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Abstract

Background/Objectives: The purpose of the paper is to examine how family-friendly certificates introduced to pursue the compatibility of work and family life affect the financial performance of small and medium-sized manufacturers, and to provide useful information to companies considering the introduction of this system in the future.

Methods/Statistical analysis: Since launching the family-friendly certification business, a total of 312 companies have received family-friendly certification in 2015, 38 of which are large companies, 99 public institutions and 175 small and medium-sized enterprises. Among 175 small and medium-sized companies that received family-friendly certification, 91 companies in the manufacturing sector were investigated for financial data from 2014 to 2017 and analyzed through the paired t-test using SPSS.

Findings: The analysis results are as follows. First, the net sales growth rate of family-friendly certification companies was compared to 2014 before the certification and 2016 and 2017 after the certification, but it was found that there were no significant statistical differences. Second, operating profit ratio was compared to 2014 before certification and 2016 and 2017 after certification, but no significant statistical differences were found. This did not affect the financial performance of small and medium-sized companies that received family-friendly certification in 2015.

Improvements/Applications: Based on these findings, there is a limit to improving financial performance in a short period of time after small and medium-sized companies in the manufacturing sector have received family-friendly certification. Therefore, it was required to recognize the need to introduce a family-friendly system from a long-term perspective and explore policy alternatives for family-friendly systems for small businesses.

Keywords: family-friendly certification, financial performance, family-friendly systems, small and medium-sized businesses, manufacturing industry, paired t-test

1. Introduction

Today, our society has a growing tendency toward individualism, which puts individuals ahead of organizations, as well as the problem of low birthrates and aging. The change in individual values resulting from these changes in social values has led to an increasing number of workers who value life that balances work and family life, namely quality of life, which has
a significant impact on the operation of the organization and the creation of the culture of the enterprise [1]. In response, the Ministry of Gender Equality and Family has adopted and implemented the family-friendly certification system since 2008 under Article 15 of the Act on Promotion of the Creation of a Family-Friendly Social Environment, a legal basis, in order to expand the family-friendly system to balance work and family life. Family-friendly certification was first certified by nine companies in 2008, and 3,328 firms had received the certification as of 2018. Of the total, small and medium-sized companies received certification from 2,028 companies, the report showed. Family-friendly certification is a system that grants certification to companies that operate family-friendly systems (such as flexible work systems, childbirth and child rearing, and family-friendly workplace culture) through screening [2].

According to the census trends of the National Statistical Office (NSO), the nation's total fertility rate hit the lowest level in the world with 0.977 in 2018, increasing in severity [3]. This study aims to pay attention to family-friendly management to solve serious social problems with low birth rates. According to signal theory, because of the asymmetry of information, workers at companies do not know about family-friendly management. As companies implement family-friendly systems with family-friendly certificates, they can also affect productivity by increasing employee satisfaction [4]. In response, most of the existing research on family-friendly certification is focused on subjective performance analysis, making it difficult to see how it actually affects corporate financial performance and change. Therefore, in this study, we intend to identify the financial performance of a family-friendly certification company before and after certification and conduct the research by applying the paired t-test. It is expected to be able to estimate how family-friendly certification companies affect their financial performance after certification. Through these efforts, the government aims to provide basic data necessary to explore the direction of the family-friendly certification system for small businesses and strategic measures for family-friendly management of companies.

2. Materials and Methods

2.1. family-friendly certification

Family-friendly certification is a system in which the host organization reviews and certifies companies or public institutions that have exemplary family-friendly systems with the Ministry of Gender Equality and Family. Family-friendly certification was implemented in 2008 on the basis of Article 15 of the Act on the Promotion of Family-Friendly Social Environment. This can be said to play a leading role in ensuring workers are compatible with work and family life in the wake of low birth rates, aging, increasing women's social activities and changing social values [5]. The number of family-friendly certification companies began at seven in 2008, with Yuhan-Kimberly and two other large companies and five others, including the National Health Insurance Corp., receiving the certification. Meanwhile, as of 2018, the cumulative number of certified companies totaled 3,328, with 364 large companies, 936 public institutions and 2,028 small and medium-sized enterprises. By industry, 1,221 manufacturing companies, 890, public administration and others, 592 service providers, 214 wholesale and retail businesses, 168 electric, gas and water projects and 243 other companies were certified. In addition, the number of certified companies in each region is 1,512 in the Seoul metropolitan area, 600 in the Gyeongsang provinces, 322 in the Jeolla and Jeju provinces, 894 in the Chungcheong and Gangwon provinces [2]. These statistics show that the number of family-friendly certification companies is increasing rapidly in quantity.

2.2. manufacturing of small and medium-sized enterprises
According to Article 2 of the Framework Act on Small and Medium Businesses, the definition of small businesses is aimed at profit, and the actual independence of ownership and management, such as total sales or assets, and ownership or equity investment relationships, is set by the Presidential Decree. Small and medium-sized enterprises are also divided into small sized enterprises and medium sized, depending on their size [6]. On the other hand, the definition of manufacturing refers to the industrial activity of converting raw materials (materials or components) into new products with different properties by applying physical and chemical actions to them [7]. Korea, where manufacturing is the backbone of the economy, faces a serious situation where it has to take a leap forward by creating innovative technology adoption and corporate culture as it faces drastic environmental changes in the era of the Fourth Industrial Revolution [8]. In this era of the fourth industrial revolution, it is time for the nation's small and medium-sized enterprises to recognize the needs of working and family, which are the values of young talents, to develop and manage sustainable business, and to create a family-friendly culture.

2.3. Family-friendly systems

The family-friendly system was legislated in 2008 and is provided by the workplace for the sake of work and family life, including a flexible work system, a system related to the birth and upbringing of children, a family-friendly culture-building system and a family-care system [2]. Companies aim to improve productivity by enhancing employee satisfaction and increasing organizational immersion by conducting family-friendly management through the implementation of the family-friendly system. This can increase the satisfaction of life by satisfying the role employees play in their work and family life.

2.4. Relationship between Family Friendly Certification and Financial Performance

Previous studies have shown that family-friendly organizational crises directly affect workplace happiness [9]. Also, not only domestic but also foreign studies have shown that work-family compatibility has a positive effect on employees' job satisfaction [10]. In other words, when family-friendly management is achieved through such a signaling of family-friendly authentication, workers' job satisfaction and organizational immersion can be increased, leading to productivity of companies. Meanwhile, the family-friendly system was found to be positive about the intention of workers to give birth, one of the solutions to the problem of low birthrates [11]. Therefore, this study aims to understand how small and medium-sized companies in the manufacturing sector that have received family-friendly certification affect the financial performance of companies.

2.5. Research method

2.5.1. Population and Sample characteristics

The subjects of the study used the "family-friendly business" certification list on the website of the family-friendly support project operated by the Family Friendly Support Center of the Ministry of Gender Equality and Family. Of the total, 38 out of a total of 312 companies that received family-friendly certificates in 2015, 99 were certified by conglomerates, 99 public institutions and 175 small and medium-sized enterprises. Out of 175 small and medium-sized enterprises' certifications, 95 companies in the manufacturing sector were
surveyed on financial data. The reason why manufacturing industries are sampled in 2015 is to measure the mid-term performance of the nation's manufacturing industry. In addition, we judged that manufacturing businesses account for a large portion of the industry, and that workers who work are also divided into office and field jobs, which would be meaningful for family-friendly certification companies. Out of 95 certified companies in small and medium enterprises, the paired t-test analysis was performed using the financial data of the final 91 companies, excluding the four that could not find financial data.

2.5.2. Research model

The study aims to verify the impact on sales growth and operating profit rates of small and medium-sized manufacturers that received family-friendly certification in 2015. It looked at whether there was a difference between 2014 and 2016 and 2017 before and after the certification. The study model is shown in [Figure 1].

H1. Companies that received family-friendly certification in 2015 will have a difference in net sales growth rates in 2014 before certification and 2016, after certification.

H2. Companies that received family-friendly certification in 2015 will have a difference in net sales growth rates in 2014 before certification and 2017, after certification.

H3. Companies that received family-friendly certification in 2015 will have differences in their operating profit rates in 2014 before certification and 2016, after certification.

H4. Companies that received family-friendly certification in 2015 will have differences in their operating profit rates in 2014 before certification and 2017, after certification.

2.5.4. Operable defined in variables

The operational definitions of each variable are summarized as in [Table 1].

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Define Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sales Growth Rate</td>
<td>Before 2014 certification</td>
</tr>
<tr>
<td>Rate of Operating Profits</td>
<td>After 2016 certification</td>
</tr>
<tr>
<td>Net Sales Growth Rate</td>
<td>After 2017 certification</td>
</tr>
<tr>
<td>Rate of Operating Profits</td>
<td>After 2016 certification</td>
</tr>
<tr>
<td>Rate of Operating Profits</td>
<td>After 2017 certification</td>
</tr>
</tbody>
</table>
### 3. Results and Discussion

#### 3.1. Data Analysis Results

#### 3.1.1. Financial data

Among small and medium-sized companies that received family-friendly certification in 2015, the growth rate of sales and operating profit were analyzed by company through data from Korea Enterprise Data for financial data analysis between 2014 and 2017 [12]. Among SMEs that received family-friendly certification in 2015, the average in sales growth rate and operating profit rates before and after certification by the manufacturing sector is as shown in [Table 2]. Meanwhile, the average number of employees was analyzed to be 61.

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Sales Growth Rate(%)</th>
<th>Rate of Operating Profits(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>16.58</td>
<td>6.19</td>
</tr>
<tr>
<td>2015</td>
<td>23.82</td>
<td>5.13</td>
</tr>
<tr>
<td>2016</td>
<td>6.54</td>
<td>7.11</td>
</tr>
<tr>
<td>2017</td>
<td>13.25</td>
<td>6.06</td>
</tr>
</tbody>
</table>

#### 3.1.2. The general characteristics of a sample

The number of samples used in this study totaled 91, and frequency analysis was performed to identify the general characteristics of the samples. The results are summarized as in [Table 3].
### Table 4. Paired t-test (Net Sales Growth Rate)

<table>
<thead>
<tr>
<th>(%)</th>
<th>Response difference</th>
<th>t</th>
<th>df</th>
<th>significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>an exhibition of certification (2014) &amp; after certification (2016)</td>
<td>-10.568</td>
<td>1.934</td>
<td>-1.679</td>
</tr>
</tbody>
</table>

#### 3.1.3. Paired t-test analysis

In 2015, a pair t-test was conducted to compare the net sales growth rate and operating profit rate in 2016 and 2017 based on a family-friendly certification company, a useful analysis method to test the average difference between the two variables measured in the same sample.

#### 3.2. Verification analysis result

##### 3.2.1. Results of Net sales growth rate

The results of an analysis of the net sales growth rate of family-friendly certification companies in 2015 are as shown in [Table 4]. Since the value of t in 2016 was -1.679, less than ±1.96 and the probability of significance was 0.097 and greater than 0.05, the mean before and after certification in 2014 was shown to be statistically non-significant. In addition, since the value of t in 2017 was -0.665 less than ±1.96 and the probability of significance was greater than 0.05 at 0.508, the mean before and after the certification in 2014 was shown to be statistically non-significant. To check if family-friendly certificates help small businesses net sales growth Rate, the change in sales growth rates before and after certification was investigated. The results showed that the t value was -1.679 in 2016 and -0.665 in 2017, with the mean before and after certification unchanged below the level of statistical significance. Therefore, family-friendly certification itself cannot be said to affect a company's financial performance, or net sales growth rate.
3.2.2. Results of operating profit ratio

The analysis results of operating profit ratio of family-friendly certification companies in 2015 are as shown in [Table 5]. The average before and after certification for 2014 was not statistically significant because the t value for 2016 was 1.014 and the probability of significance was 0.313 and greater than 0.05. In addition, since the value of t in 2017 was -0.104, which is smaller than ±1.96 and the probability of significance was 0.918 and greater than 0.05, the mean before and after the certification in 2014 was shown to be statistically significant. To check whether family-friendly certification helps small businesses’ operating profit ratio, the change in operating profit ratio before and after certification was investigated. The results showed that the t value was 1.014 in 2016 and -0.104 in 2017, with the mean before and after certification unchanged below the level of statistical significance. Therefore, family-friendly certification itself cannot be said to affect a company's operating profit ratio, which is its financial performance.

Table 5. Paired t-test (Rate of Operating Profits)

<table>
<thead>
<tr>
<th>(%)</th>
<th>Response difference</th>
<th>Standard deviation</th>
<th>Standard error mean</th>
<th>95% Confidence limit</th>
<th>t</th>
<th>df</th>
<th>significance level</th>
</tr>
</thead>
</table>
| Pair 1
an exhibition of certification (2014)  & after certification (2016) | .937                | 8.816              | .924                | -0.899               | 2.773 | 1.014 | 90 | .313            |

*p<.05

3.2.3. Test of hypothesis

To verify this study, the statistical analysis method, SPSS 22.0 was analyzed, and the following [Table 6] is the result of this study model and hypothesized H1, H2, H3, H4 are all rejected.

Table 6. Hypothesis test result

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>financial performance</th>
<th>Year</th>
<th>T-Value</th>
<th>P-Value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Net Sales Growth Rate</td>
<td>Before 2014 certification → After 2016 certification</td>
<td>-1.679</td>
<td>.097</td>
<td>reject</td>
</tr>
</tbody>
</table>
4. Conclusion

The purpose of this study was to examine the impact of family-friendly certification on the net sales growth rate and operating profit rates of companies that received family-friendly certification in 2015 before and after certification. In summary, the main results of this study are as follows: First, the net sales growth rate of companies that received family-friendly certification in 2015 did not show much difference between 2014 and 2017 before the certification. Second, companies that received family-friendly certification in 2015 showed no significant difference in their operating profit ratios in 2016 and 2017, both before and after the 2014 certification. The results of this study show that family-friendly certification itself does not affect sales growth and operating profit ratio of small and medium-sized companies, but it is expected to have an impact in the long term, given the previous study that family-friendly system improves employee satisfaction. Thus, the need for such a family-friendly certification system may provide more information to the decision-making process of an entity considering the introduction of the scheme if there is research on non-financial performance such as employee satisfaction, turnover, reputation and the influx of talented people. Finally, this study has limitations that analyze only short-term and medium-term financial performance for the manufacturing sector of small and medium-sized companies that have received family-friendly certification. Nevertheless, it can be said that the first attempt was made to analyze the growth rate of net sales and operating profit ratio of manufacturers of family-friendly certified small and medium-sized companies before and after the certification.

5. Acknowledgment

This research was financially supported by Hansung University.

References