Applying Grounded Theory to Study Collaborative Climate, Supplier Relationship, Trust, Knowledge Sharing, and Performance in an Organization

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Abstract - **The purpose of this study is to argue the case for the use of grounded theory as a valid method for the relationship among collaboration climate, supplier relationship, trust, knowledge management, and performance. The grounded theory research method that was employed in this study is a primarily inductive investigative process in which the researcher formulates a theory about a phenomenon by systematically gathering and analyzing relevant data. This research method is trying to building theory, not testing theory. The data that was gathered for this study primarily consisted of semi-structured in-depth interviews with informants of varying industry, scale and management level.**

Keywords - **collaboration climate, grounded theory, knowledge management, performance, supplier relationship, trust**

I. INTRODUCTION

The business management of corporation lays emphasis on sustainable operation, and so, how to preserve its sustained competitive advantage is the main topic discussed by many researches. From the standpoint of corporate strategies and knowledge management, the accumulation of professional knowledge for employees makes indispensable contribution. The extent of thinking highly of knowledge management of employees by the employers, the increase of investment, along with the utilization of IT to store and share knowledge all indicate the importance of this topic. On the other hand, to increase the cooperation with suppliers and to response fast to the requests of customers, how to effectively integrate the external supply chain with self-value chain for the enterprises is another vital topic. The objective of business collaboration lies in the establishment of relationship as well as development of trust between the cooperative enterprises.

II. LITERATURE REVIEW

A. Knowledge Management and Organizational Competitive Advantage

How to improve and strengthen corporate constitution, and increase competitive advantages are the topics that the senior managers are concerned with. The corporation views knowledge as the most important asset and strategic resources, and uses the knowledge accumulated as intellectual property resources and capabilities. Hence, in order to develop the culture that is beneficial to the functioning of knowledge within the organization, it must start with integrating knowledge management into the whole business strategies [7,14]. When the business takes knowledge management into its strategic consideration, the organizational culture will change gradually because under different strategies, it will form different organizational cultures.

B. Collaboration and Supplier Relationship

Through cooperation of collaborative business, it can accelerate the communication of products between every node in the value chain, reduce the cost of time on manufacturing and coordination, establish common basis of understanding through Internet. The relationship between enterprises and suppliers affects the progress of collaborative business. Usually, this kind of collaboration can be built upon collaboration network. The so-called collaboration network means to set up the mechanism of inter-connection by means of cooperation with suppliers, and sometimes, cooperating by strategic alliance [1]. Dyer & Hatch [2] thinks that collaboration network means the valuable knowledge acquired from Internet. Powell et al. [10] regards that collaboration network is the main tool for corporations to get external knowledge so that they can proceed to make innovation and cross-organizational learning. And upon the collaboration network, the processes of collaboration comprise of several technical components; for instance, the new technology developed by R&D or information sharing of manufacturing processes. In addition, some corporations' collaboration is to market their assets or brand information, etc [6,11]. Also, the collaboration network involves horizontal and vertical connections. The former means the collaborative relationships between the same business enterprises, and the latter means the connection between upstream and downstream enterprises.

C. Trust , Knowledge Sharing, and Performance

Another focal point is that inside the collaboration network, trust plays an absolutely critical factor [1]. The reason that interests of resource sharing generated from collaborative activities increases is that inside the network, theses activities combine every participant's skill and share their knowledge, and also the project can achieve the economic scale. All of these must be built upon the basis of participants' trust [1]. It's not easy to build collaboration network between competitors; the main reason is relationship between every enterprise belongs to the opportunistic person's state of mind. Cooperation under this atmosphere is filled with threat, not trust at all [5]. So, if one only wants to steal the other's techniques, or, offers worse information or asset for the project working together, this strategic alliance is bound to bring many crises. The establishment of trust and the diminishing of opportunistic behaviors are the prerequisite to share knowledge and resource inside the collaboration network ［1］. Thereby, we can conclude that the prerequisite for the establishment of relationship of suppliers is trust. Performance evaluation is based on managers' opinions and financial reports.

III. RESEARCH METHODOLOGY

A. Grounded Theory

This research employed the techniques of grounded theory [4] for the classification of and commentary on qualitative data. An open coding process [12] was adopted in the analysis through reading and re-reading the field notes while simultaneously allowing the concepts to emerge from the empirical findings. All concepts identified were organized in possible categories or main headlines with meaningful labels [12]. New themes were added as the analysis progressed and sometimes categories were reconstituted under different labels. The process of data collection, coding and analysis proceeded iteratively [4]. At the early stages of the research, this iterative process was more open-ended. Later it was directed by the emerging concepts by involving more selected interviewees and more structured interviews. According to Eisenhardt [3], the combination of case study with grounded theory has three major strengths: (1) it is likely to produce "novel theory" (p. 546), (2) the emergent theory is likely to be testable (p.547), and (3) the resultant theory is likely to be empirically valid (p.547).

Yin [15] notes that the generalizability of results from a single case study is one of the main concerns of researchers. In order to address this concern, Yin [15] claims that case studies are generalizable to a theoretical proposition. We argue that the understanding gained in this study provides a basis for understanding similar phenomena in other settings, rather than enabling the prediction of behavior in other contexts.

B. Samples

We started with an open sample, which consisted of eight companies operating in the Taiwan. We selected those companies based on the following criteria: (1) companies having relative business activities within this study (e.g., collaboration activities, supplier relationship, trust, and KM); and (2) companies that had been using KM as well as companies that had failed or rejected to use KM. These companies were selected after we interviewed managers. We then wrote to the companies in the sample, inviting them to participate in the study.

C. Semi-Structured in-Depth Interviews

Semi-structured in-depth interviews were chosen as the primary source of data for this study because most of the skills and challenges associated with this research topic are not directly observable. Unlike structured interviews, in-depth interviews have a flexible and dynamic style of questioning and discussion directed toward understanding the significant of human experiences from the informant's perspective [9, p.12]. The interviews for this study were conducted in companies' headquarter. All of the interviews were tape-recorded with the informants' permission, and later transcribed to provide accurate records for analysis. Standard procedures were followed to maintain the confidentiality of the interview data and the anonymity of the informants. Each interview spent about 1 to 2 hours.

In addition to interviews, we also collected data from other sources: the minutes of meetings, internal documents, company visits, and attending meetings. These data sources complemented interview data and helped guide the sampling.

D. Open Coding

We followed the principle of continuous interplay between data collection and analysis. During the whole analysis, we used the software QSR NVino 2.0 to organize the vast amount of information collected, and to support our coding. In grounded theory, analysis involves the assignment of concepts and themes to the data gathered. Open coding consists of fracturing, conceptualizing and integrating data to form theory. A concept is an abstract representation of an event, object, or action/interaction that a researcher identifies as being significant in the data [13].

The iterative process of data collection, coding, and analysis gave new insights into the research, helped us to formulate new questions in subsequent interviews, and helped indicate the most appropriate informants. Codes emerged through constant comparison [4]. Opening Coding involved identifying categories and properties in the data. A category is a conceptual element of a theory – an abstract representation of something the researcher identifies as being significant in the data. A property is a conceptual characteristic or attribute of a category [4,13]. Categories and properties were generated by comparing incidents in the data and looking for patterns. As concepts

emerged, they were compared with other incidents for verification, and with other concepts for establishing the best fit with the data [4,13]. To illustrate this idea, Table 1 presents some examples of comments that gave rise to the concept of Collaborative Climate, Supplier Relationship, Trust, Knowledge Sharing, and Performance.

TABLE I
Examples of comments that gave rise to the concept of Collaborative Climate, Supplier Relationship, Trust, Knowledge Sharing, and Performance.

Informant	Example comment
A	……..We built professional knowledge base, and made documentation to let new employees learn those new skills they need from the on-line knowledge information system. ……….When I evaluate the performance of an organization or a department, I would discuss with department head. In addition, the evaluation and feedback of customer services is an important indicator, too.
B	Our knowledge sharing with Japanese suppliers is mainly periodical meetings……Every season, the senior managers, chief leaders and engineers of Japanese suppliers will come to Taiwan, visiting the customers, and exchange opinions against each issue on material usage. …. our knowledge management activities are relatively traditional. Many of our knowledge are still based on the paper records. …..our selection of suppliers is based on the ones who can coordinate with our requests rapidly. Certainly, we also have trust on these main suppliers. Japanese suppliers have very high criterion of morality.
C	……. our scale is not big enough (about two-hundred employees); however, comparing to other bigger-scaled companies, our welfare would not be below to them. Since the scale is not big enough, our cooperation with the suppliers seems relatively weaker. The stock price at that time is ten times than it is now. Employees are very positive on their work with the rapid innovative speed on products. ……….Consequently, when the stock price lowered down heavily, many R&D engineers quitted their jobs, which we lost much useful knowledge, which is truly a great regret.

IV Case Analysis and Discussion

A. Descriptive Data of Samples

The interviewees of this research are senior managers of high-tech and general industries in Taiwan. Some information about interviewees is shown in Table II.

B. Case Analysis and Propositions

According to the interviewing data of eight professional managers, this research use grounded theory to analyze the results, and develop the propositions. Since most of the interviewees belong to high-tech industry, only the General Manager of Company B belongs to conventional industry, and hence, different industries and scales of companies have totally different viewpoints on

this research thesis. Most high-tech industries, if medium-or-big sized, usually have KMS, and keep certain relationship and stability with the suppliers.

TABLE II
Industry and interviewees position of eight companies

Company	Industry	Position
A	semiconductor manufacturing	vice general manager
B	beverage company	general manager
C	networking equipment	general manager
D	NB manufacturing	brand director
E	solar energy	general manager
F	semiconductor manufacturing	general manager
G	fuel cell manufacturing	vice general manager
H	computer equipment	CFO

What they focus on are rapid development and fast services; hence, the suppliers usually provide timely technical supports and activities of knowledge-sharing by different ways of medium to let each other develop new products and then, to proceed the sales activities. Usually, suppliers' service processes also include knowledge sharing activities, which instead, has great impact for the enterprises themselves to boost their knowledge abilities. In addition, because of the scales of the organization, those small-or-medium sized companies sometimes have less achievement on the knowledge sharing activities. The establishment of relationship with suppliers is easy to be neglected by the suppliers since the amount of purchasing in these companies is not much enough, and they are not regarded as the chief customers for the suppliers; oppositely, making knowledge-sharing activities cross-organizationally by collaboration is not easy to be carried out.

So, this research presents the following proposition.

Proposition 1: When discussing the collaboration climate, the scales of the company will affect the suppliers' relationship and the knowledge sharing activities.

Different industries have different requirements on knowledge-sharing activities. The General Manager of Company B deems that the company needs to ask the employees to record the RD-related contents in the engineering logs and weekly journal incorporated as classified documents. That company does not use knowledge-management information system, but still put knowledge-management activities into practice well. On the contrary, in high-tech industries, like Company A and D, most of them encourage their employees to digitally record the related information. Also, the collaboration climate has diversities. The determination for the managers to carry through the knowledge-sharing activities will affect the success or failure of knowledge-sharing activities.

Using papers to record knowledge is feasible in the company with only a few employees, since the cost of recording information is too high. However, for enterprises with high knowledge sharing abilities, using information systems to record vital knowledge is highly workable. Therefore, different industries have different ways and media on knowledge sharing activities. According to the contents listed above, this is the reason why the research presents the following proposition.

Proposition 2: When discussing the collaboration climate, different industries have different ways to promote knowledge sharing activities.

The relationship between enterprises and suppliers also affects the knowledge-sharing activities. Company H only purchases a few parts from other suppliers. Hence, the knowledge sharing activities between Company H and suppliers is lower. However, if the companies need large number of parts from outside suppliers, they need to be highly dependent on the suppliers and gain trust each other so that they can communicate more quickly. The General Manager of Company B, suggests that trust is the reason that they have the better predominance of getting the materials than other competitors. The Vice Manager of Company A also has the same viewpoint. The communication between the suppliers and his company is very smooth. Samsung, Korea, usually responds fast to their requests. If they have urgent cases from Taiwan customers, Samsung will timely invite their chief R&D personnel and engineers to Taiwan by airplane to handle the technical issues. This kind of relationship of highly dependent is built upon the basis of trust from several years. Also, from the senior managers to the lower-level employees, all are under this phenomenon, and are keeping going toward the same objective, endeavoring to the sales of products together. According to the explanation, this research presents the following proposition.

Proposition 3: When discussing the collaboration climate, trust will affect knowledge-sharing activities.

The information capability for an enterprise itself is not the main reason affecting the knowledge-sharing activities. Instead, the senior managers' management ability are the main effect for the knowledge-management activities. The Vice Manager of Company A, promote the KM activities in senior managers meeting and announce KM performance evaluation for all employees. He is also nominated as CKO (Chief Knowledge Officer) by the company, who is responsible for promotion of knowledge-management activities inside the company. The company has higher capabilities in information systems, along with great support from the line managers, so the KM activities can be promoted smoothly. According to the explanation, this research presents the following proposition.

Proposition 4: The information capabilities for the enterprise itself are not the main factors that affect the knowledge sharing activities; instead, the senior managers' attitude will affect the knowledge-management activities.

From the eight enterprises interview, most managers agree that the cooperation and knowledge-sharing with the suppliers is one of the main factors that affect business performance, especially the one that has intimate relationship with the suppliers. Under the circumfluence with great trust, each other's cooperation, and knowledge sharing are keeping going. On the contrary, for those who only have common relationship with suppliers, or for those who are not belonging to the suppliers' chief customers, their interaction with the suppliers in general is only limited to the relationship of buying and selling. Therefore, their knowledge-sharing activities can only proceed slightly, and the relationships with the suppliers and knowledge-management activities have less impact on the performance of the organization. So, this research presents the following proposition.

Proposition 5: When discussing the collaboration climate, cooperation and knowledge sharing with the suppliers is one of the main factors that affect business performance.

V. CONCLUSION

This research focuses on the effects of organizational performance in accordance with the collaboration climate, the relationship with the suppliers, trust and knowledge sharing. According to these valuable opinions, we summarize and address related theses. From the interviews of senior managers, we can understand different kinds of factors that affect the relationship with the suppliers and collaboration business against knowledge-sharing activities. From the external and internal analysis of an enterprise, we also can see the outline. Different industries have different implementation of management activities against the research topic, and hence, the category of industry will be an important variable against this research topic.

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TABLE III
The profile of eight companies

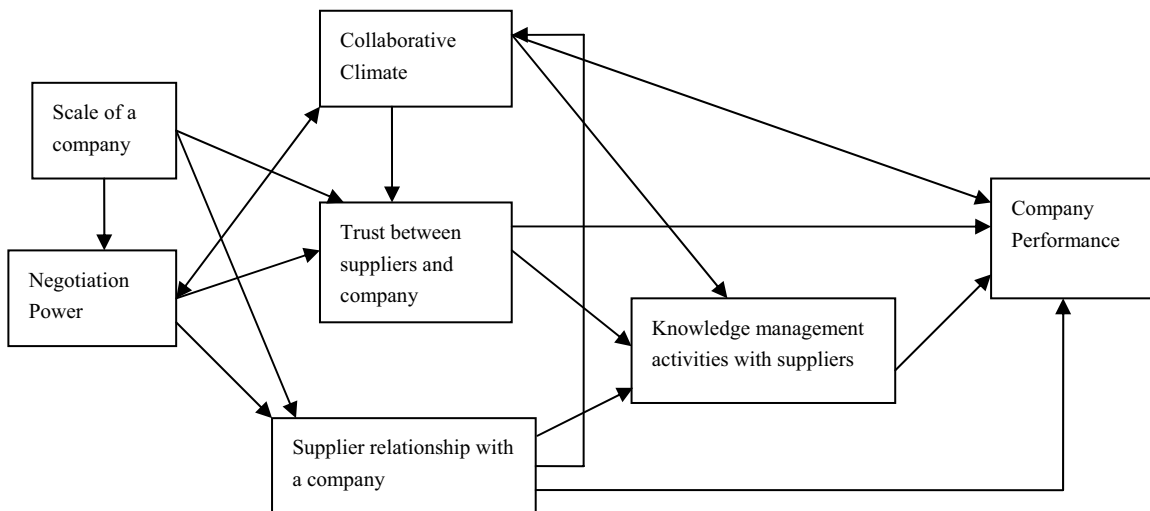| Company	# of employees	Collaboration Climate	Supplier Relationship	Supplier Power	Trust	KM & KMS	Performance
A	1600	H	H	H	H	H	H
B	250	H	H	M	H	M	H
C	200	M	M	H	M	M	M
D	6000	H	H	H	H	H	H
E	1000	M	M	H	M	M	M
F	200	M	M	H	M	M	M
G	100	M	M	H	H	H	M
H	120	L	L	M	M	L	L

Note: H: high; M: medium; L: low.

Fig. 1. Concept map depicting a grounded theory of the study.