



The Connotation and Structure of intrapreneurs' competence: An empirical analysis based on UCINET and questionnaire survey

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Abstract

Employee intrapreneurship is a bottom-up commercial activity carried out by individuals relying on existing organizations and has gradually become one of the research themes in the cross-field of organizational behavior and entrepreneurial management, but there is a relative lack of research on how colleges and universities can cultivate the competence of intrapreneurship among college students. This study focuses on the question of “what is the connotation and structure of the intrapreneurs' competence”, uses the content analysis method to analyze the intrapreneurs' competence based on the existing literature and obtains 22 core competency elements, and based on 22 core competency elements distributes 270 questionnaires to conduct empirical research on the composition of intrapreneurs' competencies. The study found that intrapreneurs' competence is composed of four aspects: innovation competence, team leadership competence, individual characteristics, and risk management competence. This study deepens people's understanding of the connotation and structure of the intrapreneurs' competence in China, and to some extent promotes universities to discover and cultivate intrapreneurs' competence in college students.

Key Words: Intrapreneurs' Competence, Connotation and Structure, UCINET, Questionnaire

1. Introduction

Intrapreneurship was first proposed by Pinchot, an American scholar, in his 1985 book “Innovator and Enterprise Revolution”. The core of intrapreneurship is to study how to conduct entrepreneurial activities within large, established organizations.[1] Intrapreneurship theory was first focused on the field of enterprise management. It is believed that it can not only boost the organization to continuously improve products, innovate services and improve strategies[2], but also effectively solve the “big enterprise disease” of the organization and improve the flexibility and competitiveness of the organization[3]. Since the 1970s and 1980s, organizations have been increasingly

impacted by the constant pressure of competition from globalization, economic transformation, and technological change. One of the measures taken by the organization to deal with the challenges is to release the entrepreneurial spirit, subjective initiative, and passion of employees, so that employees can open up new paths to improve the current situation of the organization, that is, to actively promote intrapreneurship behavior within the organization. 3M, IBM, Google, and other large enterprises as well as more small and medium-sized enterprises have realized the importance of intrapreneurship and actively adopted the intrapreneurship model. Under the wave of the intrapreneurship model, it has swept all kinds of enterprises and organizations from manufacturing to the service industry, from large enterprises to small and medium-sized enterprises.

However, with the development of intrapreneurship practice, although intrapreneurship practice has received a lot of theoretical and practical attention, the academic research on intrapreneurship has yet to be further deepened. Most of the existing research is qualitative research, and there are very few studies directly on the composition of intrapreneurs' competence. Therefore, this paper adopts content analysis and questionnaire survey to identify the connotation and structure of intrapreneurs' competence in the Chinese context.

2. Literature Review

Studies have used different terms to define and describe intrapreneurship within organizations, such as “Corporate Entrepreneurship”, “Intrapreneurship”, “Internal Entrepreneurship”, “Corporate Venturing”, etc. Intrapreneurship is a new form of development corresponding to independent entrepreneurship. Pinchot[4], Hisrich[5], Antoncic and Hisrich[6] believe that intrapreneurship is an innovative activity that occurs within an organization and can promote the performance of the new business, new product, service, technology, administrative practice, strategy, and competition. Existing studies have explored the concept of intrapreneurship in terms of entrepreneurial scope, entrepreneurial characteristics, entrepreneurial purpose, entrepreneurial activities, and other aspects. Although no consensus has been reached, some consensus has been formed on the characteristics of intrapreneurship, such as “within the organization, relying on professional skills, and post entrepreneurial

behavior”.

Intrapreneurs refer to employees who use their own professional abilities and resources to carry out innovative and entrepreneurial activities supported and approved by the organization [7]. Intrapreneurs are often compared with independent entrepreneurs, and intrapreneurs are considered to be those who carry out entrepreneurial activities based on positions in existing organizations. Generally, they are innovation practitioners within the organization [8], (mild) risk bearers [9], and promoters of organizational learning [10]. Two important characteristics are highlighted: first, they have solid professional skills and their innovative and entrepreneurial behaviors are skill-based; Second, they are innovative, initiative, and show a strong sense of responsibility and risk, and carries out innovation and entrepreneurship within the organization.

In early studies, some people put forward many content dimensions related to intrapreneurs' competence. For example, Miller(1983) believed that there were three dimensions: innovation, priority action, and risk taking[11]. Later, some scholars extended the three dimensions to four dimensions: New venture entrepreneurship, innovation, self-renewal, and priority action.[12] Some scholars believe that the dimension of “new venture entrepreneurship” should be the dimension of “competitive capacity”, and the dimension of intrapreneurs' competence should be innovation, self-renewal, priority action, and competitive capacity.[13] Currently, intrapreneurs are divided into eight dimensions: New venture entrepreneurship, new business, product/service innovation, process innovation, self-renewal, risk-taking, priority action, and strong competitiveness.[14][15][16] Veysel Ağca et al. (2012) summarized previous research into two aspects: “entrepreneurship orientation” and “enterprise entrepreneurship”, and divided intrapreneurs' competence into five dimensions: innovation, new venture entrepreneurship, self-renewal, strategic renewal, risk-taking, and priority action.[17]

Most of the existing literature belongs to theoretical speculation or qualitative analysis, and few people carry out empirical research on the connotation and structure of the intrapreneurs' competence, and the research object pays little attention to college students. This study adopts the method of content analysis and questionnaire survey to try to give a scientific answer to the connotation and structure of the intrapreneurs'

competence of college students.

3. Theoretical Construction: Based on UCINET co-word network analysis

The co-word analysis method was proposed by Callon et al in 1983, which is a form of content analysis method. A combination of words and noun phrases can be counted in a single document or document to reflect the intimate relationship between the subjects.[18] It is generally believed by scholars that the higher the frequency of occurrence of two pairs of words in the same paper, the closer the relationship between the two pairs is. Therefore, a co-word network composed of these pairs can be formed by counting the frequency of the pairs of words, and then it can be visualized through data analysis.

In this paper, UCINET social network analysis software is used to analyze the co-word network. UCINET(the University of California at Irvine NETwork) is a powerful social network analysis software, originally written by Linton Freeman, an authoritative scholar of social network research at the University of California at Irvine in the United States. UCINET can process raw data in matrix format, and provides a large number of data management and transformation tools. The program itself does not include a graphics program for network visualization, but it can output data and processing results to software such as NetDraw, Pajek, Mage, and KrackPlot for plotting. UCINET includes the role analysis of network analysis programs and statistical analysis based on substitution, including detecting cohesive subgroups (Cliques, Clans, Plexes) and regions (Components, cores), personal network analysis, and structural hole analysis.

As intrapreneurship research is still an emerging research field, relevant literature is relatively limited, and there is little literature on intrapreneurs' competence research. Therefore, to absorb relevant studies as much as possible, this paper made a thorough search of intrapreneurship research literature as far as possible. The literature retrieval condition was as follows: "topic = Intrapreneur or intrapreneurship or intrapreneuring". The literature retrieval database was the CNKI Database, SSCI Database, Google Academic Database. According to the above retrieval conditions, a total of 86 Chinese literature on internal entrepreneurship research were screened out, and 177 foreign literature on intrapreneurship research were screened again by reading 263 articles in

full. On the one hand, other research literature on intrapreneurship unrelated to intrapreneurship competence was deleted. On the other hand, the existing research subjects of intrapreneurship not only include intrapreneurship at the individual level, but also include intrapreneurship within the team and organization. Since this study only focuses on the study of intrapreneurship within individuals, the relevant literature on "intrapreneurship within team and organization" is deleted. Finally, 36 literature on intrapreneurship were selected, including 21 Chinese and 15 foreign literature.

In the UCINET data processing, this study carried out standardization processing of similar keywords, determination of high-frequency words, Netdraw visualization imaging, k-Cores hierarchical structure analysis, and K-Plex condensed subgroup density analysis for 36 literature. It should be emphasized that, to comprehensively and scientifically reflect the connotation and structure of the intrapreneurs' competence, and ensure the effect of co-word analysis, in this study, the threshold value of high-frequency words and low-frequency words is set to 2, and the competence of frequency 1 will be eliminated.

According to the results of co-word analysis, this paper considers that the connotation and structure of the intrapreneurs' competence include 22 elements: Create, identify, and exploit new opportunities; Resource acquisition competence; Innovation management competence; priority action competence; learning competence; Team leadership; risk management competence; Strain competence; risk-taking competence; independent working competence; Risk identification competence; goal orientation; forethought; Strategic Implementation competence; motivative competence; communication competence; Technical skills; rich experience; Strong achievement motivation; Optimistic and enterprising; Perseverance; Frustration tolerance competence; Innovation management competence. These competency elements will be the questions of the follow-up questionnaire survey.

Table 1 Intrapreneurs' Competence High Frequency Keyword

Number	Competence Keywords	Frequency	Number	Competence Keywords	Frequency
1	Innovation management competence	24	12	Perseverance	4
2	Risk-taking competence	13	13	goal orientation	4
3	Strong achievement motivation	13	14	Strain competence	4
4	rich experience	12	15	Team leadership	4

5	learning competence	10	16	forethought	4
6	priority action competence	9	17	Frustration tolerance competence	3
7	independent working competence	8	18	Resource acquisition competence	3
8	Optimistic and enterprising	8	19	Risk identification competence	3
9	Technical skills	8	20	risk management competence	2
10	Create, identify, and exploit new opportunities	7	21	motivative competence	2
11	communication competence	4	22	Strategic Implementation competence	2

4. Data and Results

4.1 Questionnaire design and distribution

A questionnaire survey is an important way to verify the connotation and structure of the intrapreneurs' competence in this study. The questionnaire consists of two parts: the intrapreneurs' competence scale, and the basic information of the applicants. Among them, based on the existing literature and content analysis results, this study constructed a scale of the components of intrapreneurs' competence, and determined and improved the content of the questionnaire on this basis.

In this study, paper questionnaires were distributed offline on the spot and electronic questionnaires were distributed online to the employees, intrapreneurs, and entrepreneurs. Although not all of them were intrapreneurs, they were all insiders of intrapreneurs. During the questionnaire distribution process, the researchers informed the respondents of the necessary concepts of intrapreneurs and intrapreneurship, so that the respondents clearly understood the content and purpose of the questionnaire survey.

4.2 Reliability Test

Due to the lack of mature and systematic measurement scales for the core elements of intrapreneur' competence, this study determined 22 competency items based on literature review and UCINET co-word network analysis, and conducted reliability tests on the questionnaire items based on the survey results before exploratory factor analysis.

Reliability is an index used to measure the consistency and stability of the measurement effect of the scale. In this study, the "Cronbach's Alpha" coefficient were used as the

reliability test, and the data was analyzed by SPSS software. The results show that the overall "Cronbach's Alpha" value of the scale is 0.989, which is significantly greater than 0.9. Therefore, each item meets the reliability requirements for factor analysis.

4.3 Factor Analysis: Data analysis results

Finally, a total of 270 valid questionnaires were collected in this study. According to the statistical results of the recovered samples, the distribution of the survey objects in each characteristic item is shown as follows:

Table 2 Demographic data analysis of the study sample

Characteristic Variable	Type	Population	Percentage
Gender	Male	112	41.48%
	Female	158	58.52%
Education Background	Below Higher Vocational College	7	2.59%
	Higher Vocational College	29	10.74%
	Undergraduate	189	70%
	Master Degree	31	11.48%
	Phd Degree	14	5.19%
Working Time	0-3year	177	65.56%
	3-5 year	28	10.37%
	5-10 year	27	10%
	10-20 year	24	8.89%
	More than 20 years	14	5.19%
Nature of Working Organization	Private Enterprise	88	32.59%
	State-owned Enterprise	43	15.93%
	Public Institution	105	38.89%
	Party and Government Offices	34	12.59%
Management Level	Ordinary Employees	189	70%
	Junior Manager	34	12.59%
	Middle Manager	26	9.63%
	Senior Manager	19	7.04%
	Employer	2	0.74%

Based on the existing data analysis, the Kaiser-Meyer-Olkin test and Bartlett test should be performed on the sample data before exploratory factor analysis. In general, if the KMO value exceeds 0.9, it is very suitable for factor analysis. Bartlett test is used to test the correlation between variables in the correlation matrix and whether each variable is independent. The results show that the KMO value is 0.973, far exceeding 0.9, indicating that this subscale is very suitable for factor analysis. In addition, the chi-

square value of Bartlett's test is 9194.654 (df=231, significant at the 0.000 level), which indicated that the subscale data is correlated and suitable for factor analysis.

In this paper, SPSS was used to conduct factor analysis on 22 items of intrapreneurs' competence. In this paper, the principal component was used to extract common factors, the feature root was greater than 1 as the extraction standard, and the maximum variance method was used for rotation. The maximum iteration was set to 25 times. Through factor analysis, four common factors were obtained. As can be seen from Table 2, CE01 to CE05 and CE08 and CE16 explain factor 1, CE13, CE14, CE15, CE18, and CE19 explain factor 2, CE17, CE20, CE21, CE22 explain Factor 3, CE06, CE07, CE9, CE10, CE11, and CE12 explain Factor 4. Factor Loading is greater than 0.5. The results of the principal component analysis are different from the connotation and structure of the intrapreneurs' competence, so it is necessary to rename and structure the connotation and structure of the intrapreneurs' competence. According to the commonness and characteristics of each project, this study names the four common factors extracted: common factor 1 is named "innovation competence", common factor 2 is named "team leadership competence", common factor 3 is named "risk management competence", and common factor 4 is named "individual characteristics".

Table 3 Factor analysis of “the intrapreneurs’ competence Composition scale”

Common Factor	Items	Validity
Innovation Competence	CE01 Create, identify, and exploit new opportunities	0.738
	CE02 Resource acquisition competence	0.749
	CE03 Innovation management competence	0.616
	CE04 priority action competence	0.603
	CE05 learning competence	0.616
	CE08 Strain competence	0.61
	CE16 communication competence	0.574
Team Leadership Competence	CE13 Team leadership	0.639
	CE14 Strategic Implementation competence	0.593
	CE15 motivative competence	0.624
	CE18 rich experience	0.578
	CE19 Strong achievement motivation	0.707
Risk Management Competence	CE06 Risk identification competence	0.621
	CE07 risk management competence	0.67
	CE09 risk taking competence	0.562
	CE10 independent working competence	0.609
	CE11 forethought	0.561
	CE12 goal orientation	0.552
Individual Characteristics	CE17 Technical skills	0.73
	CE20 Optimistic and enterprising	0.655

CE21 Perseverance	0.621
CE22 Frustration tolerance competence	0.576

5. Conclusion

5.1 Empirical findings

This study uses the content analysis method to analyze the intrapreneurs' competence based on the existing literature and obtains 22 core competency elements, and based on 22 core competency elements distributes 270 questionnaires to conduct empirical research on the composition of intrapreneurs' competencies, and finally extracts the competence elements and structure of intrapreneurs' competence in the Chinese context.

Based on 270 questionnaires from 36 key articles, the study found that intrapreneurs in the Chinese context contain 22 competency elements; In addition, according to the results of SPSS factor analysis, this study concluded that the 22 competency elements could be condensed into four competence structures, namely, innovation competence, team leadership competence, individual characteristics, risk management competence. As an early empirical study on intrapreneurs' competence in China, this paper deepens people's understanding of the connotation and structure of the intrapreneurs' competence in China, and to some extent promotes universities to discover and cultivate intrapreneurs' competence in college students.

5.2 Limitations and directions for future research

As intrapreneurs' competence is a very complex systematic engineering, this study still has some shortcomings: in the process of empirical research, the data used is from the questionnaire, which is highly subjective and has limited data, and the reliability and validity of each competence factor need to be further strengthened.

Future research should focus on the following three aspects for improvement: First, increase field research, field interviews to investigate more intrapreneurs and obtain first-hand research materials, so as to analyze the connotation of intrapreneurs' competence in Chinese context in a more comprehensive and in-depth way; The second is to improve and reissue questionnaire, as much as possible to increase the number of samples, in order to cover more diverse types of intrapreneurs; Third, in the future

should be based on the research results of the connotation and structure of intrapreneurs' competence, improving professional curriculum for colleges and universities entrepreneurship to advise and guide students within the organization based on jobs, innovative undertaking full integration of entrepreneurship education and professional education, break through the traditional shackles of entrepreneurship education promote the talent cultivation system of colleges and universities set up a sound entrepreneurial engineering.

References

- [1] Pinchot G I. Intrapreneuring: Why You Don't Have to Leave the Corporation to Become an Entrepreneur[J]. Social Science Electronic Publishing, 1985.
- [2] Yariv I, Galit K. Can Incivility Inhibit Intrapreneurship?[J]. Journal of Entrepreneurship, 2017, 26(3):097135571667738.
- [3] Alvarez C, Turró A, Urbano D. Organizational resources and intrapreneurial activities: an international study[J]. Management Decision, 2013, 51(4):854-870.
- [4] Pinchot G I. Intrapreneuring: Why You Don't Have to Leave the Corporation to Become an Entrepreneur[J]. Social Science Electronic Publishing, 1985.
- [5] Hisrich R D. Entrepreneurship/intrapreneurship.[J]. American Psychologist, 1987, 45(2):209-222.
- [6] Antoncic B, Hisrich R D. Intrapreneurship : Construct refinement and cross-cultural validation[J]. Journal of Business Venturing, 2001, 16(5):495-527.
- [7] W Lan & Z Jingran., "Intrapreneurs: The new trend of entrepreneurship education in colleges and universities", Jiangsu Higher Education, 2015(6):107-110. (in Chinese)
- [8] Jain R, Ali S W, Kamble S. Entrepreneurial and Intrapreneurial Attitudes: Conceptualization, Measure Development, Measure Test and Model Fit[J]. Management & Labour Studies, 2015, 40(1-2):1-21.
- [9] Levent Altınay. The intrapreneur role of the development directors in an international hotel group[J]. Service Industries Journal, 2005, 25(3):403-419.
- [10] Burgess, Cathy. Factors influencing middle managers' ability to contribute to corporate entrepreneurship[J]. International Journal of Hospitality Management, 2013, 32(1):193-201.
- [11] Miller D. The Correlates of Entrepreneurship in Three Types of Firms[M]. INFORMS, 1983.
- [12] Antoncic B, Hisrich R D. Intrapreneurship : Construct refinement and cross-cultural validation[J]. Journal of Business Venturing, 2001, 16(5):495-527.
- [13] Sharma P, Chrisman S J J. Toward a Reconciliation of the Definitional Issues in the Field of Corporate Entrepreneurship [M]// Entrepreneurship. Springer Berlin Heidelberg, 2007:11-27.
- [14] Yariv I, Galit K. Can Incivility Inhibit Intrapreneurship?[J]. Journal of Entrepreneurship, 2017, 26(3):097135571667738.
- [15] Serinkan C, Kaymakçı K, Arat G, et al. An Empirical Study on Intrapreneurship: In A Service Sector in Turkey[J]. Procedia - Social and Behavioral Sciences, 2013, 89(9):715-719.
- [16] Antoncic B, Hisrich R D. Clarifying the intrapreneurship concept[J]. Journal of Small Business & Enterprise Development, 2003, 10(1):7-24.
- [17] Ağca V, Topal Y, Kaya H. Linking intrapreneurship activities to multidimensional firm performance in Turkish manufacturing firms: an empirical study[J]. International Entrepreneurship & Management Journal, 2012, 8(1):15-33.
- [18] Callon M, Courtial J-P, Turner W A, et al. From translations to problematic networks: An introduction to co-word analysis[J]. Social Science Information, 1983, 22(2): 191–235.