

# The exploration factors of affecting knowledge sharing – The case of Taiwan's high-tech industry

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## Abstract

In the past, the studies on knowledge sharing tended to be focused on the organization and few paid attention to the departments inside the organization. In this study, valid samples were collected from Taiwan's 92 IC related firms in the high-tech industry through the Hierarchical Random Sampling method for empirical analysis. The non-linear fuzzy neural network is used due to its capacity in accepting errors and low limitation. This method enables researchers to accurately assess the relations between variables. The result of this study indicated that the degree of formalization and complexity of the organizational structure is negatively and significantly correlated with knowledge sharing. Similarly, motivation through material reward correlates positively and significantly with knowledge sharing with stronger intensity than that between motivation through non-material reward and knowledge sharing. The degree of integration between organizations correlates positively and significantly with knowledge sharing.

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## 1. Introduction

As a result of increasing global competition, the issue confronting every business enterprise is to find ways of improving its own competitiveness. Nevertheless, as an enterprise's organizational structure expands, the respective business units in an organization may not only become competitors of one another internally, but may also be partners if considered from an external perspective. However, an organization unit often learns its lessons from interdependent relationships between itself and other organization units or benefits received as a result of other organization units' new knowledge. Hence, it is of paramount importance to learn how resources can be integrated and invested and how knowledge can be shared in an organization. Although there have been different studies (Grant, 1996; Kogut & Zander, 1995) in the past emphasizing the importance of internal coordination in an organization,

which had a certain level of influence on the exchange of knowledge, the majority of these studies focused only on a single organization unit. This study attempted to review the interactions between different units within an organization in that competition within an organization is the primary source of unification and sharing of knowledge and power; it is also the cornerstone for expanding knowledge and increasing competitiveness.

In theory, although there have been quite a few knowledge-management related studies in the past, most of them focused on the following areas: (1) Building and planning of hardware: mainly focused on researching ways of accomplishing information sharing to provide speedy internal and external communication tools for members of the enterprise, which in turn will enhance the business's competitiveness (Hedlund, 1994); (2) Software: exploring the details of and process in which knowledge is obtained, created, proliferated and stored from the organizational-behavior and strategic-planning perspectives; mediums for the operation of management policies and culture were also discussed (Grant, 1996; Nonaka & Takeuchi, 1995);

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(3) Contents: emphasizing the contents of academic knowledge focused by scholars in different academic fields, for instance, IT management researchers would focus on topics such as how information technology can be applied in the learning and transfer of knowledge, while strategic management academics might focus on topics such as how the organization culture, system, core competitiveness and knowledge may be integrated and linked innovatively (Davenport & Prusak, 1998; Kogut & Zander, 1995; Senge, 1997).

Although there have been numerous studies on knowledge management in the past, the focus of these studies was mainly on knowledge creation and sharing (Cross, Parker, Prusak, & Borgatti, 2001; Hendricks, 1999; Roth, 2003) as the former is the origin of knowledge and the cornerstone for building up competitiveness while the latter is the proliferation of knowledge and power and one of the ways to increase an enterprise's competitiveness. Past studies on the topic of knowledge sharing have leaned towards theoretical reviews and classification. For instance, Davenport and Prusak (1998) was of the opinion that knowledge sharing is equivalent to knowledge transfer and sharing amongst members of the organization; Nonaka and Takeuchi (1995) further considered that knowledge sharing could be converted via individuals or different mechanisms within an organization. For instance, mutualization, socialization and externalization and combination are considered the different phases of successful knowledge conversion; or the topic of knowledge sharing may be explored from different academic perspectives, for example: Senge (1997) considered knowledge sharing from the perspective of organization learning as effective mechanisms for assisting others to convert knowledge into effective actions. In addition, the levels of difficulties in knowledge sharing among organization units were considered from the perspectives of market costs and transactions. For example: Davenport and Prusak (1998) focused on the process and reasons of knowledge-sharing operations. However, this study focused on studying the interactions between the organization units in an enterprise. Besides, some academics consider that the impetus to knowledge sharing includes not only system and hardware operations but also the design and features of the organizational structure, coordination between organization units, competitive and cooperative relationships between organization units and relational involvement (Foxall & Greenly, 1999; Gadde & Snehota, 2000). From the human-resource perspective, material and non-Material incentives are not only the motives for employees to work hard, they are also the prime power to facilitate interactions and communications between organizations (Hansen, 1999; Kogut & Zander, 1992; Tsai, 2002). The primary perspectives selected for this study were initiated by the aforementioned literature overview.

In addition, related studies in the past mostly conducted case analysis or used Multivariate Statistical Analysis to authenticate hypotheses derived from theory. This study

attempted to use the neural fuzzy set network method to authenticate the theory as this method has the following characteristics: (1) The scope of application is more extensive. The relationship between input and output variables may be non-linear; (2) It is not required to understand the relationships between variables in advance through recurring orders and application of learning; (3) All fixed-quantity and fixed-quality messages are evenly distributed in the network's neurons. Hence, the level of tolerance for errors and resilience is high; (4) The scope of application is broader than that for traditional statistical approaches. It is more suitable to construct a model for highly non-linear social science behaviors and modes of the like. This is the second motive of this study.

On the basis of the above background and motives, the purposes of this study are as follows:

1. Explore the effects of the organizational structure characteristics, interactive relationships between organization units and the methods to encourage knowledge-sharing activities;
2. Utilize the neural fuzzy set network method to authenticate the relevant theoretical hypotheses and present the significance of these results in management as well as make some practical recommendations.

## 2. Literature review

### 2.1. Relational involvement

The concept of “involvement” is most frequently applied in psychology. For instance, Foxall and Greenly (1999) explained “involvement” from a psychological standpoint. They were of the opinion that the basic concept of “involvement” originates from “the awareness of personal relevance”. In simple words, when individuals become aware that a particular matter is of high importance to them, they will start paying attention to the matter.

On the basis of past studies, the concept of “involvement” has also been commonly applied in consumer behavior but less in the exploration of relationships between different organization units. Besides, past studies mainly focused their analysis on the buyer/seller relationship between strategic allies or partners in the supply chain or organizational-behavior. For instance, Li and Nichols (2000) proposed the levels of relational involvement as the principle criteria to classify the continuity of buyer–seller transactional relationships. They considered that “relational involvement” represents the buyer and seller's willingness to establish a long-term partnership relationship. Higher levels of involvement imply that both parties are more enthusiastic to establish a long-term partnership while lower levels of involvement imply that both parties opt for a more simplified transactional relationship. Bensaou (1999) considered that in order to enjoy

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