ESG Information	Website
ESG Data Collection	Website
ESG Data Book	Website
Value Report	Website
Environment Announcement	Website, PDF
Environment Report	PDF
Environment/Society Report	PDF
Safety and Environment Report	PDF
Sustainability Report	PDF
Sustainability Data Book	PDF
Corporate Communication Book	PDF
Comprehensive Report	PDF
Comprehensive Announcement	PDF
Corporate Report	PDF
Reports with the title starting with the trade name e.g. Oji Group Report in the case of Oji	PDF

Holdings (Ticker code 3861)	
Others	Website, PDF

Notes: Report types indicate report formats in which most are published.
Source: Compiled based on Nikkei Value Search's data.

For CSR data, there were 3 items in Table 3-10 which were quantifiable. Growth rates were calculated for these 3 in this analysis. Even when CSR disclosure indicator is "Yes", there are possibilities that the 3 elements below were not disclosed.

Table 12: Quantifiable CSR Items

Items for Analysis	Units
Employment rate for the physically challenged	%
Annual paid leave acquisition rate	%
Rate of females in managerial positions	%

Source: Compiled based on Nikkei Value Search's data.

Analysis was conducted to see if CSR data was disclosed during the period 2011-2019. To be able to compare among the companies under analysis, those that underwent fiscal year changes were excluded from analysis.

4. Results and Conclusions

4.1 Assumptions

Taken as a sample representing the population, 925 companies used in this analysis (in 6 industries) comprise one-fourths of the total 3,708 listed companies in Japan. As explained previously, out of these companies, there were 823 which have been listed on a stock exchange for more than 10 years and for which share prices were available on a consistent basis from February 2011. Excluding those that underwent fiscal year changes and those that were de-listed by April or May 2020 when this analysis was made, the analysis was made using the remaining 790 companies.

In this chapter, below are the explanations and formulas for the abbreviations of financial and non-financial items.

Table 13: Financial and Non-financials Abbreviations and Formulas

Abbreviations	Explanations/Formulas
Price	12-month moving average spread between individual share prices and Nikkei 225
RevYoY	Sales growth YoY
OP%	Operating profit margin (=Operating profit/Sales)
NP%	Net profit margin (=Net profit/Sales)
ROE	Return on equity (=Net profit/Shareholders' equity)
ROA	Return on asset (=Net profit/Total assets)
SE%	Equity ratio (=Equity/Total assets)
D/E	Debt ratio (=Total debts/Total equity)
CR	Current ratio (=Current assets/Current liabilities)
IC	Interest coverage (=[Operating profit + interest income + Discounts + Interest on investment securities]/[Interest payments + Discounts])
Pay	Payout ratio (=Dividend/Net income)
Phy	Employment rate of physically challenged
Leave	Annual rate of taking annual paid leave
Fem	Rate of women in managerial posts

Source: Compiled based on Nikkei Value Search database.

4.2 Analysis result 1: Holistic Correlation between financials and CSR

First of all, correlation between financial results and CSR data (rate of the physically challenged, rate of taking annual leave, and rate of women in managerial posts) in fiscal 2011-19 was observed for the 790 companies. There may be a time lag between CSR data disclosure and when it was reflected in the financial results. Taking this into consideration, the correlation was assessed by taking no lag as well as 1-3 years' lag data. Below are the results of the analysis. In each of the tables, correlations greater than +0.2 or below -0.2 are shaded.

Table 14: Correlation between financial and no time lagged non-financials among 790 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.17	1.00												
OP%	0.05	0.00	1.00											
NP%	0.05	0.00	0.99	1.00										
ROE	0.23	0.06	0.29	0.31	1.00									
ROA	0.26	0.08	0.54	0.53	0.64	1.00								
SE%	0.02	0.01	-0.06	-0.05	0.04	0.15	1.00							
D/E	-0.04	-0.02	-0.00	-0.00	-0.23	-0.05	-0.11	1.00						
CR	0.02	0.09	-0.41	-0.41	-0.11	-0.18	0.40	-0.03	1.00					
IC	0.07	0.05	0.13	0.09	0.06	0.21	0.21	-0.01	0.18	1.00				
Pay	-0.06	-0.05	-0.10	-0.12	-0.16	-0.13	0.02	-0.01	0.01	-0.01	1.00			
Phy	-0.01	-0.01	0.00	0.00	0.02	0.01	-0.07	0.03	-0.12	-0.01	-0.01	1.00		
Leave	-0.07	-0.04	0.07	0.02	0.01	0.09	-0.04	0.00	-0.08	-0.00	0.03	0.45	1.00	
Fem	0.04	-0.08	-0.03	-0.00	-0.03	0.00	0.23	-0.14	0.14	0.18	0.15	0.17	0.10	1.00

Table 15: Correlation between financial and one year-lagged non-financials among 790 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.17	1.00												
OP%	0.05	0.00	1.00											
NP%	0.05	0.00	0.99	1.00										
ROE	0.23	0.06	0.29	0.31	1.00									
ROA	0.26	0.08	0.54	0.53	0.64	1.00								
SE%	0.02	0.01	-0.06	-0.05	0.04	0.15	1.00							
D/E	-0.04	-0.02	-0.00	-0.00	-0.23	-0.05	-0.11	1.00						
CR	0.02	0.09	-0.41	-0.41	-0.11	-0.18	0.40	-0.03	1.00					
IC	0.07	0.05	0.13	0.09	0.06	0.21	0.21	-0.01	0.18	1.00				
Pay	-0.06	-0.05	-0.10	-0.12	-0.16	-0.13	0.02	-0.01	0.01	-0.01	1.00			
Phy	0.01	-0.01	0.03	0.03	0.05	0.08	-0.08	-0.00	-0.05	0.03	-0.01	1.00		
Leave	-0.00	-0.01	0.02	0.02	0.04	0.07	-0.07	0.00	-0.03	-0.02	-0.01	0.38	1.00	
Fem	0.00	-0.01	0.01	0.01	0.01	0.03	0.04	-0.00	-0.00	0.03	0.02	0.16	0.19	1.00

Table 16: Correlation between financial and two year-lagged non-financials among 790 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.20	1.00												
OP%	0.05	0.05	1.00											
NP%	0.05	0.04	0.99	1.00										
ROE	0.24	0.10	0.28	0.30	1.00									
ROA	0.28	0.16	0.54	0.53	0.63	1.00								
SE%	0.05	-0.01	-0.06	-0.06	0.05	0.15	1.00							
D/E	-0.05	-0.03	-0.00	-0.00	-0.24	-0.05	-0.11	1.00						
CR	0.02	0.03	-0.41	-0.41	-0.11	-0.18	0.39	-0.02	1.00					
IC	0.08	0.05	0.13	0.09	0.06	0.21	0.21	-0.01	0.18	1.00				
Pay	-0.08	-0.06	-0.10	-0.11	-0.16	-0.13	0.02	-0.02	0.00	-0.01	1.00			
Phy	0.02	-0.00	0.03	0.03	0.05	0.08	-0.08	-0.00	-0.05	0.03	-0.01	1.00		
Leave	0.01	-0.01	0.02	0.02	0.03	0.06	-0.07	0.00	-0.03	-0.02	-0.00	0.36	1.00	
Fem	0.01	-0.02	0.01	0.01	0.00	0.02	0.03	-0.00	-0.00	-0.01	0.02	0.14	0.17	1.00

Table 17: Correlation between financial and three year-lagged non-financials among 790 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.15	1.00												
OP%	0.07	0.05	1.00											
NP%	0.07	0.04	0.99	1.00										
ROE	0.24	0.07	0.27	0.29	1.00									
ROA	0.29	0.13	0.54	0.53	0.63	1.00								
SE%	0.03	-0.01	-0.06	-0.06	0.05	0.14	1.00							
D/E	-0.05	-0.03	-0.00	-0.00	-0.25	-0.05	-0.10	1.00						
CR	-0.04	0.05	-0.43	-0.42	-0.11	-0.18	0.40	-0.02	1.00					
IC	0.08	0.06	0.15	0.09	0.06	0.21	0.20	-0.01	0.17	1.00				
Pay	-0.07	-0.05	-0.10	-0.11	-0.16	-0.13	0.02	-0.02	0.00	-0.01	1.00			
Phy	0.02	-0.01	0.03	0.03	0.05	0.08	-0.08	-0.00	-0.05	0.03	-0.01	1.00		
Leave	0.00	-0.01	0.02	0.02	0.03	0.05	-0.06	0.00	-0.03	-0.02	-0.00	0.35	1.00	
Fem	0.01	-0.01	0.01	0.01	0.01	0.01	0.03	-0.00	-0.00	-0.00	0.02	0.13	0.15	1.00

Source: Compiled based on Nikkei Value Search database.

In neither of these cases, was there a crucial correlation found between financial and non-financial indicators. The correlations observed were all within financial elements, and there was virtually no relationship between financial and non-financial results in no lag or 1-3 years' lag data. A One-way ANOVA analysis was also made using share prices as dependent variables and CSR (namely, employment rate of the physically challenged, rate of taking annual leave, and rate of women in managerial posts) as explanatory variables, but there was no helpful conclusion made as to their impact on log returns of individual stocks' performances.

4.3 Analysis result 2: Correlation between financials and CSR <among CSR-disclosing companies>

The reason there was no correlation between the two in the previous section may be the minimal effect of CSR on share prices. Based on this hypothesis, the next analysis was limited to 150 companies which consistently disclosed CSR data during the fiscal 2011-19 period. Below are the results of this analysis. Similar to previous analysis, the time-lagging impact of CSR performance on financial performance was taken into consideration. Correlations higher than +0.2 and lower than -0.2 are shaded.

Table 18: Correlation between financial and no time lagged non-financials among 150 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.23	1.00												
OP%	0.40	0.24	1.00											
NP%	0.25	0.11	0.51	1.00										
ROE	0.21	0.10	0.34	0.70	1.00									
ROA	0.34	0.27	0.71	0.34	0.43	1.00								
SE%	0.08	-0.06	0.16	0.24	0.20	0.19	1.00							
D/E	-0.09	-0.02	-0.08	-0.11	-0.37	-0.08	-0.21	1.00						
CR	-0.04	-0.10	0.03	0.08	0.03	0.05	0.45	-0.06	1.00					
IC	0.02	0.03	0.08	0.05	0.00	-0.01	0.04	-0.00	0.05	1.00				
Pay	0.02	-0.04	-0.08	-0.01	-0.01	-0.05	0.05	-0.00	0.04	-0.02	1.00			
Phy	0.03	0.06	-0.01	-0.00	0.03	0.00	-0.04	-0.09	0.01	-0.04	0.07	1.00		
Leave	0.05	-0.01	-0.06	0.01	0.03	-0.04	-0.02	-0.13	-0.01	-0.01	0.02	0.18	1.00	
Fem	0.03	0.02	-0.02	0.01	0.04	0.01	-0.01	-0.08	0.01	-0.03	0.06	0.16	0.21	1.00

Table 19: Correlation between financial and one year-lagged non-financials among 150 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.25	1.00												
OP%	0.45	0.24	1.00											
NP%	0.27	0.13	0.51	1.00										
ROE	0.22	0.12	0.33	0.69	1.00									
ROA	0.37	0.26	0.68	0.33	0.42	1.00								
SE%	0.09	-0.06	0.16	0.22	0.19	0.19	1.00							
D/E	-0.11	-0.03	-0.08	-0.11	-0.37	-0.08	-0.21	1.00						
CR	-0.04	-0.12	0.03	0.05	0.02	0.05	0.44	-0.06	1.00					
IC	0.02	0.03	0.08	0.05	0.00	-0.02	0.03	-0.00	0.05	1.00				
Pay	0.03	-0.01	-0.04	-0.02	-0.01	-0.01	0.02	0.00	-0.01	-0.02	1.00			
Phy	-0.03	-0.05	0.01	-0.00	-0.02	-0.00	0.04	0.00	0.02	-0.02	-0.07	1.00		
Leave	-0.01	0.01	0.04	-0.01	-0.00	0.03	0.01	-0.00	0.00	0.01	-0.00	0.17	1.00	
Fem	-0.03	-0.01	0.02	-0.02	-0.02	0.00	-0.01	0.01	0.00	-0.03	-0.01	0.13	0.17	1.00

Table 20: Correlation between financial and two year-lagged non-financials among 150 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.22	1.00												
OP%	0.45	0.20	1.00											
NP%	0.26	0.10	0.51	1.00										
ROE	0.22	0.09	0.30	0.69	1.00									
ROA	0.37	0.22	0.66	0.32	0.41	1.00								
SE%	0.09	-0.10	0.15	0.23	0.18	0.16	1.00							
D/E	-0.11	-0.02	-0.08	-0.11	-0.37	-0.08	-0.23	1.00						
CR	-0.05	-0.16	0.02	0.04	0.00	0.03	0.41	-0.07	1.00					
IC	0.02	0.03	0.12	0.06	0.01	0.01	0.04	-0.00	0.03	1.00				
Pay	-0.02	-0.03	-0.07	-0.01	-0.02	-0.04	0.02	-0.00	-0.00	-0.03	1.00			
Phy	-0.02	0.03	0.04	0.05	0.07	0.01	0.03	-0.09	0.01	0.05	-0.05	1.00		
Leave	0.02	0.01	0.03	0.01	-0.00	0.01	0.00	0.00	0.02	0.03	-0.01	0.17	1.00	
Fem	0.00	-0.01	-0.04	-0.04	-0.04	-0.03	-0.08	0.03	-0.02	-0.01	-0.00	0.19	0.22	1.00

Table 21: Correlation between financial and three year-lagged non-financials among 150 companies in 6 industries

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.23	1.00												
OP%	0.45	0.17	1.00											
NP%	0.29	0.08	0.49	1.00										
ROE	0.23	0.08	0.26	0.69	1.00									
ROA	0.37	0.22	0.66	0.31	0.38	1.00								
SE%	0.12	-0.15	0.19	0.28	0.20	0.14	1.00							
D/E	-0.12	-0.02	-0.08	-0.11	-0.40	-0.08	-0.27	1.00						
CR	-0.05	-0.18	0.03	0.04	-0.02	-0.02	0.33	-0.08	1.00					
IC	0.01	0.03	0.12	0.06	0.01	0.03	0.05	-0.00	0.04	1.00				
Pay	-0.00	0.01	-0.11	-0.12	-0.04	-0.06	0.00	-0.00	-0.04	-0.04	1.00			
Phy	0.02	0.05	-0.02	-0.01	-0.06	0.00	0.04	0.05	0.03	0.02	0.02	1.00		
Leave	-0.06	0.06	-0.03	-0.00	0.00	-0.00	0.01	-0.00	0.03	-0.00	0.02	0.16	1.00	
Fem	0.04	0.01	0.02	0.07	0.06	0.02	-0.02	0.01	-0.04	0.04	-0.01	0.23	0.22	1.00

Source: Compiled based on Nikkei Value Search database.

In this section of analysis, each of the results showed no meaningful correlation between financial and non-financial results, even with the time-lagging consideration. The only difference from the previous analysis was the correction among non-financial data. For example, for the three-year lag data, rate of women in managerial posts had a correlation of +0.23 and +0.22 with employment rate of physically challenged and annual rate of taking annual paid leave, respectively. In other words, companies which are said to be disclosing their CSR data tend to disclose, not just a few items, but multiple factors.

Analysis was then made for each of the 6 industries in a similar manner, but with no meaningful correction. These were all taken with up to three years' time lag, so the conclusion can be made with time factors taken into account. Thus, the conclusion is that changes in financial results are not susceptible to the types of non-financial data disclosed in the prior years.

4.4 Analysis result 3: Correlation between financials and CSR <by sales size>

Next, the size of the most recent 12-month sales data shown in Chapter 3 was divided into 4 sub-groups: Less than 100 billion yen (A), 100 billion to less than 1 trillion yen (B), 1 to less than 2 trillion yen (C), and more than 2 trillion yen (D). The relationship between financial and non-financial data was analyzed for each of these 4 categories in the 6 industries. Below shows the result of this analysis (using the 3-year lag data).

Table 22: Correlation between financials and three-year lagged non-financials — Group A (Less than 100 billion-yen annual sales) — 517 Companies

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.15	1.00												
OP%	0.01	0.26	1.00											
NP%	0.01	0.25	0.96	1.00										
ROE	0.09	0.14	0.13	0.19	1.00									
ROA	0.21	0.43	0.32	0.30	0.43	1.00								
SE%	0.10	-0.06	0.14	0.19	0.15	0.23	1.00							
D/E	-0.05	-0.04	-0.00	-0.00	-0.10	0.01	-0.13	1.00						
CR	0.01	0.01	0.43	0.50	0.09	0.14	0.24	-0.01	1.00					
IC	0.09	0.13	0.02	0.01	0.04	0.14	-0.02	-0.00	-0.02	1.00				
Pay	-0.02	-0.01	-0.00	-0.00	-0.01	-0.02	0.01	-0.00	0.00	0.00	1.00			
Phy	0.01	-0.00	-0.00	0.00	0.01	-0.01	0.00	-0.00	-0.00	0.03	0.01	1.00		
Leave	-0.01	-0.01	-0.00	-0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.01	0.08	1.00	
Fem	0.00	-0.01	-0.00	-0.00	-0.00	-0.01	0.00	0.00	0.00	-0.00	0.01	-0.00	0.00	1.00

Table 23: Correlation between financials and three-year lagged non-financials — Group B (100 billion to less than 1 trillion-yen annual sales) — 192 companies

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	-0.01	1.00												
OP%	-0.02	0.14	1.00											
NP%	-0.01	0.14	0.07	1.00										
ROE	0.27	-0.01	-0.06	-0.01	1.00									
ROA	0.35	-0.01	-0.05	-0.00	0.25	1.00								
SE%	0.27	-0.02	0.04	0.02	0.14	0.68	1.00							
D/E	0.18	-0.05	0.04	0.02	0.14	0.70	0.83	1.00						
CR	0.38	-0.01	-0.05	0.01	0.32	0.96	0.65	0.68	1.00					
IC	0.10	0.03	0.07	-0.02	-0.12	0.42	0.46	0.50	0.40	1.00				
Pay	-0.11	0.06	-0.02	0.01	-0.00	-0.06	-0.11	-0.23	-0.09	-0.25	1.00			
Phy	-0.05	0.11	0.03	-0.04	-0.12	0.04	0.12	0.09	0.03	0.29	-0.07	1.00		
Leave	0.04	-0.02	-0.00	0.01	0.03	0.04	0.04	0.03	0.05	0.04	-0.00	0.01	1.00	
Fem	-0.04	0.02	-0.03	-0.02	-0.02	-0.05	-0.06	-0.00	-0.05	-0.01	-0.00	-0.02	-0.02	1.00

Table 24: Correlation between financials and three-year lagged non-financials — Group C (1 to less than 2 trillion-yen annual sales) — 14 companies

|	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.07	1.00												
OP%	0.58	-0.05	1.00											
NP%	0.46	-0.07	0.81	1.00										
ROE	0.45	-0.04	0.72	0.88	1.00									
ROA	0.66	0.08	0.93	0.76	0.78	1.00								
SE%	0.27	-0.19	0.13	0.27	0.22	0.19	1.00							
D/E	-0.31	0.13	-0.17	-0.29	-0.27	-0.21	-0.85	1.00						
CR	-0.18	-0.22	-0.05	-0.09	0.02	-0.07	0.13	-0.09	1.00					
IC	0.06	0.10	0.22	0.25	0.16	0.19	-0.06	0.13	0.12	1.00				
Pay	-0.14	-0.00	-0.25	-0.44	-0.40	-0.28	-0.08	0.01	0.07	-0.11	1.00			
Phy	0.14	-0.06	0.06	0.04	0.02	0.07	0.10	-0.09	-0.03	0.42	0.11	1.00		
Leave	-0.02	0.01	-0.10	-0.18	-0.15	-0.05	-0.14	0.05	0.03	0.08	0.16	0.23	1.00	
Fem	0.06	-0.05	-0.05	0.00	0.08	-0.03	0.02	-0.05	0.10	0.04	0.12	0.08	0.14	1.00

Table 25: Correlation between financials and three-year lagged non-financials — Group D (more than 2 trillion-yen annual sales) — 13 companies

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.32	1.00												
OP%	0.64	0.23	1.00											
NP%	0.50	0.30	0.74	1.00										
ROE	0.49	0.20	0.80	0.95	1.00									
ROA	0.62	0.30	0.95	0.78	0.86	1.00								
SE%	0.06	0.18	0.07	0.11	0.06	0.14	1.00							
D/E	-0.14	-0.27	-0.17	-0.14	-0.15	-0.24	-0.86	1.00						
CR	0.03	0.18	0.03	0.09	0.06	0.02	0.44	-0.36	1.00					
IC	0.30	0.15	0.53	0.44	0.41	0.54	0.20	-0.18	-0.14	1.00				
Pay	0.20	0.20	0.15	0.28	0.34	0.30	-0.01	-0.01	-0.17	0.20	1.00			
Phy	0.05	-0.14	0.13	0.10	0.13	0.13	-0.11	0.15	-0.17	-0.14	1.00			
Leave	-0.03	-0.04	0.02	0.09	0.07	-0.01	-0.13	0.14	0.06	0.06	-0.18	0.15	1.00	
Fem	0.04	-0.05	0.05	0.14	0.13	0.05	-0.11	0.18	-0.01	-0.10	0.01	0.03	0.04	1.00

Source: Compiled based on Nikkei Value Search database.

As the size of the companies becomes larger from Group A to Group D, the number of factors that have relationship higher than +0.2 or less than -0.2 increases. However, in either of the groups, no relationship was found between non-financials and financials, which were results found in previous findings. Almost all large-size companies such as those in Groups C and D had disclosed CSR data, so correlation was expected. However, meaningful correlation was again not found.

Figure 26: Distribution and quartile of annual paid leave acquisition rates by most recent fiscal year's sales (for Groups A to D) (1)
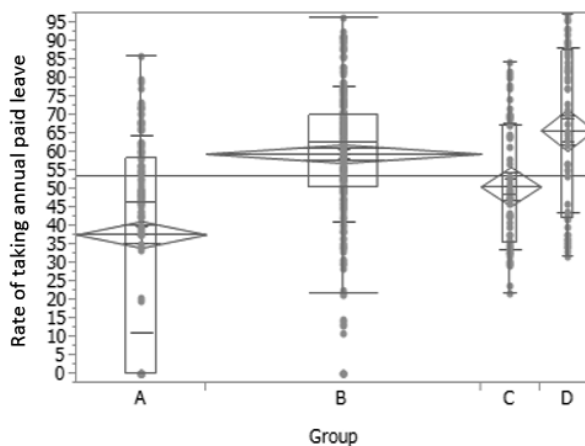
Table 27: Distribution and quartile of annual paid leave acquisition rates by most recent fiscal year's sales (for Groups A to D) (2)

Group	Minimum	10%	25%	Median	75%	90%	Maximum
A	0	0	0	46.4	58.2	68.42	85.7
B	0	36.6	50.6	62.4	70.1	80.8	96.3
C	21.5	30.64	35.5	48.2	67.35	76.56	84
D	31.7	35.2	42.075	68.65	87.675	93.2	97

Source: Compiled based on Nikkei Value Search database using SPSS software.

4.5 Analysis result 4: Correlation between financials and CSR <by industry type>

Next, the correlation among the elements for particular industries was investigated. For prior analysis, all the companies in the 6 industries (Foods, Energy, Construction materials, materials/chemical, Pharmaceuticals, and Automobiles/transports) were altogether used in the same analysis. Each of these 6 industries were individually investigated to see if there is any correlation between financials and non-financials.

Table 28: Correlation between financial and three-year lagged non-financials – Foods (133 companies)

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.12	1.00												
OP%	0.17	0.26	1.00											
NP%	0.09	0.11	0.51	1.00										
ROE	0.10	0.05	0.45	0.79	1.00									
ROA	0.16	0.33	0.77	0.43	0.62	1.00								
SE%	0.09	-0.09	-0.04	0.10	0.22	0.05	1.00							
D/E	-0.09	0.28	0.04	0.03	-0.22	-0.02	-0.75	1.00						
CR	0.02	-0.14	-0.06	0.08	0.04	0.01	0.36	-0.17	1.00					
IC	0.08	0.01	0.15	-0.02	-0.04	-0.06	-0.01	0.00	-0.03	1.00				
Pay	0.07	0.01	0.04	-0.04	-0.06	0.04	0.01	0.01	-0.00	0.00	1.00			
Phy	0.02	-0.01	-0.01	0.00	-0.00	-0.01	0.10	-0.06	0.05	0.02	0.01	1.00		
Leave	-0.03	-0.00	-0.01	0.01	0.01	-0.00	0.07	-0.04	0.01	-0.00	-0.00	0.12	1.00	
Fem	-0.01	-0.02	0.00	0.01	0.00	0.00	0.06	-0.03	0.02	-0.00	0.00	0.23	0.24	1.00

Table 29: Correlation between financial and three-year lagged non-financials – Energy (17 companies)

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.28	1.00												
OP%	0.23	0.07	1.00											
NP%	0.12	0.04	0.16	1.00										
ROE	0.10	-0.04	0.35	0.76	1.00									
ROA	0.28	0.06	0.71	0.32	0.56	1.00								
SE%	-0.01	-0.02	0.02	0.36	0.30	-0.07	1.00							
D/E	-0.03	0.00	-0.20	-0.35	-0.38	-0.16	-0.67	1.00						
CR	-0.13	-0.10	-0.23	-0.04	0.02	-0.32	0.41	-0.21	1.00					
IC	0.01	0.20	0.15	0.03	0.06	0.20	-0.28	0.03	-0.15	1.00				
Pay	0.10	-0.01	-0.24	-0.10	-0.04	-0.13	0.02	-0.01	0.32	-0.04	1.00			
Phy	-0.12	-0.22	-0.14	-0.15	0.04	-0.02	-0.12	0.14	0.41	-0.03	0.23	1.00		
Leave	-0.20	-0.11	-0.14	0.03	0.00	-0.06	-0.07	0.06	-0.21	-0.02	-0.26	-0.08	1.00	
Fem	-0.20	-0.06	-0.15	0.08	0.02	-0.06	-0.06	0.07	-0.17	-0.02	-0.25	-0.06	0.98	1.00

Table 30: Correlation between financial and three-year lagged non-financials — Construction (309 companies)

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.16	1.00												
OP%	0.16	0.58	1.00											
NP%	0.12	0.36	0.74	1.00										
ROE	0.07	0.06	0.31	0.33	1.00									
ROA	0.30	0.38	0.69	0.49	0.47	1.00								
SE%	0.11	-0.14	0.13	0.30	0.16	0.25	1.00							
D/E	-0.07	-0.06	0.01	0.00	-0.11	0.02	-0.17	1.00						
CR	-0.01	-0.24	-0.24	-0.11	0.05	-0.06	0.36	-0.02	1.00					
IC	0.08	0.13	0.16	0.06	0.05	0.22	-0.03	-0.00	-0.10	1.00				
Pay	0.02	-0.03	-0.04	-0.03	-0.02	-0.06	0.00	-0.00	-0.00	-0.00	1.00			
Phy	0.00	-0.01	-0.00	-0.01	-0.00	-0.01	0.01	-0.00	0.00	0.00	0.01	1.00		
Leave	-0.04	-0.04	-0.04	-0.03	-0.02	-0.07	0.02	-0.00	0.01	0.01	0.04	0.12	1.00	
Fem	-0.00	0.00	0.00	0.01	0.00	0.00	-0.01	0.00	-0.00	0.03	-0.00	0.04	0.12	1.00

Table 31: Correlation between financial and three-year lagged non-financials — Materials & Chemicals (288 companies)

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.33	1.00												
OP%	0.43	0.32	1.00											
NP%	0.20	0.07	0.20	1.00										
ROE	0.16	0.07	0.16	0.56	1.00									
ROA	0.42	0.32	0.83	0.18	0.22	1.00								
SE%	0.10	-0.17	0.03	0.23	0.20	0.04	1.00							
D/E	-0.08	0.01	-0.04	-0.06	0.24	-0.06	-0.21	1.00						
CR	-0.01	-0.18	-0.08	0.02	0.07	-0.04	0.36	-0.07	1.00					
IC	0.06	0.06	0.05	0.02	0.01	0.05	0.03	-0.00	0.04	1.00				
Pay	-0.06	-0.03	-0.12	-0.01	-0.00	-0.11	0.05	-0.01	0.02	-0.02	1.00			
Phy	0.02	0.04	0.02	0.00	-0.03	0.02	-0.01	-0.02	0.02	-0.00	0.04	1.00		
Leave	0.02	-0.02	-0.00	0.03	0.05	-0.01	0.04	-0.02	0.03	-0.00	0.01	0.23	1.00	
Fem	0.00	-0.03	-0.02	-0.00	-0.00	-0.03	-0.02	0.00	0.00	-0.00	0.02	0.02	-0.00	1.00

Table 32: Correlation between financial and three-year lagged non-financials — Pharma (67 companies)

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.08	1.00												
OP%	-0.03	0.45	1.00											
NP%	-0.04	0.44	0.96	1.00										
ROE	0.17	0.57	0.36	0.42	1.00									
ROA	0.18	0.61	0.38	0.37	0.93	1.00								
SE%	0.12	0.33	0.37	0.45	0.71	0.57	1.00							
D/E	-0.08	-0.25	-0.26	-0.32	-0.72	-0.56	-0.93	1.00						
CR	0.01	0.14	0.46	0.54	0.27	0.22	0.40	-0.19	1.00					
IC	0.12	0.06	0.02	0.03	0.11	0.09	0.13	-0.12	0.02	1.00				
Pay	-0.06	-0.01	-0.00	-0.00	-0.01	-0.01	-0.01	0.02	0.00	-0.00	1.00			
Phy	-0.02	0.00	-0.00	0.00	0.01	-0.00	-0.01	0.02	0.00	-0.07	-0.00	1.00		
Leave	-0.04	-0.00	0.00	0.00	0.00	0.01	-0.01	0.01	0.01	0.01	-0.00	0.02	1.00	
Fem	0.05	-0.02	0.01	0.00	-0.01	-0.01	0.01	-0.01	0.02	0.00	-0.00	-0.08	0.10	1.00

Table 33: Correlation between financial and non-financial performances for three year-lagged data – Transportation (111 companies)

	Price	RevYoY	OP%	NP%	ROE	ROA	SE%	D/E	CR	IC	Pay	Phy	Leave	Fem
Price	1.00													
RevYoY	0.18	1.00												
OP%	0.18	0.39	1.00											
NP%	0.14	0.34	0.80	1.00										
ROE	0.23	0.22	0.59	0.79	1.00									
ROA	0.23	0.36	0.91	0.74	0.67	1.00								
SE%	0.11	-0.10	0.29	0.37	0.38	0.32	1.00							
D/E	-0.14	-0.04	-0.08	-0.12	-0.52	-0.11	-0.27	1.00						
CR	0.15	-0.09	0.08	-0.17	-0.11	0.04	0.19	-0.02	1.00					
IC	0.05	0.07	0.19	0.08	0.09	0.19	0.09	-0.01	0.04	1.00				
Pay	-0.06	-0.03	0.00	0.00	0.04	-0.00	0.07	-0.01	0.05	0.28	1.00			
Phy	-0.01	-0.02	-0.01	-0.02	-0.09	-0.01	0.02	0.20	-0.01	-0.01	-0.06	1.00		
Leave	-0.01	0.00	-0.02	-0.02	-0.03	-0.02	-0.03	0.00	-0.00	-0.04	-0.05	0.05	1.00	
Fem	-0.01	0.02	0.01	0.04	0.07	0.02	-0.00	0.01	-0.01	0.01	-0.00	0.18	0.01	1.00

Source: Compiled based on Nikkei Value Search database.

As a result, it was found that only for the energy industry, was there a correlation between financial and non-financial performances. For example, Table 4-4-2 shows that the correlation between employment rate of the physically challenged and payout ratio was +0.23, implying that as the rate of employment rate for the physically challenged increases, dividend payout ratio (3 years after the CSR data became available) also tends to increase. However, it needs to be noted that such a relatively high correlation may have been achieved due to the small number of samples within the industries (i.e., 17 companies). At any rate, there was no common trend that was found among the 6 industries under investigation.

In any industry, no strong correlation was found among financial and non-financial performances, but this is not to say that CSR disclosure rates were similar from industry to industry. Taking rate of taking annual leave as an example, there are a wide range of rates among these industries (Table 4-6). For the rates of taking annual leave, the median for construction and pharma industries was lower than 50%, but the rates in automobile and transportation were close to 80%.

Figure 34: Distribution and quartile of rate of annual paid leave acquisition rates by industry type (1)
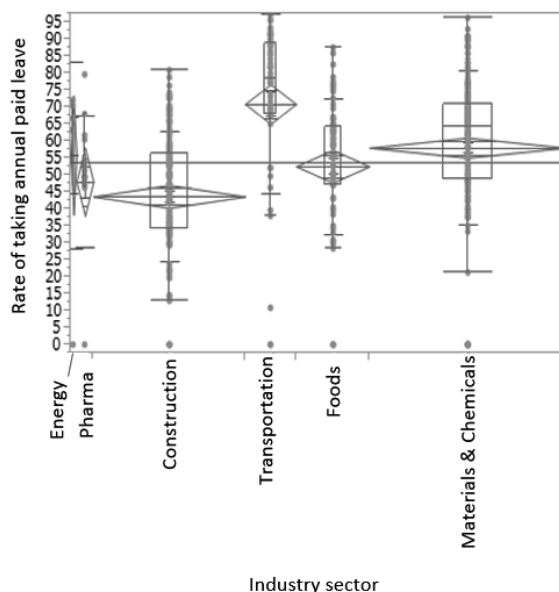
Table 35: Distribution and quartile of annual paid leave acquisition rates by most recent fiscal year's sales (for Groups A to D) (2)

Industry	Minimum	10%	25%	Median	75%	90%	Maximum
Energy	0	0	47.25	64.85	70.875	72	72
Pharma	0	0	46.85	49.4	55.725	69.23	79.4
Construction	0	14.16	34.2	46	56.4	67.76	80.8
Transportation	0	24.4	68.075	78.5	88.775	93	97
Foods	0	29.49	47	56.4	64.125	75.58	87.7
Materials & Chemicals	0	32.28	48.925	64.2	70.7	81.74	96.3

Source: Compiled based on Nikkei Value Search database using SPSS software.

From this analysis, the correlation between financial and non-financial performances cannot be observed distinctively, even if only those disclosing CSR data for +9 consecutive years are used as samples, or even if 1 to 3 years' time lag is taken into account, or even if the analysis was made within the same industry. Other methods of analysis such as regression analysis and one-way ANOVA analysis showed no meaningful results either.

4.6 Analysis result 5: Partition spread <Materials & Chemicals>

Taking materials and chemicals industry as an example, analysis was made on the variations of sales by CSR disclosure status. In Table 4-7, disclosure type 1 indicates those years in which CSR was disclosed, and 0 indicates no CSR disclosure.

Figure 36: Distribution and quartile of sales by disclosure type (1)
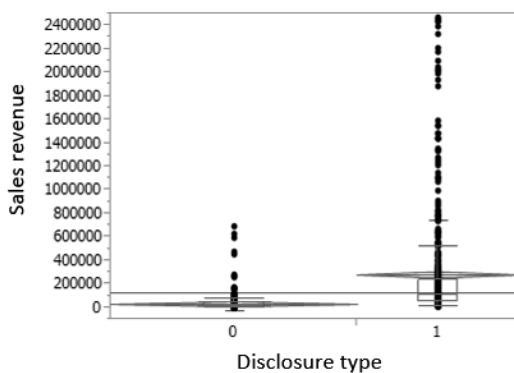
Table 37: Distribution and quartile of sales by disclosure type (2)

Disclosure Type	Minimum	10%	25%	Median	75%	90%	Maximum
0	413	5,438	10,052	19,671	36,277	54,140	695,574
1	6,552	33,448	50,701	109,048	240,132	771,333	2,463,387

Source: Compiled based on Nikkei Value Search database using SPSS software.

As the table shows, for companies with disclosure type of 1, the median of sales in years when CSR was disclosed was 109,048 million yen, which is far greater than the median of sales for companies with disclosure type of 0, 19,671 million yen. In other words, companies which are making substantial sales have much higher tendency to disclose non-financial data. This is compared on an absolute sales yen basis, so the comparison was also made on sales growth basis.

Figure 38: Distribution and quartile of sales growth rates by disclosure type (1)

Table 39: Distribution and quartile of sales growth rates by disclosure type (2)

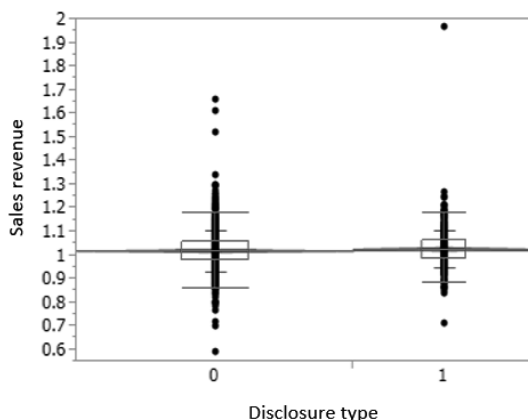| Disclosure Type	Minimum	10%	25%	Median	75%	90%	Maximum
0	0.593	0.932	0.979	1.015	1.060	1.111	1.663
1	0.716	0.957	0.986	1.020	1.063	1.109	1.968

Source: Compiled based on Nikkei Value Search database using SPSS software.

This table indicates that the median for disclosure type = 1 does not show much difference from that for disclosure type = 0. Put it another way, the correlation between sales growth rates and the CSR disclosure type is low. Together with Table 4-7 which showed sales numbers trends, it can thus be said that the bigger the size of sales, the more companies tend to disclose CSR data. However, this variance is virtually wiped out when changed to rates of growth, so non-financial data disclosures are not contributing to positive financial performances. The same trend was observed in the relationship between operating profit and operating profit margin growth, as well as the relationship between net profit and net profit margin growth.

4.7 Analysis result 6: Share price partition spread <Materials & Chemicals>

How, then, about the dependence of share prices return? Using the partition spread data, analysis was made to see items that may depend on share price performance spreads (the variances between log returns of individual stocks and sector indices). In order to simply the process, the analysis was made using the same single materials & chemicals sector.

Figure 40: Materials & chemicals sector – Partition spread analysis of share price spread
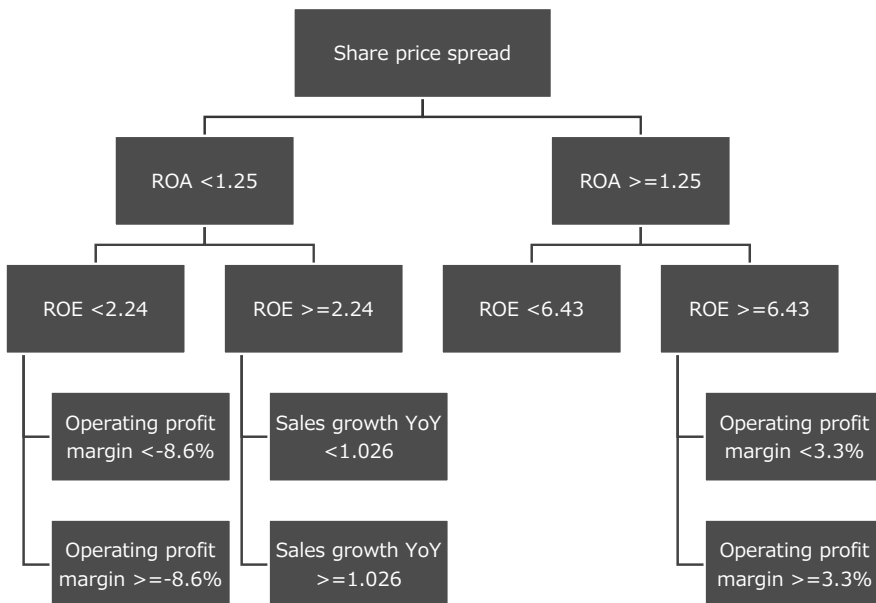
4.8 Analysis result 7: Partition spread <Rate of women in managerial posts>

Next, a similar partition analysis was conducted for rate of women in managerial posts to see elements that the rate is dependent on. The analysis was conducted again with materials & chemicals sector. Within this sector, there were a certain degree of contributions made to the rates among such data elements as dividend payout ratios and sales, both after being led by interest coverage ratios. Although profit-related items were absent, rate of women in managerial posts do make certain contributions to sales figures, and it is also affected by other data items such as dividend payouts. However, this trend was not apparent in other sectors, so this needs to be noted as something specific to the sector.

Figure 41: Materials & chemicals sector – Partition spread analysis on rate of women in managerial posts
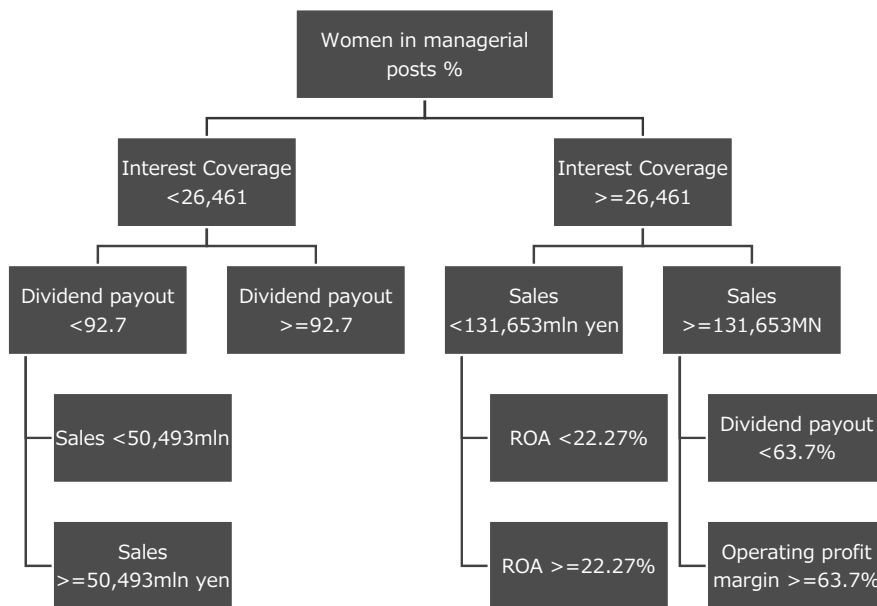
5. Discussions on Research Findings and Conclusions

This paper focused on the validity of the hypothesis, "companies reap higher profitability increases through active CSR". Below are the findings of the research conducted. To test the hypothesis, it analyzed 925 companies, approximately a quarter of 3,329 companies listed on Japanese stock market, using their 2011-19 data on Nikkei Value Search.

The results of the research have shown that (1) companies overall do not have explicit correlations between financial and non-financial performances, (2) companies which have disclosed CSR consistently during 2011-19 do not have correlation between the two, (3) companies which have disclosed consistently during 2011-19 and produce sales larger than 1 trillion yen still do not have correlation between the two, but the correlation among the non-financial indicators increases, and (4) classifications of the companies by sector indicate that the energy sector contains the highest correlations between some of the financial and non-financial performances, although it may be due to the smaller sample size. Further analysis within the chemicals sector has shown that (5) corporations with higher sales and operating profit have a higher tendency to disclose CSR, and (6) share price variances are being impacted mostly by ROA and ROE using partition analysis. Finally, similar partition analysis within the chemicals sector has indicated that (7) the rate of women in managerial posts is affected by interest coverage, dividend payouts and sales revenues, albeit not enough to cause correlation between financial and non-financial performances.

In a nutshell, weak correlations were observed when the number of samples were limited or when the samples were selected within a few industries which contained a small number of companies. However, when taking all samples as a whole, the results did not prove to contain a positive relationship. Despite the consideration of multiple elements such as sectors, CSR disclosure years, and most recent sales figures, within the extracted sample data it was not possible to observe a strong correlation between financial and non-financial performances. A similar result was achieved even when a one to three-years' time lag was taken into consideration. A weak correlation was observed within the energy sector, but it could most likely be the result of the small sample size within the data set. Even if it is the result of some strong trend in the sector, this was not confirmed in this research. Regrettably, non-financial data such as CSR did not contribute to corporate growth at least from this research. This proves that verifications of non-financial performances are still at an early stage in the history of Japanese capitalism, let alone under development. This area requires much improvement for future research.

From the partition spread research, the rate of women in managerial posts may seem to have some degree of relationship with interest coverage and dividend payout ratios. Companies that disclose CSR tend to report a wide range of CSR elements, so each of these elements needs closer scrutiny to see the level of impact on financial statements going forward.

Many limitations existed. The number of companies in each of the samples may not have been sufficient in reaching conclusions regarding the hypothesis, and larger data sets may have been necessary to see a viable relationship. Only 43%, or less than a half, of these companies had CSR data available, which may not have been enough to reach valid conclusions as to the effect of CSR data on corporate values in financial terms. In addition, Nikkei Value Search database provided only 10 years of CSR data, but there

may have been a need to select a time frame longer than a decade. During the process of analysis, many companies were de-listed, and others were only recently listed so did not have 10 years of stock prices available; some others underwent fiscal year changes, so all these companies had to be removed from the sample set for analysis reasons, which reduced sample size.

The inconsistency found in the analysis result may also be ascribed to lack of comprehensive CSR activity reporting system. The way of reporting CSR is still not standardized in Japan. Thus, there is no set standard as to the level of disclosure and what amounts to such disclosure. For example, the rate of women in managerial posts was one of the CSR elements incorporated in this research, but the definition of 'managerial posts' is not made explicit. Such definitions should be made clearer, and there has to be a better consensus as to the reporting system. Such shortcomings may have added to the inconsistency found in the analyzed data.

Furthermore, as the most important source of limitation, there were only 3 elements of quantifiable CSR data, i.e., employment rate of the physically challenged, rate of taking annual paid leave, and rate of women in managerial posts. Other CSR data were mostly Yes/No type of data, such as availability of flexible working hours and placements of nurseries, which were difficult to quantify thus not included in this research. These limitations need to be addressed in conducting future research. The implications were that CSR's positive impact is available only by accumulating vast amount of data, and it is not certain as to the level of this 'vastness' required to prove the impact CSR has on financial performances.

The fact that this research found no relationship between financials and non-financials may be the result of this major Japanese companies' failure to put CSR in the position where it should be. Since the start of the 21st Century, there have been events one after another which seemed to have resulted from the lack of proper CSR being in place. Just since the start of 2000, we have observed investment fund manager Yoshiaki Murakami's arrest for alleged insider trading, the largest nursing care provider Comsn's fraudulent applications for nursing care compensation, Nikko Cordial Group's 18 billion fictitious profits creation, Fujiya's product quality management issue with the use of expired ingredients, and many others. Business scandals exist in companies of a variety of sizes, and if some solutions can be suggested through the relationship between financial and non-financial performances, this would make a tremendous contribution to current society, adding good grounds for supporting the hypothesis of this research. Matsuno commented that the persistent occurrence of these scandals stems from the fact that many companies position CSR as a mere marketing tool or PR effort in order to avoid social criticism against corporate scandals, simply handling them passively instead of handling them as core issues of corporate management, i.e., corporate sociability [22].

In addition, as of now, September 2020, the environment surrounding Japanese and global economy is undergoing a drastic change due to the spread of new virus, COVID-19, and it has created a need for greater attention to be paid to CSR. In other words, recent pandemic is creating increasingly unique opportunities for companies to recognize the importance of non-financial disclosure, serving as the impetus that triggers changes to the level of CSR data disclosed by the companies. CSR will prove to be even more essential than ever before due to the outbreak of this pandemic. Japan has announced the nation-wide release from mobility lockdown in 18th of June, but since then, the number of coronavirus-infected people has still not subsided. There is a

concern that Japan is already undergoing the second or third wave of infection, not allowing optimism. Many companies, small- and mid-size companies in particular, are simply striving to just survive with the money at hand, and corporate sustainability, the clincher of CSR, is no longer on their priority list. Their going concern is at stake, and some may say it is a natural trend to forsake environmental and social sustainability to a certain degree.

However, at the same time, such an environment has provided management with the opportunity to re-think about the importance of sustainable management. Without a long-term view on management, no matter how excellent financial performances are, corporate survival may all at once be put in peril in the midst of unprecedented events like COVID-19. Significant differences will most likely exist between the performance of companies which go back to their old habits once this pandemic subsides and those which realize that now is the time to embrace CSR in a more realistic way. In that sense, coronavirus may play the role of a touchstone to measure the level of their commitment on ESG contribution. Ted Eliopoulos, Co-Chair of the Sustainable Investing Council of US Morgan Stanley Investment Management, articulated that he has dialogues with many clients, but there is currently an increasing trend to incorporate ESG in their investment going forward with the coronavirus crisis. Thus, there is a high expectation for ESG to receive increasing attention [23].

COVID-19 infected people show light symptoms in most cases, so this may not pose a serious threat to many. However, according to the statistics provided by World Health Organization, the fatality rate of COVID-19 is 4% as of now, not a minute number to be shoved aside [24] considering 11 million total coronavirus cases worldwide (as of 4th of July). In order to successfully achieve long-term management by surviving these emergencies, companies need to appropriately handle a balance of needs among employees, shareholders and other stakeholders. This can be realized through promotion of flexible working style with employee health and safety under consideration, management system of overall supply chain that encompasses customers and suppliers, creation of contingency plans, and communication and relationship building among all the stakeholders within and outside the company. All of these indicate that CSR reporting needs to be taken more seriously in light of COVID-19. Germany has built a new medical care system under the various pandemic scenarios since 2012. As a result, it succeeded in minimizing the fatality rate from coronavirus within the country. If this is possible for a nation, the same can also be applied on a corporate level as well; long-term focus on management no doubt increases the chance of succeeding in maintaining survival [25].

Fleming & Jones [26] expressed concerns that "CSR is becoming a predatory corporate practice… in order to enhance their own interests". In other words, "rather than changing business practice, it provides a cloak of ethicality so that conditions remain unchanged." If CSR only serves the role of tool provision for maintaining the current capitalistic world, then it may now be the time to change the concept of CSR itself. Indeed, we have now come to an era to appreciate the value of corporate social responsibility in a real sense. Companies need to realize that better CSR has serious implications for the survival of the Japanese economy.

References

[1] O. Sheldon, "The Philosophy of Management," 1923. [オンライン]. Available: https://openlibrary.org/books/OL7045989M/The_philosophy_of_management.

[2] G. C. N. Japan, "Global Compact Network Japan," [オンライン]. Available: http://ungcjn.org/gcjn/state/index.html.

[3] United Nations Environment Programme - Finance Initiative (UNEF-FI), "United Nations Environment Programme - Finance Initiative (UNEF-FI)," [オンライン]. Available: https://unepfi.org/.

[4] I. D. Committee, "ISO/SR Domestic Committee," [オンライン]. Available: http://iso26000.jsa.or.jp.

[5] K. Kokubu, "『ＣＳＲの基礎—企業と社会の新しいあり方』("CSR Fundamentals - New Perspectives for Firms and Societies")," Chuo Keizai-sha, 2017.

[6] Commission of the European Communities, "Green Paper – Promoting a European framework for Corporate Social Responsibility" final.," 18.8.2001 COM (2001) 366. [オンライン]. Available: https://ec.europa.eu/transparency/regdoc/rep/1/2001/EN/1-2001-366-EN-F1-1.Pdf.

[7] D. Okamoto, "『社会的責任と CSR は違う！』("Social Responsbility is different from CSR!")," Chikura Shobo, 2018.

[8] M. R. K. Michael E. Porter, "The Competitive Advantage of Corporate Philanthropy," Diamond Harvard Business Review 28(3), 24-43, 2003-03., 2003.

[9] M. R. K. Michael E. Porter, "The Link Between Competitive Advantage and Corporate Social Responsibility," *Diamond Harvard Business Review* 33(1), 36-52, 2008-01, 2008.

[10] M. R. K. Michael E. Porter, "Creating Shared Value," *Diamond Harvard Business Review* 36(6), 8-31, 2011-06., 2011.

[11] T. Nawa, "『CSV 経営戦略—本業での高収益と、社会の課題を同時に解決する』("CSV Management Strategy - Finding Ways to Achieve High Profits and Find Solutions to Social Problems Simultaneously")," 東洋経済, 2015.

[12] Japan Exchange Group, "Corporate Governance Code," 2008. [オンライン]. Available: https://www.jpx.co.jp/english/news/1020/b5b4pj000000jvxr-att/20180602_en.pdf.

[13] Japan Exchange Group, "Practical Handbook for ESG Disclosure," 2020. [オンライン]. Available: https://www.jpx.co.jp/english/corporate/sustainability/esg-investment/handbook/b5b4pj000003dkeo-att/handbook.pdf.

[14] M. F. L. S. a. S. L. R. Orlitzky, "Corporate social and financial performance: a meta-

analysis," *Organizational Studies*, 24, 403-411, 2003..

[15] M. M. M. W. T. Suto, "『企業の社会的責任（CSR）活動とパフォーマンス—企業収益とリスク』 ("Corporate social responsibility and performance - Corporate profit and risk")," *Waseda University Institute of Finance Working Paper Series*, WIF-06-002 September 2006.

[16] S. S. M. O. N. Hibi, "Quantitiave analysis of the relationship between CSR activities and corporate financial performance," *Draft paper for 2017 Autumn Conference*, Aina Campus at Iwate Prefectural University, 2017.

[17] M. Oura, "The relationship of CSR and corporate financial performance: An empirical analysis of Japanese firms," *The Nonprofit Review*, 17(1), 49-62, 2017.

[18] M. Tonosaki, "The relationship between CSR (Croporate Social Responsibility) and financial performance," Journal of Innovation Management, No.11, pp.145-161, 2013.

[19] M. Araki, "CSR (Corporate Social Responsibility) and firm financial performance: focused on industrial divisions and CSR activities," *The bulletin of the Graduate School of Soka University*, 2009.

[20] K. Endo, "『CSR 経営が企業価値に及ぼす効果』 ("The Effect of CSR Management on Corporate Value")," Economic Management Research, 34(2), *Research Institute of Capital Formation*, Development Bank of Japan, 2013.

[21] Japan Exchange Group, "Number of Listed Companies/Shares," [オンライン]. Available: https://www.jpx.co.jp/english/listing/co/index.html.

[22] H. Matsuno, 『「企業と社会」論とは何か—CSR 論の進化と現代的展開—』("What is Corporation and Society - Evolution of CSR and Contemporary Development"), Minervashobo, 2019.

[23] Nikkei BP, "『危機で試される ESG　投資手法の優位性を確証』("ESG Tested in Crisis - Verifying Its Superiority of Investment Approach")," p. 22, 2020.7.

[24] D. Butcher, "CFOs Respond to the COVID-19 Pandemic," *Strategic Finance,* pp. 26-31, 2020.5.

[25] Nikkei BP, "ESG Management after Coronavirus - Go back to the Long-term Perspective（"コロナ後の ESG 経営　今こそ長期視点に立ち返れ"）," *Nikkei ESG,* p. 29, 2020.7.

[26] P. J. M. V. Fleming, The End of Corporate Social Responsbility: Crisis and Critique, SAGE Publications Ltd., 2012.

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