# Analysis of the Correlation Between the Support Performance of Supported Business for the Regional Industry

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## Abstract

Reflecting the conditions and characteristics of Korea, the region's main industry is being developed to expand new job creation in the region and enhance the competitiveness of local industries. The local main business is supported to 63 main industries selected by region. The main industries in Busan include digital contents, intelligent machine parts, super precision convergence parts, mold heat treatment, and bio-health. In this study, the main industries of Busan region in 2016 conducted an analysis on the companies that support the intelligent machine parts industry. For the analysis, we collected data on the sales of supported companies, sales after business support, and employment growth. The analysis tool utilized IBM SPSS statistics 18. As a result, we confirmed the relationship between employment and sales according to support business programs. Based on the results of this study, it will be helpful for the task performing organization to identify the direction of the support program and the needs of the enterprise.

**Keywords:** supported business for the regional industry, correlation analysis, intelligent, mechanical parts

## 1. Introduction

Since the 1960s, when the Republic of Korea spurred economic development, the economic scale and export scale as of 2016 have developed dramatically to ten world economic powers as of 2016, with rapid growth. In this process, the role of the Government's ongoing R&D investment and support was important. In 2017, the size of R&D investment in the government accounted for 4.7% of the government budget at 19 trillion won, and it has increased by 2.5% each year. Such government efforts include support projects to support the growth of SMEs. Protection and development of small and medium enterprises support policy for small and medium enterprises turned into active direction. Policy efforts are being made to create innovative economies based on the improvement of technological innovation of SMEs. (Castells & Hall, 1994: Westhead & Storcy, 1994: Martin & Scott, 2000).

The Republic of Korea government formulated regional industry promotion policies and made efforts to develop small and medium enterprises. In 2013, the government integrated regional industry promotion plans, which were classified into strategic projects and municipal specialized industries, into a new region specialized industrial development policy. By doing so, we tried to expand local employment creation and maximize sales growth of regional companies. Business support projects other than the regional specialized industrial development business intensively support the technical support, the commercialization support, the human resource development, etc. of specialized industrial fields selected for each region, to expand regional employment

creation and to promote regional employment We are aiming to revitalize regional economies by increasing sales and other factors. In this study, we would like to analyze the enterprise support project of the Busan area specialized industry in 2015 and analyze what kind of correlation the business support project has with the employment of the company and the increase in sales.

## 2. Previous Research

Many researches have been made recently that present the direction of desirable enterprise support projects through outcome analysis of existing enterprise support projects. LEE, KIM(2016) conducted an analysis of the efficiency of enterprise support project for the whole-South area specialized industry development business, and KIM, WON(2015) conducted an influential factor analysis on the outcome of support of enterprises by industry of regional industry promotion policy.

Lee Jun-Soo (2013) analyzed the problems of the enterprise support service project through research on improvement efficiency and improvement measures of the Busan regional company support service project and presented a remedial measure. GimJaegun (2013) analyzed the satisfaction of tenant enterprises of corporate support services through analysis of the functions and roles of Techno Park to support SMEs.

## 3. Analysis of Correlation

In this study, Pearson correlation analysis was conducted on the results of the "Comprehensive Package Support Project for Intelligent Machine Parts Industry", a regional main industry development business enterprise support project conducted in 2015. In the prototype production support business of the intelligent machine parts industry, we selected the demand enterprise support program through the early enterprise demand survey. Table 1 shows program frequency analysis. Results of demand investigation ware requested in order of upgrading of products, supporting prototype production, certification, and patent support. The field of commercialization support was requested in order of brand development support, exhibition support, marketing support, network support, and so on.

Using the IBM SPSS statistics 18, we conducted a frequency analysis of 138 selected companies. Frequency analysis was conducted to confirm the frequency of programs meeting the needs of the demand enterprises and the results are shown in Table 1.

Table 1 Program frequency analysis

| Program | Frequency | Percent | Effective Percent | Cumulative Percent |
|---|---|---|---|---|
| Domestic exhibition | 32 | 23.2 | 23.2 | 23.2 |
| Brand | 21 | 15.2 | 15.2 | 38.4 |
| Market analysis | 4 | 2.9 | 2.9 | 41.3 |
| Bottleneck technique | 16 | 11.6 | 11.6 | 52.9 |
| Patent application | 14 | 10.1 | 10.1 | 63.0 |
| Product quality | 7 | 5.1 | 5.1 | 68.1 |
| Prototype | 12 | 8.7 | 8.7 | 76.8 |
| Product planning | 6 | 4.3 | 4.3 | 81.2 |
| Foreign exhibition | 4 | 2.9 | 2.9 | 84.1 |
| Certified support | 5 | 3.6 | 3.6 | 87.7 |
| Test analysis | 5 | 3.6 | 3.6 | 91.3 |
| Consulting | 8 | 5.8 | 5.8 | 97.1 |
| Marketing | 4 | 2.9 | 2.9 | 100.0 |
| Sum | 138 | 100.0 | 100.0 | |

As a result of the frequency analysis, the domestic exhibition support program was supported in order of the highest frequency 32 times support, brand support 21 times, bottleneck technical support 16 times, patent application 14 times, prototype 12 times, and so on. Also, Table 2 shows the distribution of support project costs, the highest among 108 companies with the highest under 10 million won. This seems to be due to support of domestic and foreign exhibitions, support for brands, bottlenecks technical support less than ten million won.

Table 2 Frequency analysis of support project cost

| Support project cost(million won) | Frequency |
|---|---|
| Less than 10 | 108.0 |
| More than 10~ Less than 20 | 13.0 |
| More than 20~ Less than 30 | 8.0 |
| More than 30~ Less than 40 | 3.0 |
| More than 40~ Less than 50 | 5.0 |
| More than 50 | 1.0 |

Table 3 also shows that employment with 117 programs equivalent to 85% was not triggered by 138 support programs for new employment. The creation of one or two employment occupied the highest proportion

Table 3 New employment

|  | Frequency | Percent | Effective Percent | Cumulative Percent |
|---|---|---|---|---|
| 0 | 117 | 84.8 | 84.8 | 84.8 |
| 1 | 9 | 6.5 | 6.5 | 91.3 |
| 2 | 8 | 5.8 | 5.8 | 97.1 |
| 3 | 2 | 1.4 | 1.4 | 98.6 |
| 4 | 1 | .7 | .7 | 99.3 |
| 5 | 1 | .7 | .7 | 100.0 |
| Sum | 138 | 100.0 | 100.0 |  |

Table 4 shows the results of descriptive statistical analysis, the average cost of corporate support was 83 million won, and the average sales of domestic commercialization was confirmed at 130 million won.

Table 4 Descriptive statistics

|  | Average | Standard Deviation | N |
|---|---|---|---|
| Support project cost (thousand won) | 8300.02 | 10657.012 | 138 |
| New employment | .29 | .803 | 138 |
| Sales (domestic) in commercialization | 13658.12 | 53982.765 | 138 |
| Sales (overseas) in commercialization | 1305.36 | 6692.743 | 138 |

Table 5 Descriptive statistics

|  |  | Support project cost (thousand won) | New employment | Sales of commercialization (domestic) | Sales of commercialization (overseas) |
|---|---|---|---|---|---|
| Support project cost (thousand won) | Pearson correlation coefficient | 1 | .416[**] | .066 | .016 |
|  | Significant probability |  | .000 | .440 | .849 |
|  | N | 138 | 138 | 138 | 138 |
| New employment | Pearson correlation coefficient | .416[**] | 1 | .118 | -.009 |
|  | Significant probability | .000 |  | .168 | .915 |
|  | N | 138 | 138 | 138 | 138 |
| Sales of commercialization (domestic) | Pearson correlation coefficient | .066 | .118 | 1 | .453[**] |
|  | Significant probability | .440 | .168 |  | .000 |
|  | N | 138 | 138 | 138 | 138 |
| Sales of commercialization (overseas) | Pearson correlation coefficient | .016 | -.009 | .453[**] | 1 |
|  | Significant probability | .849 | .915 | .000 |  |
|  | N | 138 | 138 | 138 | 138 |

**. Please note that the correlation coefficient is 0.01 level (both sides).

Table 5 shows the results of correlation analysis. Through correlation analysis, we analyzed the correlation between support project cost and new employment, sales (domestic) in commercialization, sales (overseas) in commercialization. The project cost shows that the correlation between new employment (r = 0.416) and quantity (+) is commercialized, while sales (domestic) shows correlation between sales (overseas) and commercial quantity (+) It was analyzed.

## 4. Conclusions

The results of empirical analysis of this study are as follows. First of all, the support cost of a company and new employment have a slightly high correlation, and it seems that the influence of direct and indirect employment of a company is influenced according to the company support amount. But as a result of the frequency analysis of the overall employment, it is found that significantly lower employment has been carried out. In other words, it can be confirmed that there is a limit to increasing employment for project cost support.

Secondly, it is generally judged that there is a correlation between the support cost of a company and the sales (domestic) of commercialization. In fact, sales of commercialization were analyzed as having no significant correlation with the support cost of enterprises.

In fact, the support cost for companies supporting prototype production is relatively high. However, there is a point that it is hard to cooperate with sales immediately. It is judged that it is desirable to evaluate prototype performance and sales collaboration rather than sales, as a result of prototype production support.

Thirdly, the sales of domestic commercialization and the sales of overseas commercialization have a slightly high correlation. It turns out that the sales of domestic commercialization and the sales of overseas commercialization positively have mutual influence.

Therefore, we can see how much employment is affected by corporate support project cost.

However, employment frequency is low. There is also no significant correlation between corporate support project cost and sales of commercialization. When choosing the evaluation item of the enterprise support project, it is not simple employment and sales, it is necessary to find and present the result item desired by the company. In addition, it is judged that it is desirable to plan and evaluate to the consumer focus, not the manufacturer's center.

## References

[1] S. S. Lee and Y. K. Kim, "Efficiency analysis of enterprise support project for nurturing specialized industries in Jeonnam area," 2016 Korean Institute of Industrial Engineers, symposium, pp. 34-40, November 2016.
[2] Y. H. Won and G. H. Kim, "An analysis on performance influence factors of enterprise support based upon the local industrial development policy: focused on the industry types of region-specialized industries," Korean Association For Policy Science, June 2015.
[3] S. W. Lee, G. J. Park, and J. D. Kim, "Correlation analysis on the performance of supported business for the robot industry," Korean Society of Precision Engineering, May 2016.
[4] J. K. Kim, "Evaluating roles of techno-park as a policy tool to support regional SMEs," Journal of the Korean Urban Management Association, vol. 26, no. 1, pp. 1-28, March 2013.
[5] W. J. Shim and E. S. Kim, "Korean national research and development project, multifaceted analysis of the output ratio of research expenses by government," Korea Technology Innovation Society, March 2010.