

IDENTIFICATION OF HUMAN ERROR FACTORS IN VENTURE CAPITAL

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Abstract

By means of mailing questionnaire and making interviews, a survey of superior and secondary staff in venture capital was conducted. 216 valid questionnaires were received and a structural framework of human error factors for venture capital was built. Then a Structural Equation Model was established and tested by using AMOS 21. 0. The results of analysis indicated that leader's moral risk, the diathesis, decision error, adventurous and lucky psychology as well as government's intervention, the harmony of association and the feedback mechanism of information, etc. were the key human errors that caused failure of venture capital.

Keywords: Venture capital; human error; structural equation model; identification

INTRODUCTION

In the past few years, human reliability analysis (HRA) in the rational design of the high risk of complex technology system and safety assessment made great contribution, it is in cognitive psychology, behavioral science, reliability engineering combined with each other on the basis of performance focuses on generating human behavior, the scene environment and how they are influence people's behavior (Wang, 2001. As for human error causes and mechanism of gradually thorough, people are increasingly aware of the importance of human error behavior in management decision making.

Venture capital refers to the capital investment has enormous potential for growth, high-tech industries but also in all aspects of technology, market and so there is a huge risk of failure. In venture capital, people are the most important resources; other resources are all realized

through people the value of. But because of the physiological, psychological, social and spiritual properties, people not only exist some inherent weaknesses, have great plasticity and hard to control (Hou & GU, 2004) but which has the function of degree of freedom may lead to the failure of investment, which constitutes the human error in venture investment.

At present, the venture investment in China is increasing year by year, and by the human factor risk failure induced has become a hidden constraint of venture capital (accounting for 70% of the total risk of ~90%) (Wei & Xia, 2004). Therefore, the identification of human error factors, to explore its control on venture capital investment has very important significance. This is what, this study aims to explore.

The composition of venture investment of the human error factors

The so-called human error refers to the person's behavior results deviate from the prescribed target, and a negative impact. Venture investment failure led to human error factors are as follows: the leader factors: performance as the basic qualities of a leader is poor; judgment and decision-making mistakes; the lack of sense of responsibility and the sense of political responsibility; on the investment project disagree; because of the information asymmetry risk agents caused; moral risk (Steier & Greenwood, 1995) intends to seek their own interests; the leader adventure with the fluky psychology; core people leave etc..

Factors of employees: the performance of employees lack the necessary professional knowledge and skills and lead to errors; or is led to the failure of because of luck, self-confidence, love the performance, psychological paralysis; or when they encounter problems, resulting in impatience, nervous, cannot be good for processing and coordination, lead to human errors.

The factors of Government: venture investment is essentially a kind of market behavior rather than the government (Tyebjee & Bruno, 1984), but in reality, too much government intervention on venture capital, brings great impact on investment.

At the same time, and the investment of enterprise leaders and political tendency, as in the pursuit of performance or to cater to the superior leadership decision-making, lack of investment feasibility, bring the risk to investment.

Factors, organization management: the performance of the organizational structure, staffing unreasonable; the improper method of management, labor discipline lax; management risk consciousness; information exchange and feedback mechanism is not perfect; the team coordination ability is not strong; risk response mechanism is not sensitive and incentive mechanism is not perfect etc.

METHODOLOGY

Venture capital in the survey by human error factors

Person by error factors in the design of the questionnaire

Questionnaire using Likert five-point scale score standards, on the design of the questionnaire is divided into two steps. First of all are the preliminary design and investigation, including investment failure causes and performance investigation. Then using SPSS factor analysis was carried out on the initial data, to eliminate load factor is too small (<0.5) and the correlation coefficient is too large (0.7) >inappropriate survey project (Barry,1998) and collates, get detailed questionnaires: (1) leader factor: leader basic quality (X1), judgment and decision-making errors (X2), communication (X3), adventure and fluky psychology (X4), moral risk and the agent risk (X5), core departure (X6); (2) the factors: employee (X7) basic quality, professional skills, understanding ability and the adaptability (by 8), work sense of responsibility and discipline concept (X9); (3) the government behavior factors: the government management is scientific (X10), management politicized tendency (X11); (4) organization and management factors: staffing (X12); Information communication and feedback mechanism (X13); Team coordination ability and risk coping mechanisms (X14); (5) venture investment intangible performance: customer satisfaction (Y1), staff loyalty (Y2); Physical performance: return on assets (Y3), the market share (Y4).

Assessment object and the sample size

The survey of superior and secondary staff in venture capital or senior staff as investigation object, and investigating of venture investment in recent two years. Surveys shall be carried out in accordance with the scale of the investment proportion sampling, such as by mail in the form of questionnaire and on-site interview, etc. In the related departments with the assistance of a total of 325 questionnaires, including high-level management personnel and senior staff respectively 7. 2%, 25. 7% and 67. 1%, men and women account for 86% and 14% respectively. Recycling questionnaire, 271, the recovery was 271. 4%, of which 216 valid questionnaires, effective recovery was 79. 7%.

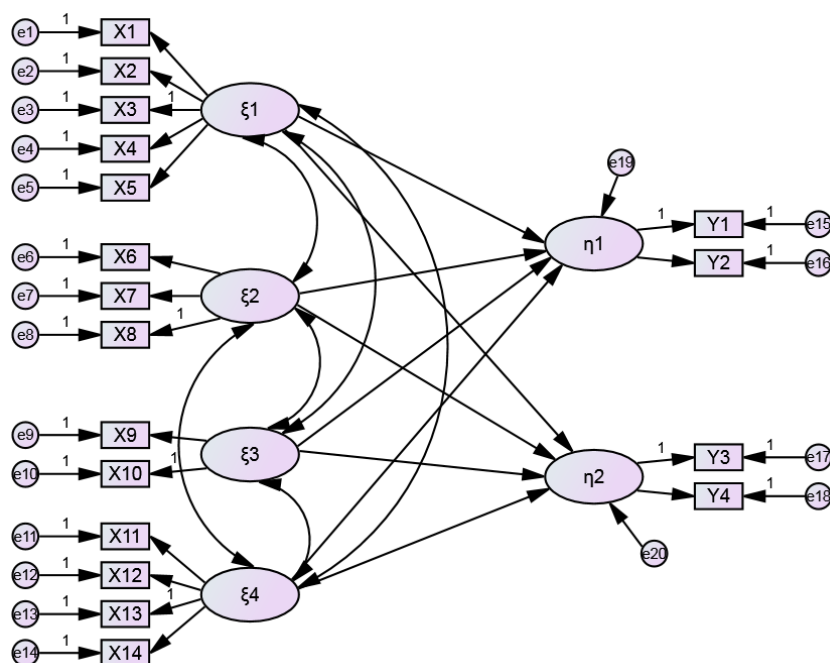
Reliability analysis

In the process of the design of the questionnaire, this study refer to the relevant theoretical and empirical research results both at home and abroad, and discussed the with several changes, therefore, the questionnaire should have a fair degree of validity. In reliability, research using the Cronbach alpha's method with SPSS 0.7 as the threshold for inspection, the results show that most problems with acceptable reliability value.

Venture investment in structural equation model by error factors

Structural equation model (SEM) is a technology based on statistical analysis of research methods, to deal with complex multivariate data inquiry and analysis (Chen 2003). Through the analysis of the survey, people assume that venture investment because of error factors of structural equation model is made up of six latent variables. Among them, the exogenous latent variables N1: leader factors; N2: employee factors; N3: the government behavior factors; N4 interchange: organization and management factors. G1: endogenous latent variables to venture investment intangible performance; G2: venture capital physical performance. To establish the relationship between the observed variables and latent variables as shown in figure 1.

Figure 1 venture investment go-between for error factors of structural equation model



In order to investigate the influence of various factors on the venture investment performance, set up five hypotheses. H1: leadership factors and other factors there is positive relationship between; H2: leader factors can improve the significant increase in the venture investment performance; H3: employees significant influences on venture investment; H4: the government behavior of venture investment is very large; H5: has a great influence on the venture investment organization and management factors.

EMPIRICAL FINDINGS

Structural equation analysis of venture investment in by error factors

The test of the fit

This research use AMOS 21. 0 for structural equation model analysis, using TLI is relatively stable index assessment model of goodness of fit, fitting the evaluation results and its ideal value after summarized in table 1 (including ideal value reference Bentley evaluation criteria).

Table 1 Fitting analysis

| Goodness of fit index | The calculated values | Ideal value | Results | Goodness of fit index | The calculated values | Ideal value | Results |
|-----------------------|-----------------------|-------------|-------------|-----------------------|-----------------------|-------------|-----------|
| X^2 | 274. 7 | | | CFI | 0.785 | >0.9 | Not ideal |
| P | 0. 1 76 | >0. 1 | significant | GFI | 0.924 | >0.9 | ideal |
| X^2 / df | 2. 306 | <3 | ideal | Tucker-Lewis index | 0. 903 | >0.9 | ideal |
| RMR | 0.042 | <0. 05 | ideal | RMSEA | 0. 045 | <0. 05 | ideal |

From known statistical hypothesis model parameters in table 1 basically meet the evaluation criteria of Bentley, thus it can be seen: structure model and the observation of the sample data has a better fitting effect, thus it can be according to the calculation results for further analysis.

Path and factor analysis

It is gained through the analysis of the structural equation model, the path coefficient between latent variables and indicators and the factors of load between latent variables. This study analysis after the standard path coefficient and factor load summary in table 2.

Table 2 Path coefficient and factor load

| Path or factors | Standardized estimate | Value t | Path or factors | Standardized estimate | Value t | Path or factors | Standardized estimate |
|----------------------------|-----------------------|---------|-------------------------|-----------------------|---------|--------------------------|-----------------------|
| $\xi_1 \rightarrow \eta_1$ | 0. 786 | 3. 746 | $\xi_1 \rightarrow X_4$ | 0. 573 | 9. 714 | $\eta_1 \rightarrow Y_1$ | 0. 773 ^b |
| $\xi_2 \rightarrow \eta_1$ | 0. 217 | 1. 847 | $\xi_1 \rightarrow X_5$ | 0. 807 | 7. 574 | $\eta_1 \rightarrow Y_2$ | 0. 586 |
| $\xi_3 \rightarrow \eta_1$ | 0. 624 | 4. 972 | $\xi_1 \rightarrow X_6$ | 0. 526 | 11. 921 | $\eta_2 \rightarrow Y_3$ | 0. 716 ^b |
| $\xi_4 \rightarrow \eta_1$ | 0. 649 | 3. 941 | $\xi_2 \rightarrow X_7$ | 0.617 ^b | | $\eta_2 \rightarrow Y_4$ | 0. 654 |

| | | | | | | | |
|----------------------------|--------------------|-------|----------------------------|--------------------|--------|-------------------------------|-------|
| $\xi_1 \rightarrow \eta_2$ | 0.831 | 4.216 | $\xi_2 \rightarrow X_8$ | 0.542 | 3.493 | $\xi_1 \leftrightarrow \xi_2$ | 0.537 |
| $\xi_2 \rightarrow \eta_2$ | 0.149 | 1.283 | $\xi_2 \rightarrow X_9$ | 0.685 | 5.273 | $\xi_1 \leftrightarrow \xi_3$ | 0.362 |
| $\xi_3 \rightarrow \eta_2$ | 0.574 | 7.169 | $\xi_3 \rightarrow X_{10}$ | 0.647 ^b | | $\xi_1 \leftrightarrow \xi_4$ | 0.659 |
| $\xi_4 \rightarrow \eta_2$ | 0.512 | 9.347 | $\xi_3 \rightarrow X_{11}$ | 0.729 | 7.914 | $\xi_2 \leftrightarrow \xi_3$ | 0.117 |
| $\xi_1 \rightarrow X_1$ | 0.743 ^b | | $\xi_4 \rightarrow X_{12}$ | 0.548 ^b | | $\xi_2 \leftrightarrow \xi_4$ | 0.584 |
| $\xi_1 \rightarrow X_2$ | 0.549 | 7.652 | $\xi_4 \rightarrow X_{13}$ | 0.659 | 14.537 | $\xi_3 \leftrightarrow \xi_4$ | 0.319 |
| $\xi_1 \rightarrow X_3$ | 0.318 | 6.745 | $\xi_4 \rightarrow X_{14}$ | 0.726 | 6.974 | | |

Latent variables from table 2 shows that load factor basically all above 0.5, the significance level $A = 5\%$ ($t = 1.96$) test showed that in addition to the individual path coefficient and factor load, fitting requirements of the vast majority of t is greater than 1.96, shows that after eliminating the questionnaire questions items are well reflects the corresponding latent variables.

Hypothesis testing and the result of path analysis

According to the rule of the above analysis, the hypothesis was tested with fewer than 5% significance level, the results summarized in table 3. Performance of staff and tangible and intangible performance between structure parameters of the t value is less than the critical 1.96, not by statistical significance test, the assumption fails; T value of the structural parameters, the remaining nine were greater than 1.96, by statistical significance test, the hypothesis is established.

Table 3 result of hypothesis path coefficient and t

| Hypothesis | Path | coefficient | t | Hypothesis | Path | coefficient | t |
|------------|-------------------------------|-------------|-------|------------|----------------------------|-------------|-------|
| H_1 | $\xi_1 \leftrightarrow \xi_2$ | 0.537 | 5.491 | H_3 | $\xi_2 \rightarrow \eta_1$ | 0.217 | 1.847 |
| | $\xi_1 \leftrightarrow \xi_3$ | 0.362 | 2.204 | | $\xi_2 \rightarrow \eta_2$ | 0.149 | 1.283 |
| | $\xi_1 \leftrightarrow \xi_4$ | 0.659 | 2.785 | H_4 | $\xi_3 \rightarrow \eta_1$ | 0.624 | 4.972 |
| H_2 | $\xi_1 \rightarrow \eta_1$ | 0.786 | 3.746 | | $\xi_3 \rightarrow \eta_2$ | 0.574 | 7.169 |
| | $\xi_1 \rightarrow \eta_2$ | 0.831 | 4.216 | | $\xi_4 \rightarrow \eta_1$ | 0.649 | 3.941 |
| | | | | H_5 | $\xi_4 \rightarrow \eta_2$ | 0.512 | 9.347 |

From table 3 can still be seen: effect on intangible performance factors, the largest is the leader, and organizational management factors, government behavior factors, factors of influence on employees minimum; tangible performance, followed by the leader factor, government behavior factors, management factors, factors affecting employee basically No. The moral risk and agency risk factors, the leader of the basic quality, adventure and fluky psychology, making mistakes is the main human error factor; effect of the political tendency of government management government behavior factors in scientific and leader of venture investment are very large; organizational management factors of team coordination and risk response mechanism, information exchange and feedback mechanism is the main factor.

CONCLUSIONS

The empirical analysis of the model using the sample data, we can see that:

- (1) Leaders in venture investment factors and other factors are highly correlated; its effect on venture capital is far greater than other factors, that the venture capital is a process of one part person is dominant, which can also see that the leader is a key influence factor of venture investment factors.
- (2) The impact of managerial moral risk, agency risk of venture investment is very large, this shows that we should strengthen the leadership, improve the compensation management occurred thought leaders quality to guard against this risk.
- (3) The staff factor although has certain influence on venture capital, but not significantly, thus it can be seen, venture investment, vulnerable groups employees at a lack of information, it is not powerful, key factors will not affect the investment.
- (4) The influence of government intervention on venture capital investment is very big. Because the old thinking durance for many years, governments at all levels against the development of modern venture capital industry rules, resulting in improper government behavior accordingly, is actually "do not do a good job, but do not do too much" (Chen,1998) the results can only be run counter to one's desire.
- (5) The influence of the political tendency of venture capital is very great leader. This is because in the process of venture investment, leaders in the pursuit of performance or to cater to the superior leadership, lack of scientific policy-making, bring the risk to investment.
- (6) The organizational management factors have a great influence on entrepreneurial investment, if can effectively improve the management of personnel configuration, optimization of the organizational procedures, strengthen the awareness of risk management personnel, improve the information feedback mechanism, especially pay attention to team risk under the

condition of reaction, improve the coordination ability, can effectively prevent the occurrence of human errors.

REFERENCES

- Wang Yiqun. The analysis of human: need, problem and development trend of systems engineering theory & practice, 2001 (06):13-19.
- HouErxiu, GuLigang. People because of Management Countermeasures of failure analysis of [J].ergonomics, 2004 (02):53-55.
- Wei Xing, Xia Enjun, Li Quanxing. A comprehensive evaluation of risks in venture investment project decision making [J]. Chinese soft science, 2004 (02):153-157.
- Steier L, Greenwood R. Venture Capitalist Relationships in the Deal Structuring and Post - investment Stages of New Firm[J]. 1995,32 (3):476-489.
- Tyebjee T T, Bruno A V. A model of Venture Capitalist Investment Activity[J]. Management Science, 1984,30 (9):251-267.
- B K. Human Error Identification Techniques for Risk Assessment of High Risk System -Part 2: towards a Framework Approach[J]. Applied Ergonomics, 1998,5 (29):299-318.
- Chen Mingliang. An Empirical Study on the factors [J]. Journal of Management Sciences in China decided to customer loyalty, 2003 (05):72-78.
- Chen Demian, Pei Xiasheng, Shen Minghong. The theory and method of [J].hightechnology investment risk forecast and evaluation of prediction, 1998 (01):48-50.