A Positive Research on Dynamic Needs Model of Knowledge Workers Based on Career-Life-Cycle Theory[*]

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Abstract   This paper began with the motivation disorder of the knowledge workers under the knowledge-based economy. Firstly, the paper reviewed the relevant researches of the dynamic motivation on knowledge workers. Secondly, the paper put forth the relevant need hypothesizes of the knowledge workers in different career-life-cycle stages. Thirdly, the paper designed the questionnaires of the dynamic demands on the knowledge workers. Fourthly, the paper analyzed the statistic quality and results of the questionnaire investigations. Finally, the paper made the relevant.
Key words   Career-life-cycle; Knowledge worker; Dynamic needs model; Positive research

1 Introduction

As we all know that the knowledge had become the key resource and factor of the society in the knowledge-based economy. So the knowledge workers are the most important fortune of the enterprises. If the knowledge as the carrier of the knowledge workers drain or their active status is not very good, it will result in serious consequence. So the motivation of the knowledge workers became the core of the management and the main force of the efficiency and competence.   William James, a professor in Harvard University, had indicated that the man can only work out his potentialities from 20% to 50% in worse motivation environment, but he can exploit his potentialities from 80% to 90% in the better motivation organization. Therefore, the potentialities difference from 50% to 60% result from the effective motivation. Therefore, Peter Drucker, a famous American professor, had said that it is the most threats for the organizations how to enhance the productivity of the knowledge workers and effectively motivate them in 21st century. It is well known that the demands of the knowledge workers in different career-life-stage are different. If the organizations are not familiar with their demands, they won't work out the effective motivation mechanisms. Based on this, the paper aim to present and testify the career-life-cycle demand model of the knowledge workers to identify the rule of the leading demands in their different career-life-cycle stages. Therefore, the paper was divided into seven parts. Part 1 introduced the importance of the research on the motivation of the knowledge workers under the knowledge economy. Part 2 reviewed the relevant researches of the dynamic motivation on knowledge workers. Part 3 put forth the relevant need hypothesizes of the knowledge workers in different career-life-cycle stages. Part 4 designed the questionnaires of the dynamic demands on the knowledge workers. Part 5 analyzed the statistic quality and results of the questionnaire investigations. Part 6 made the conclusions based on above statistic analysis.

2 Relevant Research Review on Motivation of Knowledge Workers

The relevant researches on the motivation of the knowledge workers result from the development of the knowledge-based economy. In 1989, MaHon Tampoe put forth the motivation factors include personal growth, job autonomy, business success, and money wealth. In 2001, Peng Jianfeng and Zhang Wangjun analyzed the motivation factors of the knowledge workers include salary and reward, individual growth and the development, the challenging task, the company future, and the security and stable work. In 2001, Zheng Chao and Huang Youli put forth that the order of the motivation are the money wealth, the individual growth, achievement and work autonomous according to the importance. Ma Lirong and Xiao Hongjun put forth that the main motivation factors of the knowledge workers include organizational environment, individual growth, spiritual and material motivation. Cheng Hui and Zhang Daliang found that the motivation factors of the knowledge workers exist three dimensions such as work motivation including the challenge, the achievement and the ability exertion; the external motivations including management system, the organizational future, the training, the leadership quality, the work condition and the rewards; and the periphery motivation factors including the work competence, the human relationship, the team cooperation and the individual life.

With the development of the further research on the motivation of the knowledge workers, the scholars found that not only the organizational quality, the education and the marriage and affect the motivation but also the motivation factors in different career-life-cycle stage are very different. According to their researches, we can know the follows. The knowledge workers pay more attention to the money reward in entry phase, the individual growth in development phase, and the achievement in maturity phase.　In different age, the importances of the motivation factors of the knowledge workers have obvious difference. The younger the knowledge workers are, the more important the individual growth and the achievement are; the older the knowledge workers are, the more important the money reward; the higher level their education is, the more important the individual growth; the lower level their education is, the more important the money reward.　Therefore, we can make the follow hypothesis of the demands of the knowledge workers in different career-life-cycle stage.

3 Hypothesizes on Different Career-life-cycle Demands of Knowledge Workers
3.1 The definition of the career-life-cycle
The predecessor's relevant researches are only explaining the stage and characteristics of the career-life-cycle. They have not explored the reasons behind the characteristics and no further research on the related incentive management. Therefore, the paper aims to combine the motivation theory with the career--life-cycle theory to indentify the rules of the demand factors of the knowledge workers. Based on career-life-cycle theories and the state laws and regulations, the career- life-cycle can be divided into four stages. The entry phase is the period between 18 and 27 years old. During this phase, the knowledge workers begin to work. There are many unrealistic views and expectations, so they need to learn the new environment and job skills; they are not familiar with their work, so their performances are not very high. The development phase is the period between 28 and 35 years old. During this stage, the experienced knowledge workers have been familiar with their jobs, so they focused on cultivating their ability, improving their job performance, and enhancing their professional competence. At the same time, they will take a relatively heavy responsibility and increase performance significantly. The maturity phase is the period between 36 and 55 years old. In this phase, the knowledge workers gradually become key members of the business and continue to enhance their core competitiveness and. Meanwhile, their ability will stay in a stable career peak. They will focus on their achievements, the participation in work and the challenge task. The decline phase is the period after 55 years old. In this stage, the knowledge workers will enter into the natural decline stage due to the decline in their physical energy and learning ability.　Their capacity and status will declined rapidly, so the performance will also reduce drastically.
3.2 The hypothesizes of demands in the different career-life-cycle
In the entry stage, the knowledge workers just entered the organization. So their main task is to understand the organization, accept the organizational culture, integrate into the working groups, become an effective organizational member as soon as possible. So they have to cooperate with the experienced personnel closely and form the mentoring relationship so that they can be competent with their job under the guidance and assistance of the others. Therefore, the knowledge workers began to live an independent life and need much more expenditure, thus the demand for money is obvious firstly. Secondly, they hope that they can make full use their potential, so they have more significant demand of their individual growth. Finally, the knowledge workers want to integrate into the team and the organization as soon as possible, so they need a good team atmosphere and other environmental. Therefore, we put forth hypothesis 1.

Hypothesis 1: In the entry phase, the demands of the knowledge workers are the dominant physiological and safety needs based on money reward, individual growth, and environmental support.

In the development stage, the knowledge workers have been familiar with their job environment content, set up their interpersonal relationships network in their work. Meanwhile, they began to accelerate growth and be recognized by their superiors and colleagues. However, their main problems are that they began to assume responsibility, assign tasks to others, and demonstrate their skills and expertise to achieve promotion. In addition, the knowledge has found their positions and can independently contribute to their work without the guidance of others. Therefore, the knowledge workers have a clearer understanding and planning of their career, so firstly they will desire to get a promotion and a breakthrough in their courses. Secondly, they need to secure more favorable conditions to meet their self-growth demands. Thirdly, they will be faced with bring up the next generation, so they desire a solid economic foundation support. Therefore, we put forth hypothesis 2.

Hypothesis 2: In the development stage, the main demands of the knowledge workers are social and respect needs based on individual growth, environmental support, and money reward.

In the maturity stage, the knowledge workers have abundant expertise and most of them have become the elite of the organization. Meanwhile, they already have a certain social status, a stable economic base, the vast relationship network and have climbed their course peak. They can deeply understand the company's expectations, assess their career development, accept the status quo and make specific choices for the future. In addition, they can get on well with others, learn how to guide others work, develop the company policies and fulfill a more important responsibilities. Therefore, they would like to make an achievement in their courses firstly in order to better undertake their work roles and tasks. Secondly, they need organizations to give them greater autonomy to work and a good team atmosphere to direct others.　Finally, they usually want to maintain their own achievements and social status, so they need get the recognition of the superior, colleagues, and society. Thus, we can put forth hypothesis 3.

Hypothesis 3: In the mature stage, the main demands of the knowledge workers are the respect and self-fulfillment based on the work autonomous and achievement.

In the decline stage, the knowledge workers have accomplished their course, so they began to prepare to adjust their work and non-work activities due to the decline in their competitiveness and initiative. Therefore, first of all the knowledge workers are to keep self-values, to use their experience mentoring others to maintain their existing professional achievements and dignity. Secondly, the knowledge workers hope to have a relatively comfortable life and get the love of their friends and family. Therefore, we can put forth hypothesis 4.

Hypothesis 4: In the decline phase, the knowledge workers' leading demands are the social security and physical needs based on being recognized, environmental support, and money reward.

4 Demands Questionnaire Investigation of Knowledge Workers
4.1 Questionnaire design

According to the relevant researches of the precursor, the questionnaire divided the demand into five aspects such as money reward, individual growth, environmental support, work achievements and work autonomous.　They can be subdivided into 21 factors such as Table 1, which can make the demands investigation more overall, specific and measurable.　Meanwhile, the appraisal of the factors is divided into five grades according to Likert scale, that is, 5 is very important, 4 indicates important, 3 expresses sometimes important, 2 represents rarely important, 1 stands for never important.

Table 1　The Demand Variables of the Knowledge Workers

Dimensions	Variables
Money Reward	Q1：I want to enjoy the symmetric reward with the contribution.
	Q2：The money reward is the manifests of my own value.
	Q3：My job objective is to obtain the material reward.
	Q4：I want to own the share of the company and share its benefit by my own value.
Individual Growth	Q5：I want to enjoy the opportunities of the study, exchange and training.
	Q6：I want to undertake the challenging task.
	Q7：I hope I can enhance my ability in work.
	Q8：I want to get the new job opportunities and assume the new responsibilities.
Environmental Support	Q9：I want to have a good communication environment and interpersonal relationship.
	Q10：I want to have a good team work atmosphere.
	Q11：I want to have a good leaning organization to share its knowledge.
	Q12：I want to have a Common values and excellent organizational culture.
	Q13：I want to have a sound and favorable system.
	Q14：I hope there is a scientific and reasonable performance appraisal system.
Work Autonomous	Q15：I can arrange the job with my own pattern.
	Q16：I want to have a flexible work time and place.
	Q17：I hope I can get the trust and empowerment of the supervisors in the work.
Work Achievements	Q18：I hope the supervisors can adopt the advice and originality.
	Q19：I want to enjoy the sense of the satisfaction and the achievement.
	Q10：I want to enjoy the promotion opportunities.
	Q21：I hope the position can take advantage of my potential.

4.2 Questionnaire investigation

In the research, we make preliminary and formal investigation. The objects of the preliminary investigation mainly are 29 MBA students in WHUT.   According to their feedback, we modified the questionnaire.   In formal investigation, the objects are mainly from the organizations such as WISCO, CMB, DFAC, NANHUA, and TARENA and so on.   We sent out 192 pieces of questionnaire and took back 174 pieces and the rate of the response is 90.63%. There are 3 pieces ineffective, so the effective questionnaire 171 pieces, the effective rate is 89.1%. The basic situation is shown in Table 2.

Table 2   The Basic Situation of the Questionnaire Investigation N=171）

	Dimensions	Number	Percentages
Gender	Male	87	50.88%
	Female	84	49.12%
Age	18-27	39	22.81%
	28-45	48	28.07%
	36-55	40	23.39%
	>=56	44	25.73%
Education	Junior college	10	5.85%
	Bachelor	61	35.67%
	Master	74	43.27%
	Ph. D	26	15.20%

5 Statistic Analysis on Demands Questionnaire Investigation

5.1 Reliability analysis

To testify the quality of the questionnaire investigation, we should make the reliability and validity analysis with SPSS 15.0. In reliability analysis, we generally use Cronbach's Alpha to express the reliability.   If Cronbach's Alpha is above 0.60, it indicates that the reliability of the questionnaire can be accepted. The Cronbach's Alpha of this qustionaire investigation is shown as Table 3.

Table 3   Cronbach's Alpha

Reliability	Total Questionnaire	Money Reward	Individual Growth	Environmental Support	Work Autonomous	Work Achievements
Cronbach's Alpha	0.897	0.765	0.726	0.715	0.813	0.799

5.2 Validity analysis

The validity analysis includes construct validity and content validity. In construct validity analysis, the factor analysis was considered the most powerful distinction method of the construct validity. According to the point of Kaiser, when KMO is under 0.5, it is inappropriate to make the factor analysis. The result indicated that KMO equal to 0.908, the Bartlett's value is 4857.691, df equal to 528 and p equal to 0.000, so it is appropriate to make the factor analysis. We extracted the factors whose characteristic root is more than 1 with the principal components analytic method. After the Varimax orthogonal rotation, we obtained 5 factors with 21 variables named separately them as the money reward, individual growth, the environmental support, the work autonomous, and the work achievements. In addition, each factor load value is above 0.5, the variance accumulation achieves 44.421%.

In content validity analysis, we interviewed with the relevant professors and some knowledge workers, we made the preliminary and formal investigation, and then we modified the questionnaire. Therefore, we ensured the good content validity of the questionnaire.

5.3 Results discussion

Based on above, we made the questionnaire result analyzes and the classification item by item with SPSS and EXCEL, then we made decision to determine the questionnaire result with the mean value in order to testify the hypothesis. The research categorized the objects with their age and the five kinds of demands, and then got the mean value of each category with equation（1）.

$$\overline{V}_{ij} = \sum V_{ij} / nP_i \tag{1}$$

Here, $\overline{V}_{ij}$ is the importance mean value of the objects in i career-life-cycle stage and j demand aspect. P_i is the number of the object in i career-life-cycle stage, i=1 is the entry phase between 18 and 27 years old, i=2 is the development phase between 28 and 35 years old, i=3 is the maturity phase between 36 and 55 years old, and i=4 is the decline phase over 56 years old.   Meanwhile, i=1 is the money reward, j=s is the individual growth, j=3 is the environmental support, j=4 is the work autonomous, and j=5 is

the work achievements. $\sum V_{ij}$ is the total value of the objects in i career-life-cycle stage and j demand aspect.   Thus we can get Table 4.

Table 4   The Importance Mean Value of the Objects in Different Career-life-cycle Stage and Demands Dimension

Demand Dimensions / Career-life-cycle stages	Money Reward	Individual Growth	Environmental Support	Work Autonomous	Work Achievements
Entry Phase	4.5	4	2.9	2.1	3.2
Development Phase	3.6	4.4	3.9	2.1	3.2
Maturity Phase	1.5	1.6	2.7	3.6	4.8
Decline Phase	4.4	1.2	4.4	4	2.6

According to Table 4, we can know the follows. In entry phase, the most important demand is the money reward and the individual growth, and then is the work achievements, the environmental support and the work autonomous. So Hypothesis 1 basically can be true. In development phase, the most important demand is the individual growth and the environmental support, and then is the money reward, the work achievements, and the work autonomous. So Hypothesis 2 basically can be true. In maturity phase, the most important demand is the work achievements and the work autonomous, and then is the environmental support, the individual growth and the money reward. So Hypothesis 3 basically can be true. In decline phase, the most important demand is the money reward and the environmental support, and then is the work autonomous, the work achievements, and the individual growth. So Hypothesis 4 basically can be true.

6 Conclusions

According to the above, we concluded the follows. Firstly, in the entry phase, the demands of the knowledge workers are the dominant physiological and safety needs based on the money reward and the individual growth. Secondly, in the development stage, the main demands of the knowledge workers are social and respect needs based on the individual growth and the environmental support. Thirdly, in the mature stage, the main demands of the knowledge workers are the respect and self-fulfillment based on the work autonomous and achievements.   Fourthly, in the decline phase, the knowledge workers' leading demands are the social security and physical needs based on the money reward and the environmental support. Therefore, the research conclusions can be put in to the motivation management practice of the knowledge workers.   Based on the research, the organization can adopt more pertinent measures to dynamically motivate their knowledge workers for enhancing their core competence and performance.

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