

# Influence Factors of Business Performance Based on Empirical Research of the Information Technology Industry in Shaanxi

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**Abstract:** *Study on the influence factors of business performance in IT industry of Shaanxi, based on the survey of 35 foreign-invested enterprises in Shaanxi, analysis the foreign investment and operation, research the characteristics of foreign capital operating in IT industry. Reveal the significant negative correlations between foreign ownership and enterprise performance by control the factors of enterprises scale, capital structure, operating time and technology, and then offer the policy advice.*

**Keywords:** IT industry, Influence factors, business performance

## 1. Introduction

In the context of economic globalization, international capital becomes more active, and thus its active trend in turn promotes economic globalization, reinforcing the connection between countries. The cooperation of international industry with multinational firms as leading power promotes global economic growth, changes world economic pattern, forms a new international investing feature. IT industry is an active field where lots of international cooperation happens, and it leads to world-scale restructure and reorganization of three factor of production: capital, technology and human resources. The technology premium and capital support of international cooperation as well as multinational investment can largely promote the development of our country's IT industry, which is a win-win cooperation.

Under the global background that internet develops rapidly, the development of IT industry in our country has an evident upward trend. Although IT industry in Shaanxi started a bit earlier than other provinces, we still have to figure out what factors can be new motivation to promote development. In the international industry, multinational capital and technology participation are two important driving factors, therefore, research of foreign equity and the performance of companies can help us understand the status of IT company in our province, provide reference for government policy, and promote IT development.

The influence of ownership structure on enterprise management has been the important question of enterprise theory research, however, the effect of foreign shareholders on business performance is based on the theories of multinational capital and the strength of ownership of technology. Thus, analyzing the influence of the participation of multinational capital on the operation efficiency of the enterprises is an important issue in the theory of multinational corporations. Nowadays, there are some contradictory opinions as followed in China. Some people believe that due to the overflow effect of capital and technology, to a certain enterprise, the more foreign capital it has, the better it performs and that the

efficiency of the individual-owned enterprise is better than that of the joint venture. Xiaozhong Qing found FDI had an obvious overflow effect though analyzing the data from 39 fields in 1995[1]. As the international capital is getting more dynamic and sizeable, FDI has become the main type of capital flows[2]. According to Commerce Ministry statistics, 26575 foreign-invested enterprises were approved in 2015, with growth of 11.8% year-on-year. The actual use of foreign capital reached RMB 78.135 billion by 2015, rose 6.4% over 2014. It also proves that investors remained upbeat about China's market. Although we are facing the forbidding challenges of the slower economic growth, rising labor costs, increased competition of low-cost manufacturing[3], [4]. But in recent years many foreign-investment enterprises are largely in operational losses and nearly loss year after year[5], [6]. China had become the biggest FDI host country among developing countries and regions[7].

Aitken and Harrison conducted a deeper research on the influence of the participation degree of foreign capital on manufacturing enterprises in Venezuela. They constructed linear equations by transforming the production function, and used panel data to get the positive correlation between the proportion of foreign capital and the production efficiency[8]. Woodcock et.al thought that individual-owned firms had lower transaction costs than joint ventures and thus performed more efficiently[9].

Xu et.al analyzed data from 1998 and 2002 and found that joint ventures with small amounts of foreign capitals typically have a higher return on assets than individual-owned companies, and this result was statistically significant; Pan et.al used data from 14466 companies in 1995, finding joint ventures have higher profitability than individual-owned companies[10].

So, the relation between the foreign ownership structure and the performance of companies hasn't been consistent in empirical research yet. The possible reasons are that many related empirical researches use questionnaires, which are easily influenced by subjective factors and that the use of objective financial data is relatively limited. Meanwhile, even

Volume 5 Issue 11, November 2016

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some researches use financial data, most of them just take cross section data. It means that researchers cannot measure the performances of enterprises influenced by time series. In addition, due to the difficulty to get the micro financial data from foreign companies, it is rare to find the empirical researches on foreign capital and enterprise performance, especially in information industry, though researches in this field are very important.

To objectively and scientifically analyze the specific impact of the participation of foreign capital on IT industry, with the support from Department of Commerce and The Finance Department in Shaanxi Province, we use the data from Joint Annual Inspection of Foreign Enterprises in Shaanxi Province, conduct a deep investigation into the the foreign-invested firms in information transmission, computer services and software fields and analyze the investment and operation situations of these companies. Based on the assumption of the theory of the advantage of the ownership of transnational investment, we use panel data to build multiple regression analysis model, and under the control of the enterprise scale, capital structure, technology, operation period and other factors which may influence the performance, we analyze the impact of foreign ownership structure on operation performance.

## **2. Basic information about foreign-invested enterprises in IT industry in Shaanxi Province**

According to the 'Joint Annual Inspection of Foreign Enterprises in Shaanxi Province' provided by the Department of Commerce and The Finance Department in Shaanxi Province, we investigate the foreign IT enterprises which are operating normally and collect data from 35 enterprises which have continuous operation data in the period from 2011 to 2015. Then, we build panel data for research.

### **2.1 The characteristics of the sources of foreign capital in IT industry in Shaanxi Province**

From the data we collect, we find that foreign capitals from 10 countries have invested in Shaanxi Province. Among all the investments, the number of companies invested by Japan is 13, ranking first and accounting for 37.14% of the total number of foreign-invested enterprises in the IT industry. Hongkong, America and the British Virgin Islands all invest 5 companies, ranking second. From the perspective of the total amount of money invested by foreign companies, foreign capital majorly derives from Cayman, Hongkong, Britain and British Virgin Islands, from which the sum of investment was 7678.43 million dollars in 2015, by contrast, the 35 enterprises invested 9218.48 million dollars in total. Therefore, we can see that equity from these four country account for 83.29% of total foreign equity, constituting the majority of Shaanxi foreign investment.

### **2.2 Investment opening situation**

During past few years, foreign equity companies in Shaanxi that concentrate on information transfer, computer service and software have a good investment opening situation.

Production run rate was around 1 from 2011 to 2013, while year 2014-2015 has a slight decline, generally it has been above 90%.

### **2.3 Owned enterprises and joint enterprises**

From the data analysis of these 35 enterprises, the majority of these companies are owned enterprises, and during the four years owned enterprises account for about 71.23%, additionally, the increase of the information technology foreign equity companies are largely consisted of owned enterprise

### **2.4 Secondary IT industry**

Secondary IT industry can be divided into three categories, software, computer services, telecommunications and other information Transmission Services. From the data analysis of these 35 enterprises, the software industry is dominant, accounting for about 80.66% of the entire information technology industry; followed by computer services industry, accounting for 13.78% of the entire information technology industry. From the perspective of original foreign country, companies whose secondary IT industry is software industry is mainly from Japan, accounting for 39.15% of the entire software industry, and whose secondary IT industry is computer services is majorly from Japan, and secondly the British Virgin Islands, the United States and HongKong. Foreign-invested enterprises in computer services industry mainly come from HongKong, accounting for 36.2% of the entire industry; With regard to the telecommunications and other information transmission services industry, foreign-invested enterprises mainly come from the British Virgin Islands. From the perspective of the total investment in secondary industries in 2015, the total foreign investment in the software industry reached up to \$ 51,663,500 followed by telecommunications and other information transmission services industry, about \$ 32,447,800 and total foreign investment in computer services industry ranked last, around \$ 6,171,800. Viewing from the break-even point of the secondary industries, the profit margin of the software industry is large and the net profit is 25 million RMB; the net profit of computer services industry is 249,000 RMB while that of telecommunications and other information transmission services industry reaches 8,516,700 RMB.

### **2.5 Tax situation**

From the data analysis of these 35 enterprises, the information technology industry foreign companies in Shaanxi Province paid taxes 231.1659 million RMB in 2011; 2012 tax situation had a significant decline in total tax of 44.419 million RMB, which has a reduction rate of 80.78%; three years after tax has increased, 122.3958 million RMB , 96.5446 million RMB and 10121.33 million RMB respectively. From the perspective of secondary industry, in 2015 software industry paid the most tax , 7763.72 million RMB, 76.71% of the total amount of tax; followed by computer services, 1791.13 million RMB, 17.69% of the total amount of tax; telecommunications and other information transmission services paid minimum, 566.48 million RMB, 5.6% of the total amount of tax.

## 2.6 Analysis of industry profit and loss

### (1) Loss Analysis

By doing 2011-2015 data research, 21 in a total of 35 companies made profit in 2011, one company broke even, 13 had losses, with a loss of 37.14%. In 2012 and 2013, the deficit situation of enterprises has not changed a lot until 2014-2015, when 16 companies among 35 qualified foreign-invested enterprises made profit, 19 losses, with a loss of 54.43%. From the table below we can see that there has been a significant rise of loss in 2014-2015.

**Table 1: 35 enterprises' loss situation in 2011—2014**

years	The enterprise number after the screening	Profitable firms	Unprofitable firms	Zero profit enterprise	Percentage of Unprofitable firms
2011	35	21	13	1	37.14%
2012	35	24	11	0	31.43%
2013	35	22	13	0	37.14%
2014	35	16	19	0	54.43%
2015	35	16	19	0	54.43%

### (2) Loss Reason Investigation

Although the operating performance of foreign-funded enterprises in 2015 has improved, loss is still higher than 50%. So we conducted deep investigations into loss-making enterprises, mainly to explore reasons for their losses. The survey found that business losses due to these main reasons:

- 1) Because of nature of the industry sector - that is, when enterprise development stage is long, software development cycle is long, initial investment becomes larger, while IT companies established period is generally short, fluctuations in market demand has great impact on enterprises' making loss.
- 2) Because of cost - take the transmission of information industry for example, rising raw material prices, increased labor costs and shopping costs increase, result in increased costs and lower profits, leading to losses.
- 3) Camp software service outsourcing enterprises are affected by the economic crisis, so that the business volume increased little, plus, no company's overall staffing reduction, coupled with increased domestic prices, leads to losses.

## 3. Statistical analysis of foreign equities' impact on business performance

We used multivariate statistical analysis, researching 35 companies' panel data between 2011 and 2015, establishing related variables that affect business performance, to find out the intrinsic relationship between them and business performance. We used econometric package Eviews 8.0 as a measuring tool.

### 3.1 Research data and samples

We chose 35 foreign-invested enterprises in Shaanxi IT Industry for five-consecutive-year panel data, to a total of 175 observations.

## 3.2 Variables description

### 1) The dependent variable

According to the traditional empirical research for firm performance, referring related survey data, this paper set return on assets (ROA), return on total assets (ROT), return on sales (ROS) as corporate performance indicators. ROA is the ratio of net profit to total assets, ROT is the ratio of gross profit to total assets, ROS is the ratio of net profit to sales revenue.

### 2) The independent variable

Foreign equity ratio (FER): formed by the percent of foreign capital in total registered capital of the enterprise. It's used to analyze the impact of foreign on corporate performance

### 3) Control variable

- Operating time (RUNTIME): used to measure the impact of operating time on performance.
- Assets scale (LNSCALE): logarithm of total assets, used to measure the impact of firm's size on business performance.
- Total asset turnover (TAT) : used to measure the impact of business operations and management level on performance.
- Debt to assets ratio (DAR): for the analysis of financial leverage's impact on performance.
- Set high-tech variable (AT): set certified high-tech enterprise as 1, otherwise zero, for analysis of a high-tech's impact on management performance.

## 3.3 Assumption Description

According to the theory of ownership advantages, this paper makes the following assumptions regarding influencing factors:

Assumption 1: percentage of foreign ownership has positive correlation with business performance. Higher foreign equity ratio means higher investment of transnational capital and technology, so that capital and technology' positive impact on business performance should be more obvious.

Assumption 2: DAR has negative correlation with business performance. The higher DAR is, the greater business risk is, so the quality of assets is worse, and business performance would be adversely affected.

Assumption 3: firm size has positive correlation with business performance. Within a certain degree, the larger the scale, the more obvious scale effect, and the better business performance.

Assumption 4: The total asset turnover has positive correlation with business performance. TAT is one indicator of business operations, from an accounting view, good asset management can promote business performance, and business operating indicator is usually used to represent management level.

Assumption 5: High-tech has positive correlation with business performance. High-tech enterprises have more advanced production technology and larger profit margins compared to ordinary enterprises, so as to improve business performance.

### 3.4 Model analysis

1. Using models to analyze corporate operating performance

(1) Model I set up

Using ROA as explained variable, operating performance analysis model assumes the form as following:

$$ROA_{it} = \alpha_i + \beta_1 FER_{it} + \beta_2 DER_{it} + \beta_3 \ln scale_{it} + \beta_4 runtime_{it} + \beta_5 TAT_{it} + \beta_6 AT_{it}$$

$i=1,2,\dots,35; t=2011,2012,\dots,2015$

(2) Model II set up

Using ROT as explained variable, operating performance analysis model assumes the form as following:

$$ROT_{it} = \alpha_i + \beta_1 FER_{it} + \beta_2 DER_{it} + \beta_3 \ln scale_{it} + \beta_4 runtime_{it} + \beta_5 TAT_{it} + \beta_6 AT_{it}$$

$i=1,2,\dots,35; t=2011,2012,\dots,2015$

(3) Model III set up

Using ROS as explained variable, operating performance analysis model assumes the form as following:

$$ROS_{it} = \alpha_i + \beta_1 FER_{it} + \beta_2 DER_{it} + \beta_3 \ln scale_{it} + \beta_4 runtime_{it} + \beta_5 TAT_{it} + \beta_6 AT_{it}$$

$i=1,2,\dots,35; t=2011,2012,\dots,2015$

2. Model estimate

**Table 2:** Model estimate results

Variables		ROA	ROT	ROS
C	Coefficient	-31.31534	-8.634630	-3.815432
	Prob	0.0237	0.2354	0.8241
FER	Coefficient	-0.102566	-0.102566	-0.399345
	Prob	0.0355	0.0017	0.02898
DAR	Coefficient	-0.079345	-0.050354	0.084566
	Prob	0.2211	0.0751	0.6554
LNSCALE	Coefficient	5.446695	1.524668	0.467826
	Prob	0.0032	0.0554	0.6542
RUNTIME	Coefficient	-73.57072	64.45716	-98.4602
	Prob	0.7143	0.4596	0.7250
TAT	Coefficient	4.625674	3.072945	5.7486502
	Prob	0.0034	0.0045	0.0499
AT	Coefficient	3.476910	5.276849	6.582978
	Prob	0.1843	0.0568	0.8764
	R-squared	0.029542	0.194568	0.051469
	Durbin-Watson stat	2.04368	1.457892	2.0547

Model I, analyzing estimated coefficients of the variables, foreign equity ratio (FER), assets scale (LNSCALE) and total asset turnover (TAT) pass significant test at 90% confident level. Foreign equity ratio (FER) and ROA have negative correlation; assets scale (LNSCALE) and total asset turnover (TAT) have positive correlation with ROA.

Model II, analyzing estimated coefficients of the variables, FER, DAR, LNSCALE, AT and TAT pass significant test at 90% confident level. There exist negative correlations between FER, DAR, and ROT. LNSCALE, AT, TAT have significant positive correlation with ROT.

Model III, FER and TAT pass significant test at 90% confident level, but others don't pass. TAT and ROS have positive correlation; FER and ROS have negative correlation.

### 3.5 Results

1) Through research, our study found that the operating performance foreign-funded enterprises in Shaanxi is not consistent with the traditional cross-border investment theory, the higher the degree of foreign capital participation in Shaanxi IT enterprises, the poorer enterprises' performance. This result is consistent with Xu(2006), Jinmeng Wang(2008,2011) and others related research, indicating that a higher level of foreign capital participation, at least on the surface and at this stage, can not increase local information industry enterprises' performance levels.

2) Those foreign-funded enterprises that have low debt, low-risk business, good asset quality, a high management level, and are certified as high-tech enterprises can have a better operating performance; In addition, foreign investment's scale effect in the information technology industry is significant, firm size has a positive impact on business performance.

## 4. Conclusions and Implications

### 4.1 Research data and samples

(1) By the 2011 --2015 years investigation and empirical research findings of Shaanxi foreign IT companies, we find that information technology industry foreign equity companies make large loss, resulting from the macroeconomic impact. The industry's sales pressure increases, plus corporate cost pressures intensified, resulting in business loss, in addition, fluctuations in the international market demand is also a reason for business losses.

(2) According to our analysis, a higher degree or complete foreign equity holding does not give foreign IT enterprises performance advantages, this may be due to the time foreign capital entered the IT industry in Shaanxi was late, there is a learning effect for multinational companies, as local market has not opened, the international market is depressed, resulting in operating performance lagging for owned holding enterprises. On the other hand, a high degree of foreign capital participation means high foreign control, so there may exist transfer pricing behavior of multinational companies to reduce their tax burden, thus on the surface showing poor business performance of foreign-owned or controlled enterprises.

### 4.2 Implications

(1) Regarding information technology industry developing policies, it's better to transfer a focus on quantity to emphasis on quality, actively attract large multinational IT companies of technical strength and economic strength to settle down locally, encourage foreign joint ventures with local enterprises, increase efforts to bring R & D center and technical service center in foreign-funded enterprises, and provide preferential policies and services to certified high-tech multinational companies.

(2) It's worthwhile to further strengthen support for the IT industry-related policy to help existing businesses grow and develop, gradually build the province's IT industry brand to

achieve industrial clustering, support export enterprises explore the international market, and enhance the export capacity of the province's IT industry, in addition, paying attention to strengthening tax administration can prevent possible fiscal revenue loss.

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