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# An Analysis of the Structure and Evaluation Methods of Individual Tacit Knowledge

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## Abstract

Tacit knowledge, especially individual tacit knowledge, plays a direct role in enabling an organization to attain a sustainable competitiveness. How to discern employee's tacit knowledge is a crucial step for an organization to cultivate, apply, and renew its core competency. As an inherent link with excellent performance, individual tacit knowledge refers to the knowledge which is hard to be expressed in words in certain situations. But tacit knowledge can be divided into general tacit knowledge and special tacit knowledge. In a pyramid model of individual tacit knowledge, it has such four levels as view of value, meta-cognition, middle skills, and professional skills. Furthermore the upper and the lower levels are different in stability, profession, and evaluation methods. Based upon the research of the structure of individual tacit knowledge, the paper explores such evaluation methods of individual tacit knowledge as questionnaires and fuzzy comprehensive evaluation. The purpose of this paper is to improve our understanding of tacit knowledge and give guidance on how to manage individual tacit knowledge effectively.

**Keywords:** knowledge management; individual tacit knowledge; structure dimensions; methods

## 1 Introduction

With clear expression and effective transmission as its criterion, knowledge falls into two categories: explicit knowledge and tacit knowledge. Because modern information technology is widely used at present, explicit knowledge has become easy to share and master. On the other hand, tacit knowledge has a characteristic of

“individual possession”, which makes it difficult to learn, express, and spread. Thereby, the Resource-Based of View (RBV) regards tacit knowledge as the key competitiveness that an organization should possess and as the crucial factor that will make it possible for the possessor to outdo his rivals. Breakthrough innovations result from the harnessing of tacit knowledge possessed by individuals and project teams. Ronald Mascitelli (2000) also described the important function of the ability of tacit technology and tacit cognition during the course of technological innovation. Roy (2001), Leonard and Sensiper (1998) argue that the complexity of skills and processes in the development of today's products and services requires that managers attend to the role of tacit knowledge during enterprises innovation. Knowledge held in people's bodies and heads, the unarticulated knowledge, is the very basis of creativity and is not easily captured nor codified. Many scholars studied tacit knowledge in relation to knowledge management. For example, Karl Paul admits that knowledge management is the new way in which enterprises can share their explicit knowledge and tacit knowledge (Chao Naipeng, 2000). Wang De-lu(1999) suggests that an important view in knowledge management is that tacit knowledge shows a superiority to explicit knowledge, and that it can create more values. Nonaka and Takeuchi(1995)make a model of organizational knowledge creation, arguing that tacit knowledge plays a central role in repeated innovations. Koskinen(2002) gives a conceptual analysis of the role of tacit knowledge in innovation processes.

The studies listed above have demonstrated the importance of tacit knowledge in knowledge management and human resource development

and management. However, the existing researches leave behind more discrepancies about concept, structure, and management of individual tacit knowledge. The goal of this paper is to illustrate the definition, structure and evaluation method of individual tacit knowledge precisely.

## **2 The definition to individual tacit knowledge**

Polanyi(1958), the first philosopher to introduce the concept of “tacit knowledge” in *Personal Knowledge* in 1958. He describes tacit knowledge as follows: ‘ I shall reconsider human knowledge by starting from the fact that we can know more than we can tell, or we have a power to know more than we can tell’. His statement is the foundation of the theory of tacit knowledge. From his perspective, the term tacit knowledge is used to describe this type of human knowledge that is hard to articulate, to express in its fullness. That is to say, one obvious characteristic of tacit knowledge is its defiance when described in words. Tacit knowledge, an instantiation of practical knowledge acquired in situations where the information is not expressed, is, in turn, hard to articulate and as a result, usually not explicitly verbalized or taught. Tacit knowledge is practical know-how that one picks up on a job or in everyday kinds of situations, rather than through formal instruction (Sternberg et al., 1993).

If decided by the ownership of knowledge, tacit knowledge has individual tacit knowledge and organizational tacit knowledge. Individual experience, value, skills belong to individual tacit knowledge; while team spirit, organizational routines belong to organizational tacit knowledge. Here our interest mainly comes to the study of individual tacit knowledge.

We define individual tacit knowledge as follows. It refers to a kind of individual knowledge which is related to achievements, but difficult to state clearly by language in proper situation. It can be divided into two types: cognitive tacit knowledge such as individual value, and special skill which deals with emotion, technique and professional skills and so on. What’s more, individual tacit knowledge helps a person realize his value and goal.

The definition of individual tacit knowledge includes three points:

a. It emphasizes the specialty and situation of

individual tacit knowledge. Different people have different tacit knowledge and they perhaps have not the same tacit knowledge in the same workshop. In an organization, a learned person may be not fitted to a similar job after changing the situation of work. This is called the situation of knowledge.

b. Here individual tacit knowledge refers to the knowledge related to work performance. That is to say, it can increase individual benefits. Those who have lots of tacit knowledge have nothing with work performance are beyond our interest.

c. Our research combined individual tacit knowledge with organizational tacit knowledge together. On the one hand, organizational tacit knowledge and core competition can't be formed without individual tacit knowledge. On the other hand, organizations need to manage their employees properly so that individual could accumulate useful tacit knowledge. For example, organizational strategy goal and culture make great function of the value of workers. In general, individual tacit knowledge and organizational tacit knowledge depend on each other.

Individual tacit knowledge is the resource of knowledge creation and the object of knowledge transformation. Therefore, the discussion on the structure and management of individual tacit knowledge, not only deepens the theory of knowledge and knowledge management, which is of important academic value, but also effectively manages all knowledge and improves organizations core competitiveness and abilities of independent innovations in order to win better competitiveness.

## **3 The structure of individual tacit knowledge**

Individual tacit knowledge is made up of various knowledge elements. According to the feature of tacit knowledge and exchange in work, organization and environment, in our opinion, tacit knowledge can be classified into general tacit knowledge and special tacit knowledge. General tacit knowledge is used in all kinds of work and circumstances which can satisfy a series of work. Special tacit knowledge means the tacit knowledge which is only used under special work and hard to transform under different work and situation. Roy Lubit(2001) divides organizational

tacit knowledge into four parts: know-how, mental models, ways of approaching problem, organizational routines. Mental models and ways of approaching problem belong to general tacit knowledge while individual skills belong to special tacit knowledge. According to the unified theory of information-technology-intelligence, Jiang Xin and Zheng Lanqin(2005) classifies tacit knowledge into four types: the tacit knowledge based on body, langue, individual meta-cognition and social culture. Among them, individual meta-cognition belongs to general tacit knowledge while the knowledge based on body and experience belongs to special tacit knowledge.

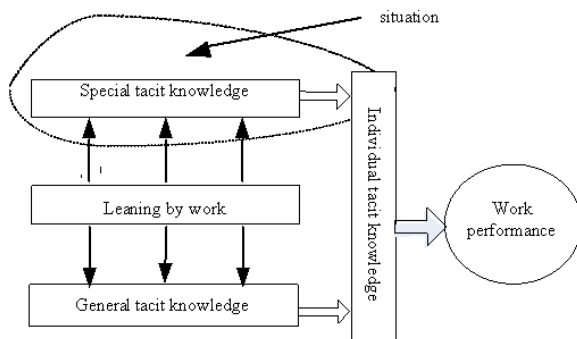


Figure 1. Relationship between general tacit knowledge and special tacit knowledge

and special tacit knowledge, in the course of using tacit knowledge, individual needs to transform not only general tacit knowledge but also special knowledge under work situation. According to the feature of situation and the characteristic of the transformation, we classify individual tacit knowledge into cognition level and skill level. The former belongs to general tacit knowledge, including view of value, meta-cognition; the latter belongs to special tacit knowledge, including interpersonal skills, communication skills and specialized skill knowledge fitted for special circumstance. Fig.2 shows the pyramid model of individual tacit knowledge.

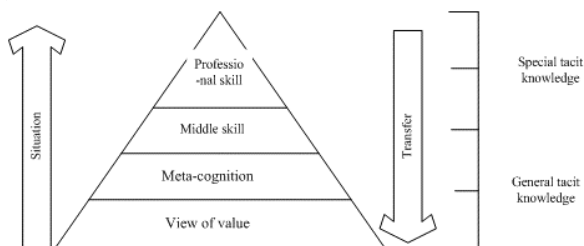


Figure 2. Pyramid model of individual tacit knowledge

As shown in Fig.2, we know that view of value, which plays an important part in the form and development of knowledge, lies in the bottom layer in the model. Generally speaking, view of value includes individual hobby, need, interest, choice, orientation, duty and moral obligation. It embodies a large scope of choosing behavior way and evaluation standard about matter is right and wrong. Narrowly speaking, view of value is the standard or principle by which individual often make his evaluations. It is actually individual basic opinion indwelled in individual heart with the property of internality. This kind of opinion works subconsciously in one's daily life.

Based on individual meta-cognitive, meta-cognitive tacit knowledge embodies in the method of individual solving the problem, mental model, and intuition. It plays an important part in the forming of other tacit knowledge.

Middle skill tacit knowledge stays between meta-cognitive and professional skill. It plays the role of contacting 'the text between two conjoint passages'. This kind of knowledge mainly contains the skill of interpersonal, communication, and learning technique.

Compared with view of value, meta-cognition, and middle skills, professional skill is perhaps easier for people to gain direct observation. Though it is hard to express, acquire and transfer, it can help people make work finished well. The forming of professional skill is always the result of the experience acquired by one's trial and error, understanding and knowledge accumulation. For examples, drivers' skills, chefs' cooking, and artists' playing skills belong to this kind of knowledge.

In the pyramid model of individual tacit knowledge, the lower level knowledge is of stability and difficult to observe and evaluate directly, so it is hard to transfer. Different from the lower level, the higher level knowledge is close to special tasks. By direct observation, we could find the differences of different individual tacit knowledge. It is easier, therefore, to evaluate this kind of knowledge by experts' evaluation. And the lower knowledge has an effect on the upper one. For example, view of value and meta-cognition decide the formation and development of middle skill knowledge; while the middle skill knowledge affects the degree and level of professional skill. At the same time, the upper also has an effect on the lower. For example, the improvement of communication skill

could force individual to further perfect his meta-cognition and view of value. So the knowledge interaction will change the structure of individual tacit knowledge.

#### 4 Evaluation model and methods of individual tacit knowledge

Nowadays because of the dynamic conditions of the market, competitive advantage is mainly dependent on knowledge; while capital, land and labor are becoming subsidiary resources gradually (Liu Shufen, 2003). Beverly Brennan (1999) pointed out that international academics are strengthening the research of measurement of knowledge. So it is necessary to evaluate and measure knowledge, including individual tacit knowledge. If not measured and captured, tacit knowledge may be lost during employee turnover. Moreover, measuring individual tacit knowledge benefits human resource management. The measurement of individual tacit knowledge is in fact a crucial topic of what tacit knowledge management should be about.

Even though individual tacit knowledge can be summarized as knowledge that has not been articulated, some studies have shown that it could be measured. Sternberg and Grigorenko(2001) argued that tacit knowledge must be assessed through individual responses to representations of practical problems, to which tacit knowledge is expected to provide a solution. J. Hedlund et al (2003) applied the method for identifying and assessing tacit knowledge to the domain of military leadership in order to understand why some leaders are more successful than others. They measured tacit knowledge by using tacit knowledge inventories.

Thereby the block model is used to assessing and measuring individual tacit knowledge. When you want to evaluate individual condition of tacit knowledge, you should indirectly assess it according to the standard of evaluating system after putting in different information to individuals. Fig.3 is the basic model of measure and evaluation of individual tacit knowledge.

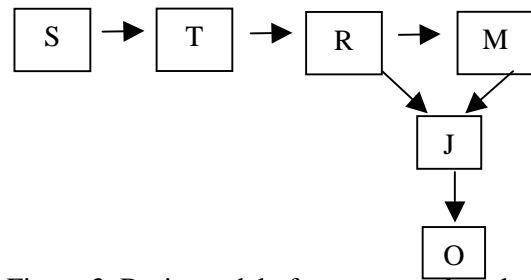


Figure 3. Basic model of measure and evaluation of individual tacit knowledge

S: Input information  
 T: Tacit knowledge  
 R: Output information  
 M: Standard of measurement  
 J: Analyses and assessment  
 O: Outcome of measurement

The block model is suitable for different situations and conditions. Interviews, one of ways of evaluation, are designed for assessing individual ability of tacit knowledge. Generally speaking, an experienced expert could identify and assess tacit knowledge accurately through proper interviews. For example, interviews are widely used for selecting new staff. Another way is questionnaires. We designed the questionnaires to select tacit knowledge items that are considered to best represent the construct of tacit knowledge for individuals.

Based on the above analyses and the nature of the structure of individual tacit knowledge, questionnaires and fuzzy comprehensive evaluation are considered for assessing individual ability of tacit knowledge with the existing personnel evaluation methods. We select questionnaires which are used for assessing general tacit knowledge and fuzzy comprehensive evaluation for special tacit knowledge. General tacit knowledge, as well as view of value and meta-cognition, has a higher personal property than special tacit knowledge. But it is difficult for experts to evaluate this type of knowledge directly. So we select using questionnaires for it.

On the other hand, the feature of special tacit knowledge such as professional skill that is practical and describes a process (know-how). Experts could make a distinction for this type knowledge between individuals by individual behaviors in context. Many characteristics of special tacit knowledge are unable to be expressed by monetary index, and lots of factors affecting tacit knowledge also cannot be decided

by monetary measurement. Therefore, for such fuzzy phenomenon or concept of the unclear "boundary", the fuzzy comprehensive evaluation method is relatively suitable. Equipped with the fuzzy switch theory, the fuzzy comprehensive evaluation method solves "fuzzy" evaluation and decision problem easily, while the problem is hard to solve with traditional method. It is a kind of effective aid decisions method. The index boundary of employee's tacit knowledge is fuzzy, so this method is suitable for evaluating employee's tacit knowledge.

## 5 Conclusion

All in all, tacit knowledge, especially individual tacit knowledge, occupies a central role in the development of sustainable competitive advantage. This article has emphasized individual tacit knowledge, the knowledge that is hard to articulate in words under certain circumstances. It can be divided into general tacit knowledge and special tacit knowledge. In the pyramid model of individual tacit knowledge, it has four levels: view of value, meta-cognition, middle skills and professional skills. Based on the nature of different types of tacit knowledge and evaluation model, we have put forward tentative methods of assessing individual tacit knowledge. But there is no empirical evidence to support the theory and as we know the theory needs to be empirically studied. We hope that this paper will provide some proposals for fruitful discussion in the future and will act as a trigger for studies in this field.

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